



Graduate Catalog 2019-2020

UAB THE UNIVERSITY OF ALABAMA AT BIRMINGHAM



Table of Contents

Graduate	5	Lifespan Developmental Psychology	72
About UAB	5	Medical/Clinical Psychology	73
General Information	5	Social Work	74
Non Academic Policies	8	Sociology	75
Trustees & Administration	9	Medical Sociology	75
Academic Calendar	11	Sociology	78
Academic and Student Services	11	Joint Health Sciences	78
Admissions	11	Anatomical Science	78
Enrollment	13	Graduate Biomedical Science	78
Academic Progress	14	Biochemistry, Structural, and Stem Cell Biology Theme	79
Completion of a Degree	20	Cancer Biology Theme	80
Financial Information	25	Cell, Molecular, and Developmental Biology Theme	81
Graduate Assistantships and Fellowships	27	Genetics, Genomics and Bioinformatics Graduate Program (GGB)	82
Student Life	28	Immunology Theme	82
Student Services and Facilities	29	Microbiology	83
Collat School of Business	37	Neuroscience Theme	84
Accounting	38	Pathobiology and Molecular Medicine Theme	85
Business Administration	40	Under Construction	86
Management Information Systems	44	Multidisciplinary Biomedical Science	86
College of Arts & Sciences	45	School of Dentistry	88
Interdisciplinary Programs	45	Dentistry	88
Cyber Security	45	DMD/PhD Program	90
Anthropology	46	School of Education	91
Art History	49	Interdisciplinary Programs	91
Biology	51	Curriculum and Instruction	93
Chemistry	52	Arts Education	94
Communication Studies	54	Music	94
Computer Science	55	Visual Arts	95
Criminal Justice	57	Early Childhood Education	96
Criminal Justice	57	Educational Studies	98
Forensic Science	59	Elementary Education	99
English	60	English as a Second Language	100
Foreign Languages and Literature	61	High School Education	101
History	61	Instructional Design & Development	104
Mathematics	62	Reading	105
Physics	64	School Psychometry	106
Political Science and Public Administration	67	Special Education	106
Psychology	69	Teaching English to Speakers of Other Languages	108
Behavioral Neuroscience	71	Human Studies	109
		Counseling	109

Educational Leadership	112	Physical Therapy	175
Community Health and Human Services	113	School of Medicine	177
Kinesiology	118	Interdisciplinary Programs	178
School of Engineering	120	Gerontology	178
Interdisciplinary Engineering	120	Medical Scientist Training Program	178
Professional Degree Programs	122	ARISE MD	183
Advanced Safety Engineering and Management	122	School of Nursing	187
Construction Engineering Management	123	School of Optometry	196
Information Engineering Management	124	Vision Sciences	197
Engineering Management	125	School of Public Health	198
Biomedical Engineering	126	Interdisciplinary Programs	200
Civil, Construction and Environmental Engineering	127	Doctor of Dental Medicine / Master of Public Health Program	201
Civil Engineering	127	Doctor of Veterinary Medicine (Auburn) / Master of Public Health Program	202
Electrical and Computer Engineering	132	Juris Doctor / Master of Public Health Program	203
Electrical Engineering	132	Master of Business Administration / Master of Public Health Program	203
Computer Engineering	133	Doctor of Medicine / Master of Public Health Program	204
Materials Science and Engineering	134	Doctor of Medicine / Master of Science in Public Health Program	204
Mechanical Engineering	136	Master of Public Administration/Master of Public Health Program	205
School of Health Professions	138	Master of Science in Health Administration/Master of Public Health Program	205
Interdisciplinary Programs	138	Master of Science in Nursing and MPH in Health Behavior Program	206
Health Focused Patient/Client management for Physical and Occupational Therapists	139	Master of Science in Nursing / Master of Public Health in Maternal & Child Health Policy	206
Rehabilitation Science	139	Master of Science in Nutrition Sciences, Dietetic Internship / Clinical Track/Master of Public Health	207
Clinical and Diagnostic Sciences	140	Doctor of Optometry/Master of Public Health Program ...	207
Biomedical and Health Sciences	141	PhD Industrial and Systems Engineering(Auburn) / Master of Public Health Program	208
Biotechnology	142	PhD in Biomedical Science / Master of Public Health Program	208
Biotechnology Regulatory Affairs Certificate	143	Master of Science in Physician Assistant Studies / Master of Public Health Program	209
Clinical Laboratory Sciences	144	MSW/MPH in Maternal & Child Health Policy & Leadership	210
Clinical Pathology Assistant	145	Doctor of Philosophy (Psychology) and Masters of Science in Public Health	210
Genetic Counseling	146	Pharm D (Auburn University Harrison School of Pharmacy) / Master of Public Health	211
Health Physics	147	PhD in Psychology (HBPY) or Sociology (HSOC) and MPH Program	211
Nuclear Medicine Technology	148	Biostatistics	212
Physician Assistant Studies	150		
Health Services Administration	152		
Administration Health Services	153		
Health Administration	156		
Health Informatics	158		
Healthcare Leadership	160		
Healthcare Quality and Safety	161		
Healthcare Simulation	163		
Nutrition Sciences	164		
Occupational Therapy	168		

Environmental Health Sciences	214	EDC-Curriculum Education	309
Epidemiology	218	EDF-Foundations of Education	310
Health Behavior	222	EDL-Educational Leadership	311
Health Care Organization and Policy	224	EDR-Reading Education	317
The Graduate School	231	EE-Electrical & Computer Engineering	318
Graduate School Professional Development	231	EEC-Elementary and Early Childhood Education	322
Program Index	232	EESL-English as a Second Language	324
Course Index	234	EGR-Engineering	327
AC-Accounting	235	EH-English	330
AH-Administration Health Services	236	EHS-High School Education	333
AH-Health Administration	238	ELE-Elementary Education	334
AHD-Administration Health Services DSc	239	EMS-Middle School Education	335
ANSC-Anatomical Science	240	ENH-Environmental Health	335
ANTH-Anthropology	241	EPI-Epidemiology	341
ARH-Art History	245	EPR-Educational Psychology	345
ASEM-Advanced Safety Engineering & Management	247	ESP-Education School Psychometry	346
BHS-Biomedical & Health Sciences	249	FLL-Foreign Language & Literatures	347
BME-Biomedical Engineering	249	FR-French	347
BST-Biostatistics	251	FS-Forensic Science	347
BT-Biotechnology	255	GBS-Graduate Biomedical Science	348
BTR-Biotechnology & Regulatory Affairs	255	GC-Genetic Counseling	356
BY-Biology	256	GER-Gerontology	357
CB-Cell Biology	260	GHS-Global Health Studies	358
CD-Clinical Dentistry	261	GRD-Graduate School	359
CDS-Clinical & Diagnostic Science	263	HB-Health Behaviour	362
CE-Civil Engineering	264	HCO-Health Care Organization	368
CECM-Construction Engineering Management	269	HCS-Healthcare Simulation	379
CESC-Sustainable Smart Cities	270	HI-Health Informatics	379
CESE-Structural Engineering	272	HQS-Healthcare Quality & Safety	380
CH-Chemistry	272	HRP-Health Professions	381
CHHS-Community Health & Human Services	277	HY-History	381
CJ-Criminal Justice	280	IEM-Information Engineering Management	382
CLS-Clinical Laboratory Science	285	INFO-Bioinformatics	383
CM-Communication Management	286	IS-Information Systems	387
CPA-Clinical Pathologist Assistant	287	KIN-Kinesiology	388
CRM-Nursing-Clinical Research Management	288	LEAD-Leadership	390
CS-Computer Science	288	MA-Mathematics	391
Early Childhood Education	296	MBA-Master of Business Administration	396
ECG-Counseling, Human Service	298	MBS-Multidisciplinary Biomedical Science	398
ECT-Collaborative Teacher Education	301	ME-Mechanical Engineering	399
ECY-Special Education	306	MHP-Health Physics	403
EDA-Art Education	309	MIC-Microbiology	404

MPA-Master of Public Administration	404
MSE-Materials Science & Engineering	405
MSEM-Engineering Management	409
MSTP-Medical Science Training Program	409
NA-Nursing-Nurse Anesthesia	410
NAH-Nursing-Adult Health	412
NBB-Nursing-Biobehavioral	413
NBL-Neurobiology	413
NCA-Nursing-Critical Care	416
NCC-Nursing-Child/Adolescent	418
NCH-Nursing-Child Health	419
NCL-Nursing-Clinical Nurse Leader	419
NCS-Nursing-Clinical Specialty	419
NCV-Nursing-Cardiovascular	420
NDP-Nursing-Dual Pediatric	420
NFA-Nursing-RN First Assist	422
NFH-Nursing-Family	423
NGN-Nursing-Gerontological	425
NHSA-Nursing-Health Administration	426
NMD-Nursing-Diabetes Management	428
NMT-Nuclear Medicine Technology	429
NNE-Nursing-Neonatal	430
NNI-Nursing-Informatics	431
NOH-Nursing-Occupational Health	433
NPA-Nursing-Palliative Care	433
NPE-Nursing-Pediatrics	434
NPN-Nursing-Psychiatric/Mental Health	435
NPR-Nursing-Promotion/Protection/Restorative Health	437
NRM-Nursing-Research Methods	437
NST-Nursing Statistical Methods	439
NTC-Nursing-Teaching	440
NTR-Nutrition Science	441
NUR-Nursing	444
NWH-Nursing-Women's Health	454
OT-Occupational Therapy	455
PA-Physician Assistant	458
PH-Physics	460
PHR-Pharmacology	463
PSDO-Physician Scientist Development	464
PT-Physical Therapy	464
PTC-Health Focused Patient/Client Management	466
PUH-Public Health	466

PY-Psychology	472
RHB-Rehabilitation Science	474
SOC-Sociology	475
SPA-Spainsh	477
SW-Social Work	478
TMS-Translational & Molecular Science	482
TOX-Toxicology	482
VIS-Vision Science	482
Addenda	484
Index	485

Graduate

Welcome to the UAB Graduate School

The UAB Graduate School seeks to nurture skills that transcend disciplinary boundaries, preparing graduate students to participate successfully in professional and academic arenas. With coordinated and interdisciplinary degree programs available, the UAB Graduate School offers students an opportunity to tailor their educational experience to their own career objective. The Graduate School administers doctoral programs, post-masters education specialist programs, and master's level programs, with additional programs planned for the future.

Graduate students, you should expect many challenges as they build upon previous educational experiences in new and exciting ways. Graduate education has a distinctly different character from that of undergraduate education. Students explore their chosen area of study in greater depth, and are also challenged to reach across boundaries and address larger intellectual issues. There will be greater emphasis on originality and the creation of new knowledge.

The Graduate Catalog outlines all of the policies and procedures pertaining to academic performance, degree progress, academic and non-academic conduct, and student responsibilities. UAB graduate students are expected to be familiar with these policies and to abide by them. Failure to do so may impede a student's progress or may result in disciplinary action and, in some cases, dismissal. In addition to Graduate School policies, students are responsible for knowing and abiding by all UAB Policies and Procedures which can be located in the UAB Policies and Procedures Library at here (<http://www.uab.edu/policies/Pages/default.aspx>).

The Graduate Council

The Graduate Council is comprised of all graduate program directors. The Graduate Council Advisory Committee is a subset of these program directors who have been designated by their school deans to serve in an advisory capacity to the Graduate School Dean. The Advisory Committee reviews academic requirements, policies, procedures, and Graduate School activities. The committee recommends and approves appropriate changes. Changes in academic requirements and related policies require a majority vote of the Advisory Committee.

The Graduate Council Advisory Committee, through consultation with the Dean, is responsible for developing academic requirements and describing these requirements through appropriate policies. The Dean, through consultation with the Graduate Council, is responsible for developing procedures that effectively enforce academic requirements and implement policies. The Graduate Council Advisory Committee has developed policies and procedures to ensure that high standards for graduate study are maintained at UAB. These policies and procedures are available at the Graduate School's Web site (<https://www.uab.edu/graduate/academic-p-and-p>).

The Graduate Faculty

Graduate faculty membership may be granted by the Dean of the Graduate School to faculty members who demonstrate a high level of competence in teaching and scholarship. Graduate faculty are nominated by the faculty member's department chair and/or graduate program

director, and membership is required of all individuals teaching courses for graduate credit and of members of graduate study committees. A complete listing of the graduate faculty can be found on the Graduate School Web site (<http://www.uab.edu/graduate/gradfaclist>).

Graduate School Professional Development Program

Through its Professional Development Program, the Graduate School offers courses, workshops and seminars designed to help graduate students, postdoctoral fellows, and other academic professionals develop communication and other career-enhancing skills. Current offerings include credit-bearing courses and workshops, as well as free seminars, in writing, funding, presentations, and teaching at the college level. More information and schedules are available at the Professional Development Program's Web site ([www.uab.edu/profdev](http://www.uab.edu/graduate/profdev)).

Graduate School Deadlines

All Graduate School deadlines, as indicated on the calendar or in explanation of policies and procedures, unless otherwise stated, are final by **5:00 p.m.** on the date specified, by which time all transactions must be completed and documents received in the Graduate School. Transactions and documents requiring the action or approval of graduate advisors, committee members, instructors, department chairs, academic deans, or others prior to receipt by the Graduate School should be initiated by the appropriate person (student, instructor, graduate advisor, or other) sufficiently in advance of the Graduate School deadline for the required actions to be taken and approvals made or declined before the deadline. Deadline dates are available online at <http://www.uab.edu/graduate/deadline-dates>.

About UAB

Over five decades, UAB has evolved from an academic extension center into an autonomous, comprehensive urban university and academic health center within the University of Alabama System. UAB has established wide-ranging programs in the College of Arts and Sciences and the schools of Business, Dentistry, Education, Engineering, Health Professions, Medicine, Nursing, Optometry and Public Health, with graduate programs serving all major units. Fall 2018 enrollment was a record-high 21,923 students, the third consecutive year of record enrollment. The freshman class had an average ACT of 25.2, and a high school GPA of 3.73.

UAB is situated near downtown Birmingham and the historic Five Points South district. The campus stretches across 100 square blocks and occupies more than 100 primary buildings. UAB is Alabama's largest single-site employer, with more than 23,000 employees and an economic impact exceeding \$7.15 billion annually on the state.

General Information

Role Statement

UAB's graduate offerings are shaped by its location in the state's largest metropolitan area, by its mandate to serve a large and heterogeneous constituency, by its responsibility to contribute to the economic and professional development of Birmingham and the state, and by its role of providing support to a nationally recognized academic health sciences center.

At the graduate level, programs serve the career needs of educators and business leaders, as well as those involved in advancing the frontiers of the health sciences. Training for health professionals is available through programs at the baccalaureate, master's, doctoral, and professional degree levels.

UAB also has the primary responsibility for meeting the state's health professional needs. It offers a comprehensive range of programs which encompass both basic preparation and sophisticated graduate and specialty training in medicine, dentistry, optometry, nursing, health professions, and public health.

As one of the nation's leading research institutions, UAB emphasizes both basic and applied research. Although the majority of the university's research effort is in the biomedical sciences and related areas, all instructional programs are expected to participate in research activities. UAB's urban setting necessitates the development of research programs that are responsive to the city's economic, social, and cultural needs. Much of the research conducted at UAB is interdisciplinary in nature and is organized through centers that bring together experts in a number of related fields to concentrate on a particular problem or issue. UAB attracts more than \$400 million annually in research funding and currently ranks 10th among public universities in funding from the National Institutes of Health. The Carnegie Foundation for the Advancement of Teaching has named the University of Alabama at Birmingham to its list of colleges and universities to receive its 2015 Community Engagement Classification. UAB is one of 51 universities nationally and the only college in Alabama to be classified for high research activity and community engagement.

As the senior public doctoral-level institution in the state's major urban area, UAB is committed to providing comprehensive programs in continuing education consistent with the quality and diversity of its other offerings. The university's faculty, staff, and students also serve as resources to the area through activities related to professional, economic, and cultural growth and development.

Cultural Opportunities

UAB's urban location offers students unique cultural opportunities. Located within walking distance of the campus is the Five Points South district, where local and unique restaurants, shops, art galleries, and music clubs are located. Not far from campus are the Birmingham Museum of Art, the Civil Rights Institute, the historic Alabama Theater, and the Birmingham-Jefferson Convention Complex. Other nearby sites include Sloss Furnace, a post-Civil War iron foundry which has been converted into a museum and informal music hall, and Oak Mountain Amphitheater, an outdoor facility that features music-industry headliners during the spring and summer concert season.

UAB has a flourishing arts program. As many as 30 major music events are produced each season at UAB, in addition to numerous theater productions and student and professional art exhibitions. The Alys Robinson Stephens Performing Arts Center is a state-of-the-art facility featuring 4 formal performance spaces: the 1,300-seat Jemison Concert Hall, the 350-seat Morris K. Sirote proscenium theater, the 170-seat Reynolds-Kirschbaum Recital Hall, and the Odess Black Box Theater, which can seat up to 120.

Student Life

Graduate students at UAB have many opportunities to become involved in the life of the university. Information about additional groups, both on and off campus, can be found in the UAB Student Handbook, *Direction*

at <http://www.uab.edu/handbook>. Such organizations include: Graduate Student Government (GSG), Black Graduate Student Association (BGSA), Society for Advancement of Hispanics/Chicanos and Native Americans in Science (SACNAS), and Graduate Career Awareness and Trends (GCAT).

Schools and Degrees

This catalog contains information about graduate programs in the College of Arts and Sciences, School of Business, School of Dentistry, School of Education, School of Engineering, School of Health Professions, School of Nursing, School of Optometry, School of Public Health and the Joint Health Sciences.

Most UAB graduate students are working toward a degree; however, some have other educational goals. Graduate level degrees are usually characterized by the level of master's, specialist or doctoral.

College of Arts & Sciences

Master of Arts

Anthropology⁵
Art History¹
Communication Management
English
History
Sociology
Psychology

Master of Public Administration

Master of Science

Biology
Chemistry
Computer and Information Sciences
Computer Forensics and Security Management
Criminal Justice
Forensic Science
Mathematics
Physics

Doctor of Philosophy

Applied Mathematics
Biology
Chemistry
Computer and Information Sciences
Medical Sociology
Physics
Psychology

Biomedical Sciences/Joint Health Sciences

Interdisciplinary Themes*

Biochemistry, Structural and Stem Cell Biology
Cancer Biology
Cell, Molecular and Developmental Biology
Genetics, Genomics and Bioinformatics
Immunology
Microbiology
Neuroscience
Pathobiology and Molecular Medicine

*Completion of the training requirements in one of the above interdisciplinary themes provides eligibility for conferral of one of the following PhD degrees:

- Biochemistry and Molecular Genetics
- Cell Biology
- Cellular and Molecular Physiology
- Genetics
- Microbiology
- Neurobiology
- Pathology
- Pharmacology and Toxicology

School of Business

Master of Accounting

Master of Business Administration

Master of Science in Management Information Systems

School of Dentistry

Master of Science

School of Education

Master of Arts in Education

Arts Education
 Community Health
 Early Childhood Education
 Educational Leadership
 Elementary Education
 English as a Second Language
 Health Education
 High School Education
 Kinesiology
 Music Education
 Reading
 School Counseling
 Special Education

Educational Specialist

Educational Leadership
 Early Childhood Education
 Elementary Education
 English as a Second Language
 Secondary Education
 Special Education: Autism Spectrum Disorder
 Teacher Leadership

Doctor of Education

Educational Leadership

Doctor of Philosophy

Early Childhood Education
 Health Education Promotion

School of Engineering

Master of Science

Biomedical Engineering
 Civil Engineering

Electrical Engineering
 Materials Engineering
 Mechanical Engineering

Master of Engineering

Advanced Safety Engineering and Management
 Construction Engineering Management
 Design and Commercialization
 Information Engineering and Management

Doctor of Philosophy

Biomedical Engineering
 Civil Engineering
 Computer Engineering
 Interdisciplinary Engineering
 Materials Engineering

School of Health Professions

Master of Science

Biotechnology
 Clinical Laboratory Science
 Genetic Counseling
 Healthcare Quality and Safety
 Nutrition Sciences
 Occupational Therapy

Master of Science in Health Administration

Master of Science in Health Informatics

Master of Science in Physician Assistant Studies

Doctorate of Physical Therapy

Doctorate of Science in Administration Health Services

Doctor of Philosophy

Administration Health Services
 Nutrition Sciences
 Rehabilitation Sciences

School of Nursing

Master of Science in Nursing

Doctor of Nursing Practice

Doctor of Philosophy

School of Optometry

Master of Science

Vision Sciences

Doctor of Philosophy

Vision Sciences

School of Public Health

Master of Public Health

Doctor of Public Health

Master of Science in Public Health

Doctor of Public Health

Doctor of Philosophy

Non-Academic Policies

Student Conduct Code (<http://www.uab.edu/students/conduct/student-conduct-code>)

The Student Conduct Code promotes honesty, integrity, accountability, rights and responsibilities expected of students consisted with the core missions of the University of Alabama at Birmingham. This Code describes the standards or behavior for all students, and outlines student's rights, responsibilities, and the campus processes for adjudicating alleged violations. Behavior that violates UAB standards of conduct listed within the Student Conduct Code and elsewhere will be subject to disciplinary action through the appropriate conduct process. Whether it is determined that an individual or group is responsible for the violation(s), either by direct involvement or by condoning, encouraging, or covering up the violation, appropriate response will occur with respect to the individual(s) and/or group involved.

Equal Opportunity and Discriminatory Harassment Policy (<http://www.uab.edu/policies/content/Pages/UAB-BT-POL-0000052.aspx>)

UAB is committed to equal opportunity in education and employment, and the maintenance and promotion of nondiscrimination and prevention of discriminatory harassment in all aspects of education, recruitment and employment of individuals throughout the university.

Immunization Policy (<http://www.uab.edu/policies/content/Pages/UAB-AD-POL-0000086.aspx>)

UAB requires that first-time entering students, international students and scholars, and students in health-related schools provide proof of immunization against certain diseases.

Non-Resident Tuition Policy (<http://www.uab.edu/policies/content/Pages/UAB--POL-0000109.aspx>)

This policy addresses non-resident tuition, certification of residency status by campus officials, and establishment of campus policies to administer an appeals process.

Drug-Free Campus Policy for Students (<https://www.uab.edu/policies/content/Pages/UAB-UC-POL-0000781.aspx>)

Unlawful possession, use, manufacture, distribution, or dispensing of illicit drugs, controlled substances, or alcoholic beverages by any UAB student is prohibited.

<https://www.uab.edu/students/wellness/policies-resources/drug-free-schools-communities-act>

UAB Annual Security & Fire Safety Report (<https://www.uab.edu/police/crime-statistics/annual-security-and-fire-safety-report>)

The 2018 UAB Annual Security and Fire Safety Report is now available online. To access it, you can go to the UAB Police Department website at <http://www.uab.edu/police> and click on "Read the 2018 UAB Annual Security & Fire Safety (Clery) Report," or go directly to the report at:

<https://www.uab.edu/police/images/PDF/Annual-Security-and-Fire-Safety-Clery-Report.pdf>

For a print copy of the report, call (205) 934-4649. The report follows the guidelines mandated by the Federal Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act and contains the following information: reporting incidents; federal campus sex crimes prevention act; missing person procedures; distribution of timely warnings; emergency preparedness, response and evacuation procedures; criminal statistics; fire safety report, etc.

Copyright Policy (<http://www.uab.edu/policies/content/Pages/UAB-RA-POL-0000035.aspx>)

The University of Alabama at Birmingham (the "University") is dedicated to instruction, research and service to benefit society and encourages its faculty, staff and students to carry out scholarly endeavors in an open and free atmosphere, and to publish the results of such work without restraint, consistent with applicable law and policy.

Patent Policy (<http://www.uab.edu/policies/content/Pages/UAB-RA-POL-0000115.aspx>)

UAB encourages the development of procurement and licensing of patents for inventions in the interest of the public, the inventor, and the university.

Data Protection and Security Policy (<http://www.uab.edu/policies/content/Pages/UAB-IT-POL-0000038.aspx>)

Data (electronic) created at UAB must be protected and maintained in accordance with all applicable federal and state laws and university policies.

Student E-Mail Address Policy

November 10, 2003

See also:

Electronic Data Processing Security Policy

Acceptable Use Policy

Network Usage Guidelines

Purpose

UAB provides electronic mail resources in support of its instruction, research, and service activities. The purpose of this policy is to establish the use of electronic mail (e-mail) as one of the official methods for communicating with UAB students.

Official Communications Using E-Mail Addresses

In a similar manner as mail distribution of paper communiqués to a student's "permanent" address is considered an official method for distributions to students, so also are official e-mail messages sent by UAB to a student's "@UAB.EDU" e-mail address considered an official distribution method. For purposes of this policy, "official" communiqués or e-mails as used here are those established as "official" through other approval mechanisms in place at UAB.

Student Requirements and Responsibilities

Every student enrolled at UAB must have an e-mail address that ends with "@UAB.EDU". Such an e-mail address is required for a student to register for UAB credit courses. It is the student's responsibility to obtain an official UAB e-mail address in a timely manner from the UAB e-mail registering system (BlazerID World Wide Web site). This will require the student also to have a valid, current, and reliable electronic mailbox through an Internet Service Provider (ISP) or portal or on a server administered by the student's academic department, or on the central mail service provided by the Office of the Vice President for Information Technology. It is the student's responsibility to check his or her e-mail regularly for distribution of official UAB communiqués. UAB recommends that e-mail be checked at least once a day, when practicable. UAB is not responsible for lost, rejected, or delayed e-mail forwarded by UAB from a student's "@UAB.EDU" address to off campus or unsupported e-mail services or providers. Such lost, rejected, or delayed e-mail does not absolve the student from responsibilities associated with an official UAB communiqué sent to the student's official UAB e-mail address ("@UAB.EDU"). If there is a change in a student's e-mail address to which the "@UAB.EDU" alias address is re-directed, it is the student's responsibility to make the changes in the UAB e-mail registering system.

UAB Responsibilities

UAB will ensure that all students have access to an e-mail account and will provide means for students who do not otherwise have access to e-mail-capable computers to be able to check their e-mail through such mechanisms as computer labs, the UAB libraries, and public terminals. UAB will provide mechanisms to allow students to request that their e-mail addresses not be published in a similar way that other student directory information is not published. However, unpublished e-mail addresses will be used for sending official UAB communiqués to students including communications to a group of students such as a course e-mail list. Students also will be provided mechanisms for requesting that their e-mail addresses not be used for general UAB mailings that are not official communications with students. UAB is not responsible for the handling or mishandling of students' e-mail by non-UAB providers or by unofficial (non-@UAB.EDU) e-mail servers.

UAB have certain rights with regard to information included in their education records. These rights are the subject of this policy.

Request to Withhold Directory Information PDF (https://www.uab.edu/images/stuaff/pdf/Registrar/Forms/Privacy_form.pdf)

Classroom Scheduling Policy

1. Departments will schedule all multiple lecture and laboratory sections so that student course enrollments will be distributed approximately equally between mornings and afternoons and between the different meeting patterns (TR vs. MWF). Departments will also limit classes taught during peak hours to 50%. Once departments reach the maximum of courses to be taught during peak hours, the remaining courses should be redistributed across non-peak hours.
2. Departments will have the ability to schedule in rooms they manage first. After this, the Registrar's Office will utilize all available classrooms to assist other departments in need of space.
3. Departments must strictly adhere to the approved standard set of time patterns when scheduling course offerings.
4. Because of the regular standard meeting lengths for three hour courses are in 50 and 75 minute time blocks, courses offered during non-standard times should be offered in multiples of these times to avoid end times that preclude the students from registering for courses that may follow the standard section. For example, one non-standard time on Tuesday and another at the same time on Thursday.
5. Classroom enrollment and capacities should be based on the actual enrollment trends over the past few years to ensure a realistic estimate of room needs and proper seat and room assignments. Room capacities will be reviewed each semester by the Office of the Provost in collaboration with the colleges and departments to ensure the actual instructional capacities for each room are assessed.
6. Departments should strive for 80% occupancy. For example, the number of students enrolled in a class divided by the instructional seating capacity of the room that class is in should be greater than or equal to 80%.
7. Peak hours are between 9:00 am - 1:25 pm Monday through Friday. Departments should strive to provide students a variety of options of course offerings throughout the scheduling week by utilizing non-peak hours. The importance of maintaining the existing course schedule M-F is to allow for courses to be spread more evenly throughout the week. Not only will this be necessary to accommodate significant course demand in response to projected enrollment increases but it will also provide students with greater flexibility when building schedules and further optimize classroom utilization.

Trustees & Administration

The University of Alabama System Board of Trustees

Kay Ivey

Governor, State of Alabama, *President ex officio*

Trustees

Ronald W. Gray, *President pro tempore*

Student Records Policy (<https://www.uab.edu/students/one-stop/policies/student-records-policy>)

The University of Alabama at Birmingham student records policy complies with the Family Educational Rights and Privacy Act of 1974, as amended. All students enrolled or previously enrolled at

Karen P. Brooks

John H. England, Jr.

Joseph C. Espy III

Barbara Humphrey

Vanessa Leonard

W. Davis Malone, III

Harris V. Morrissette

Scott Phelps

William Sexton

Finis E. St. John IV

W. Stancil Starnes

Marietta M. Urquhart

Kenneth L. Vandervoort, M.D.

James W. Wilson, III

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Frank H. Bromberg, Jr.

Paul W. Bryant, Jr.

Angus R. Cooper II

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Jack Edwards

Joseph Fine

Sandra Hullett, M.D.

Andria Hurst

John Johns

Peter Lowe

John McMahon, Jr.

John Oliver, Jr.

Joe Ritch

Cleophus Thomas, Jr.

John Thomas

The University of Alabama System Administration

Chancellor

Finis E. St. John IV (*Interim*)

Secretary of the Board

Sid J. Trant

The University of Alabama at Birmingham Administration

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Pam Benoit, Ph.D., Senior Vice President, Academic Affairs and Provost

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Autumn Cyprès, Ed.D, Dean, School of Education

Paul Erwin, Ph.D., Interim Dean, School of Public Health

Doreen Harper, Ph.D., RN, FAAN, Dean, School of Nursing

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Andrew J. Butler, M.P.T., M.B.A., Ph.D., Dean, School of Health Professions

Lori McMahon, Ph.D., Dean, Graduate School

John Meador, Jr., Dean of Libraries

Kelly K. Nichols, O.D., M.P.H., Ph.D., F.A.A.O, Dean, School of Optometry

Robert E. Palazzo, Ph.D., Dean, College of Arts and Sciences

Russell Taichman, D.M.D., D.M.Sc.; Dean, School of Dentistry

Academic and Student Resources

This section of the catalog describes some of the services, policies, and programs that support and enhance the experience of our students through their stay at UAB.

- Admissions (p. 11)
- Enrollment (p. 13)
- Academic Progress (p. 14)
- Completion of a Degree (p. 20)
- Financial Information (p. 25)
- Graduate Assistantships and Fellowships (p. 27)
- Student Life (p. 28)
- Student Services & Facilities (p. 29)

Admissions

Admission as a Degree-Seeking Student

UAB welcomes applications from all individuals whose preparation and abilities give them a reasonable chance of success in its programs. All applicants must offer acceptable evidence of ability and intent to meet the academic standards of the university. Degree-seeking graduate students are those accepted into a specific graduate program to work toward a specific advanced degree. In addition to the completed online application, the Graduate School requires an application fee and official transcripts. To be considered official, academic transcripts must be mailed to UAB directly from the college/university attended, sent electronically to the UAB Graduate School by the school's Registrar's Office, or submitted in a sealed envelope bearing a university signature or stamp across the seal.

Standardized academic test scores are not required by the Graduate School; however, they may be required by the academic program so applicants should check with the program to which they are applying. The Graduate School requires English proficiency for international applicants. This requirement is automatically waived for international applicants who earned a bachelor's, graduate, or professional degree in the US with a minimum GPA of 3.00. All other international applicants are required to submit TOEFL/IELTS/IELA/PTEA/Duolingo test scores that meet these requirements: 80 on the TOEFL, 6.5 on the IELTS, 176 on the IELA, 70 on Duolingo, or a 53 on the PTEA. Official test scores must be sent directly to UAB from the testing agencies. Academic programs may choose to waive academic test scores at their discretion based on the qualifications of the applicant. However, the English proficiency requirement may not be waived.

Individual graduate programs often require additional items such as letters of recommendation, a personal essay, or a resume so it is important that applicants are aware of program specific admissions requirements. Complete graduate applications are reviewed by graduate program faculty who make an admissions recommendation to the Graduate School. All credentials submitted as part of the application for admission become and remain property of the university and will not be returned to the student, duplicated, or transferred to another institution.

Any change in a student's record prior to enrollment will necessitate a new review of the application. Any omissions or misrepresentations

on a student's application for admission will automatically invalidate consideration by and acceptance to UAB. If, after a student is admitted to the university, information comes to light that indicates an applicant did not meet all admission requirements, the applicant's offer of admission will be rescinded.

The application for admission, application instructions, and application deadlines can be accessed at <http://www.uab.edu/graduate/admissions>.

Admission as a Non-Degree Student

Students who do not wish to pursue a graduate degree at UAB but would like to enroll in graduate courses or those who wish to begin graduate study before being admitted to a degree program can apply as a graduate non-degree seeking student. Registration in non-degree courses requires departmental approval as not all graduate courses are open to non-degree seeking graduate students. There is no limit to the number of graduate non-degree (GN) credit hours a non-degree seeking student can accumulate. However, should a student later wish to enroll as a degree-seeking student at UAB, **no more than 12 semester hours earned as a non-degree graduate student may be applied toward an advanced degree at UAB. Students wishing to apply more than 12 semester hours are required to appeal to the Graduate School Dean for permission.** Should a student be admitted to a degree program, the credit earned while in non-degree seeking status is not automatically acceptable toward the degree.

Because of U.S. immigration requirements, international applicants (i.e., those who are neither U.S. citizens nor permanent residents) typically cannot be considered for the non-degree category unless already residing in the United States. International students should consult immigration laws to determine eligibility.

International Admissions

The University of Alabama at Birmingham welcomes international applicants. An international applicant is neither a citizen nor a permanent resident of the United States. International applicants should consult the Graduate School website at <http://www.uab.edu/graduate/international> for information regarding additional admissions requirements.

Change from Non-Degree to Degree-Seeking Status

A student with a non-degree classification who wishes to change to a degree-seeking classification must apply via the degree-seeking application and submit the required documents (transcripts, applicable test scores, and program-specific supporting documents). Degree-seeking admission of non-degree students is neither automatic nor guaranteed.

Readmission as a Degree-Seeking Student

Students who have not registered for three (3) consecutive semesters will be changed to inactive student status and must apply for readmission before they will be able to register for courses at UAB. Degree-seeking students who meet the following criteria are able to apply for readmission by submitting an application for readmission by visiting the Graduate School homepage (uab.edu/graduate) and clicking the "Apply Now" button. Readmission also requires payment of the readmission fee, which is \$30 for the 2019 – 2020 academic year.

1. Were admitted to a UAB Graduate Degree-Seeking Program within the last five years, and
2. Have registered for and successfully passed at least one graduate course at UAB after being admitted to a UAB Graduate Degree-Seeking Program BUT have not registered for courses for one academic year (3 semesters) or more, and
3. Have not attended any other university or college in the interim, and
4. Wish to return to the graduate program to which they were previously admitted

Readmitted students must meet the degree requirements operative at the time of readmission.

Admission with Contingencies

Students lacking one or more admission requirements may be admitted to a graduate program contingent upon submission or completion of those requirements. Graduate students admitted with contingencies have until the end of their first semester of enrollment to resolve all contingencies. Examples of contingencies that must be resolved are the submission of official transcripts, official test scores, official degree statements, required course completion, etc. Students are informed of specific requirements for continued enrollment and the time allowed for completion at the time of admission. Failure to meet the requirements during the stipulated time will result in a registration hold until the contingency is resolved and may result in dismissal from the Graduate School.

Admission of Students Previously Dismissed

When an individual applies to a graduate program, a significant part of the admissions decision involves an estimate, based on the applicant's academic history, of whether the applicant can perform satisfactorily at the graduate level. Applicants who have previously been academically dismissed from the Graduate School must present convincing evidence to program faculty and the Graduate School Dean that a substantial improvement has occurred so that it is probable that the applicant can now perform at the required level in graduate work. In general, students are not admitted to a graduate program from which they have been previously dismissed.

Dual Degree Programs

UAB offers many opportunities for students to pursue two advanced degrees concurrently.

Students wishing to be enrolled in two programs concurrently must submit a degree-seeking application and be admitted to each program individually. The minimum number of credit hours required for each degree must be met. Courses may not be double counted and are only allowed to fulfill requirements for one degree.

Accelerated Learning Opportunities

UAB offers several options for high-achieving undergraduates to accelerate the time and cost necessary to complete both their undergraduate and graduate degrees. These include Accelerated Bachelors/Masters Programs (ABM), Fast-Track programs, and Early Acceptance. For more information visit: <https://www.uab.edu/graduate/programs/accelerated-learning-opportunities>

Accelerated Bachelors/Masters Program

The accelerated bachelors/masters (ABM) program allows undergraduate students to share credits toward both an undergraduate and graduate degree. Through ABM, an undergraduate student can take courses that count simultaneously toward their undergraduate and graduate programs. Once admitted, an ABM student can take up to 12 hours of approved 500/600-level graduate courses that will count towards both the undergraduate and graduate degree. This can significantly shorten the time it takes to earn a master's degree.

Requirements

Students may start the ABM program once they have earned 60 or more undergraduate hours, at least 36 of which must be earned at UAB.

ABM differs from traditional Fast-Track programs in that, at the time of application, eligible students must have a UAB undergraduate grade point average of at least 3.5 (or higher if required by their program). Programs may require a higher GPA for admission and/or not permit the full 12 hours to be shared between programs.

Permission to take graduate courses will be granted by the Graduate School if the student has met the criteria above as well as other minimum requirements for graduate admission. Upon admission to the Graduate School, an ABM student will begin a program of study leading to the master's degree, as approved by his or her department and by the Graduate School.

Students must maintain a cumulative GPA of 3.0 or higher in all graduate and undergraduate coursework. Programs may set higher requirements or require specific grades in individual courses.

How to Apply

Students who meet the above requirements are eligible to apply to an ABM program after completing the following steps:

- Meet with Undergraduate Advisor and the relevant Graduate Program Director(s) to discuss program requirements.
- Complete the ABM program Application Form (<https://www.uab.edu/graduate/images/documents/accelerated-learning-opportunities/accelerated-bachelors-application-form.pdf>) (including all approvals) and return it to the Graduate School.
- Submit departmental application materials (as required by program).

Fast Track Programs

Fast Track programs allow students to apply to a graduate program before finishing their undergraduate degree. While hours cannot be shared between the two programs, beginning graduate coursework while enrolled as an undergraduate allows students to pay undergraduate tuition rates and accelerate the time needed to complete their graduate degree.

Requirements

Requirements vary by program, but typically require at least 60 undergraduate hours and a 3.0 GPA.

Additionally, individual programs may specify required prerequisite courses, or only be available to certain undergraduate majors.

Early Acceptance to Graduate School

Early Acceptance Programs are designed for academically superior high-school students. Early Acceptance Programs allow high achieving

students to be conditionally admitted into a graduate program at the same time they are admitted to an undergraduate program.

Requirements

Eligible students will be notified at the time of matriculation. In order to maintain eligibility for the Early Acceptance program, students must maintain a 3.5 UAB undergraduate GPA, meet all relevant pre-requisites of the program they wish to pursue, and maintain continuous enrollment while at UAB.

Concurrent Degrees

Students who do not qualify for a combined degree program but wish to begin work toward a second graduate degree may enroll in and earn up to 12 semester hours in the secondary program without special permission while simultaneously earning credit toward their original degree. However, **no more than 12 semester hours earned while pursuing the first degree program may be applied toward the second degree without prior approval by both the graduate program and the Dean of the Graduate School.**

UAB Employee Admission

To maintain university accountability, UAB faculty and staff who wish to take occasional graduate courses may only register for these courses after admission to the Graduate School as either a non-degree seeking student or a degree-seeking student. Admission of a UAB employee as a degree-seeking graduate student requires the concurrence of the applicant's department chair and dean(s), as well as the approvals required for other applicants to the same program. For more information regarding Educational Assistance, visit the UAB Human Resources Web page at http://www.uab.edu/humanresources/home/benefits_

UAB employees who wish to become full-time graduate students and continue to work part-time cannot work more than 10 hours per week outside their commitment to meet the requirements of their pre-doctoral program.

UAB employees who enroll in a Ph.D. program and continue to work full time must meet the following requirements:

1. Are not eligible to be supported by a training grant
2. Cannot be simultaneously supported by a UAB Graduate Assistantship/Traineeship
3. Thesis or dissertation work may not be initiated until the student enrolls in a program (i.e. data generated by the employee/student prior to enrollment that has been submitted for publication or published cannot be included in a thesis or dissertation)
4. Must meet the same set of program requirements as all other students
5. The dissertation committee is responsible for assuring that these stipulations are met
6. The Program Director and dissertation committee must agree in writing to a protracted course of study

Equal Opportunity Policy

UAB administers its educational programs and activities, including admission, without regard to race, color, religion, sex, sexual orientation, age, national origin, disability unrelated to job performance or Vietnam-era or disabled veteran status. The full text of this policy can be

found here (<https://www.uab.edu/policies/content/Pages/UAB-BT-POL-000052.aspx>).

Office of Graduate Admissions

Mailing Address for Documents and Credentials:

G03 Lister Hill Library
1720 2nd Avenue South
Birmingham, AL 35294-0013

Physical Address:

1700 University Boulevard
Birmingham, Alabama 35294-0013
(205) 934-8227
gradschool@uab.edu

Enrollment

Registration

Students must register for all courses for which they wish to earn graduate credit. The UAB class schedule is accessible via BlazerNET (<https://padlock.dpo.uab.edu/cas/login?service=https%3a%2f%2fidm.uab.edu%2fssso%2fblazernet%3finst%3dprod>) located at <http://www.uab.edu/blazernet>. The class schedule lists the courses offered each semester and provides full details on prerequisites, registration dates, and procedures. Students are able to register for courses as well as adjust their schedule by adding and dropping courses through the end of the drop/add period which is denoted on the academic calendar.

To be enrolled as a full-time graduate student, a student must register for at least 9 semester hours in the fall, spring, and summer semesters. To be classified as a half-time graduate student, they must register for at least 5 semester credit hours in the fall, spring, and summer semesters. Degree-seeking students who wish to receive financial aid must be enrolled at least half-time.

Certain funding sources (e.g., training grants, individual grants, and fellowships) may have additional enrollment requirements that must also be satisfied. In addition, student loan recipients must satisfy certain minimal enrollment requirements to defer repayment. Students should consult with their funding source or the Financial Aid Office to determine these requirements as they apply to their specific situation.

Auditing Graduate Courses

Graduate students who have been formally admitted as either a non-degree or degree-seeking student may audit courses available for graduate credit with the permission of the instructor and payment of appropriate fees. Courses taken for audit credit are not counted toward the hours required for full-time status, are not counted as earned hours, are not assigned a letter grade, and do not impact a student's GPA. Provided the instructor's requirements are met, the course will appear on the transcript with the notation AU.

The Permission to Audit Graduate Level Coursework form, which can be obtained online at www.uab.edu/graduate/online-forms, should be submitted to the Graduate School for approval prior to registration.

Withdrawal from Courses

Graduate students are expected to complete courses for which they have registered unless unusual and unforeseen circumstances

require withdrawal. The procedures for withdrawal are specified on BlazerNET. **Mere cessation of class attendance does not constitute withdrawal, either academically or for tuition purposes.** Students who wish to withdraw from a class or classes after the drop/add period must proceed with the withdrawal in BlazerNET (<https://padlock.dpo.uab.edu/cas/login?service=https%3a%2f%2fidm.uab.edu%2f%2f%2fblazernet%3f%3dprod>) no later than the last day to withdraw for the semester, which is denoted on the Academic Calendar at, www.uab.edu/students/academics/academic-calendar. If a student follows the appropriate procedures to withdraw in BlazerNET (<https://padlock.idm.uab.edu/cas/login?service=https%3a%2f%2fidm.uab.edu%2f%2f%2fblazernet%3f%3dprod>), a grade of "W" will be entered on the transcript. Withdrawal from a course after the withdrawal deadline requires an academic appeal, which can be obtained online at www.uab.edu/graduate/online-forms, signed add/drop form, and documentation of extenuating circumstances. Academic appeals should be submitted directly to the Graduate School.

Leave of Academic Absence

A graduate student experiencing extenuating circumstances may request a leave of academic absence for up to one (1) academic year. The Request for Leave of Academic Absence form can be found at the Graduate School Web site at www.uab.edu/graduate/online-forms and requires approval by the student's graduate program director and the Graduate School. Leave of Absences are term-based and students' records will only be updated with a leave of absence status in a term in which they were not registered. If a student is receiving funding and fails to meet the requirements of their assistantship, their stipend can be ended at any time throughout the semester.

Course Numbering System

The scholastic level of UAB courses is indicated by the century number. Courses numbered 500 and above are graduate and post-baccalaureate courses. Courses numbered 500-599 are available to upper-level undergraduate and beginning graduate students. Courses numbered 600 and above are available only to graduate students. Those numbered 600-699 are intended primarily for students at the master's level, with 698 reserved for non-thesis research and 699 reserved for thesis research. Courses numbered 700-799 are primarily for students at the doctoral level, except in the School of Education where the numbers from 700-729 are reserved for courses leading to the degree of Educational Specialist (Ed.S.). The number 798 is reserved for non-dissertation research and 799 for dissertation research. Seminars, practica, individual studies and projects, internships, and residencies will generally carry numbers in the upper range of these centuries.

Undergraduates Seeking Enrollment

UAB undergraduate students may be allowed to enroll in a graduate course with the approval of their academic advisor, their undergraduate program director, the graduate course instructor, and the graduate program director. The Undergraduate Student Request for Enrollment in Graduate Level Coursework form can be obtained online at www.uab.edu/graduate/online-forms. Credits earned by undergraduate students may be applied to either an undergraduate degree or a graduate degree, but not both. Students must indicate which type of credit they would like to earn on the request form.

Withdrawal from the UAB Graduate School

Students who wish to withdraw from the University of Alabama at Birmingham must submit a written request to the Graduate School expressing their intent to withdraw. Should a student who has withdrawn from the Graduate School decide they would like to return to the university, they must apply to the Graduate School as a degree-seeking student and be admitted by the program rather than completing a readmission form.

Academic Progress

Graduate Credit

For purposes of academic accounting, credits expressed in "semester hours" are assigned to each course. One semester hour of lecture course credit is awarded for 13-15 contact hours per semester. One semester hour of laboratory credit is awarded for approximately 30 hours of work in the laboratory. Students may not earn "credit by examination" at the graduate level.

A graduate student's earned semester hours include all hours in which a grade of C or better or a grade of P in a pass/not pass course was earned. A graduate student's attempted semester hours include all hours for which a student earned a grade of A, B, C, F, P or NP.

Transfer Credit

Previously earned graduate credit with a grade of B or above while enrolled at another regionally accredited graduate school may be eligible for transfer into the student's current degree program if it has not been applied toward another degree (either at UAB or elsewhere). In addition, credit may be awarded for non-collegiate courses in accordance with American Council on Education recommendations and approval of the appropriate department chair and dean. All transfer credit requests must be initiated by the student and require the approval of the graduate program director and the Graduate School. Transfer of Credit forms are available online at <http://www.uab.edu/graduate/online-forms>. Completion of this form does not guarantee that the transfer credit will be granted. No more than 12 semester hours of graduate credit can be transferred to UAB. Students wishing to request an exception to the transfer credit hour limit must receive the approval of the program director, department chair, and Graduate School Dean. Once transfer credit has been approved, it will be included in the calculation of the grade point average in the student's current UAB program.

In programs offered jointly by UAB and other universities, all graduate credits earned in the program at a cooperating university are eligible for transfer to UAB. If a student earns credit in one UAB graduate program and is later admitted to another program, unused credits from the previous program, if applicable, are eligible for consideration for transfer into the current program.

Grading and Grade Point Average (GPA)

The grade of A indicates superior performance, B indicates adequate performance, and C indicates performance only minimally adequate for a graduate student. Any graduate student completing a course at the 500 level or above with a performance below the C level will receive a grade of F; the Graduate School does not use the grade of D. In some graduate programs, a grade of C is a failing grade. It is the student's responsibility

to know and abide by program grading requirements which may be more stringent than that of the Graduate School.

Four (4.0) quality points are awarded for each semester hour in which an A is earned, three (3.0) quality points are awarded for each semester hour in which a B is earned, and two (2.0) quality points are awarded for each semester hour in which a C is earned. No quality points are awarded for a grade of an F. A graduate student's grade point average (GPA) is determined by dividing the total quality points awarded by a student's semester hours attempted at the graduate level. Students can view their cumulative GPA in BlazerNET (<https://padlock.idm.uab.edu/cas/login?service=https%3a%2f%2fidm.uab.edu%2f%2f%2fblazernet%3f%3dprod>) and can view their term GPA on their transcript which is also available in BlazerNET (<https://padlock.idm.uab.edu/cas/login?service=https%3a%2f%2fidm.uab.edu%2f%2f%2fblazernet%3f%3dprod>).

For courses designated as pass/not pass, a grade of P (passing) signifies satisfactory work. A grade of NP (not passing) indicates unsatisfactory work although there is no penalty assessed with respect to the grade point average (GPA).

Temporary Grade Notations

If an instructor does not submit a grade at the end of a semester, a temporary grade of "N" (no grade reported) will be recorded. A grade of N does not positively or negatively impact a student's GPA. However, if no permanent grade has been reported by the end of the following semester, an F will automatically be entered in the student's academic record for the course.

The temporary notation of "I" (incomplete) may be reported at the discretion of the instructor to indicate that the student has performed satisfactorily in the course but, due to unforeseen circumstances, has been unable to finish all course requirements. An incomplete is never given to enable a student to raise a deficient grade. This notation should not be used unless there is reasonable certainty that the requirements will be completed during the following semester because, at the end of the next semester, the incomplete automatically changes to an F if it has not been replaced with a letter grade. In highly unusual circumstances, a student may request an extension of time to complete the requirements. This request must be submitted in writing in advance of the time when the grade automatically changes to an F because the approval of the instructor, graduate program director, and the Graduate School are all required.

Academic Standing

It is critically important that graduate students at UAB understand both the Graduate School's and their program's academic standing policy and that they are aware of their own academic standing at all times. For a student to maintain good academic standing in the Graduate School, they must maintain a cumulative grade point average (GPA) of at least 3.0 (B average) and an overall satisfactory performance on pass/not pass courses. Satisfactory performance on pass/not pass courses is defined as earning at least as many hours of P as of NP grades.

A degree-seeking or non-degree-seeking graduate student, who, at the end of any semester, fails to meet the criteria to maintain good academic standing will be placed on academic probation. Students on academic probation must re-establish good academic standing within the next two semesters during which they are enrolled at UAB. Failure to reestablish good academic standing at the end of their second term of enrollment

while on academic probation will result in academic dismissal from the UAB Graduate School.

The rules stated above govern academic probation and dismissal administered by the Graduate School. Individual graduate programs may establish and administer program probation and dismissal governed by more stringent requirements. In general, a student's retention in a specific graduate program is contingent on the faculty's belief that the student is likely to complete the program successfully. If the faculty ceases to hold this belief at any point, the student may be dismissed from the program. It is a graduate student's responsibility to be aware of and abide by program academic standing requirements in addition to the general academic standing policy in the Graduate School. Program probation and dismissal policies preempt the Graduate School policies.

Repeated Courses

Graduate students may repeat a course one (1) time in an effort to improve grades and/or to improve understanding of the course content only with the permission of the graduate program. All courses taken and all grades earned are permanently recorded on the student's transcript. Both grades will also be calculated in the student's GPA unless the Grade Replacement policy is applied; however, a student is only able to earn credit hours for the same class one time. Students wishing to repeat a course more than one time should seek approval of both their program director and the Graduate School. **Graduate programs may choose to not allow students to repeat courses.**

Grade Replacement

A graduate student who repeats a course taken at UAB and earns a better grade the second time may request a grade replacement in which the grade for the first course be excluded from their GPA calculation. The grade replacement policy may be used a maximum of two (2) times, only once for any course, which allows a student to use grade replacement for two different courses. **Graduate programs reserve the right to not allow grade replacement or to allow less than the Graduate School's maximum number of grade replacements. In addition, individual programs may have course repeat and grade replacement policy rules in addition to those of the Graduate School.**

If approved, the student's transcript will show both the original grade and the course repeat grade; however, the first grade will be excluded from the student's GPA calculation and, only the grade points and credit hours earned in the repeated courses will be counted toward degree completion. Once a course grade is replaced, the decision is irrevocable. In accordance with the UAB Academic Honor Code, any course grade of F for academic misconduct supersedes any other grade or notation for that class and therefore is not eligible for grade replacement.

It is the student's responsibility to notify the Graduate School of their request to apply the grade replacement policy to a repeated course as the process is neither automatic nor guaranteed. The grade replacement policy requires the approval of the graduate program director and the Graduate School. Grade replacement requests must be made prior to application for degree. The grade replacement policy can only be applied to grades earned at UAB and may not be applied after the student has graduated.

The Grade Replacement Request form is available online at <http://www.uab.edu/graduate/graduate-school-quicklinks/online-forms>.

Grade Changes

Final grades for an I (Incomplete) should be submitted no later than the grade submission deadline of the semester after the notation was originally awarded; Incomplete grades not changed by that time will convert to Fs. In general, grades submitted by graduate faculty members are not subject to change by reason of revision of the teacher's judgment; nor are submitted grades to be revised on the basis of a second trial (e.g., a new examination or additional work undertaken or completed). Grade changes submitted in order to correct an error in computation or transcription must be made within two semesters after the grades were originally submitted. These grade changes must be submitted via BlazerNET (<https://padlock.idm.uab.edu/cas/login?service=https%3a%2f%2fidm.uab.edu%2fssso%2fblazernet%3finst%3dprod>) and require the faculty member's statement as to the reason for the change, the approval of the department head, and the approval of the dean of the school in which the course is taught.

Time Limitations

Graduate students are generally expected to complete all degree requirements within **5 years of matriculation for masters and 7 years of matriculation for doctoral students**. One extension of these time limits can be requested when mitigating circumstances preclude completion of requirements within the time limit. The request for an extension must include a written and signed completion plan outlining the timeline for degree completion. Instructions for preparing a completion plan are available on the Graduate School website at <http://www.uab.edu/graduate/graduate-school-quicklinks/online-forms>. Time limit extension requests require the approval of the student's dissertation committee (if applicable) as well as graduate program director and must be presented in writing to the Dean of the Graduate School for consideration and approval. Masters courses taken more than 5 years before graduation and doctoral courses taken 7 years before graduation will not be applied toward a degree without the approval of the graduate program director and Graduate Dean.

Academic Ethics & Misconduct

Graduate students at UAB have joined a distinguished academic community that is guided by a conviction in the worth of knowledge and its pursuit. By virtue of their membership in this community, they accrue many benefits—among them, access to the ideas and materials of others. Graduate students not only learn from others but also engage in the pursuit of new knowledge and, in some instances, teach or provide service to others. Being a member of an academic community and functioning in multiple roles in the community carries with it certain responsibilities.

As members of an academic community, students, faculty, and administrators share a responsibility to seek truths and communicate them to others. As we pursue knowledge and encourage learning, we acknowledge the need for a free exchange of ideas and recognize the importance of listening to and maintaining respect for the views of others. We must always aspire to learn, apply, and communicate to others the best scholarly standards of the disciplines in which we are involved. High scholarly standards demand high ethical standards.

We must commit to learning and communicating the best ethical standards and their application to our disciplines. In interactions with others, we must demonstrate respect for them as individuals, give credit for significant academic or scholarly assistance, and respect the confidential nature of some exchanges. We must adhere to the highest

standards of academic conduct, avoiding those acts of misconduct and dishonesty that undermine the purposes of the academic community.

All UAB students are expected to be familiar with the UAB Academic Honor Code as well as any honor codes that are specific to their schools or disciplines. The code represents a commitment to integrity in the academic community and a respect for an individual's educational endeavors:

I have read and, by choosing to become a member of the UAB academic community, accept the UAB Honor Code. I understand that violation of this code will result in penalties as severe as expulsion from the university. I promise and confirm that I will not, at any time and under any circumstances, involve myself with abetting, cheating, plagiarism, fabrication, or misrepresentation while enrolled as a student at the University of Alabama at Birmingham.

Conduct and Complaints

Student Conduct

The university expects mature and honorable behavior from every student and reserves the right to take appropriate disciplinary action when such behavior is not forthcoming.

Academic Conduct

All UAB students are expected to be familiar with the UAB Academic Honor Code as well as any honor codes that are specific to their schools or disciplines.

The code represents a commitment to integrity in the academic community and a respect for an individual's educational endeavors:

I have read and, by choosing to become a member of the UAB academic community, accept the UAB Academic Honor Code. I understand that violation of this code will result in penalties as severe as expulsion from the university. I promise and confirm that I will not, at any time and under any circumstances, involve myself with abetting, cheating, plagiarism, fabrication, or misrepresentation while enrolled as a student at the University of Alabama at Birmingham.

The UAB Academic Honor Code

UAB expects all members of its academic community to function according to the highest ethical and professional standards. Students, faculty, and the administration of the institution must be involved to ensure this quality of academic conduct. Academic misconduct undermines the purpose of education. Such behavior is a serious violation of the trust that must exist among faculty and students for a university to nurture intellectual growth and development. Academic misconduct can generally be defined as all acts of dishonesty in an academic or related matter.

Academic dishonesty includes, but is not limited to, the following categories of behavior:

ABETTING is helping another student commit an act of academic dishonesty. Allowing someone to copy your quiz answers or use your work as their own are examples of abetting.

CHEATING is the unauthorized use or attempted use of unauthorized materials, information, study aids, the work of others, or computer-related information.

PLAGIARISM means claiming as your own the ideas, words, data, computer programs, creative compositions, artwork, etc., done by someone else. Examples include improper citation of referenced works, the use of commercially available scholarly papers, failure to cite sources, or copying another person's ideas.

FABRICATION means presenting falsified data, citations, or quotations as genuine.

MISREPRESENTATION is falsification, alteration, or the misstatement of the contents of documents, academic work, or other materials related to academic matters, including work substantially done for one class as work done for another without receiving prior approval from the instructor.

Violations of the UAB Academic Honor Code are punishable by a range of penalties, from receiving a failing grade on an assignment to an F in the course to dismissal. Any course grade of F for academic misconduct supersedes any other grade or notation for that class. Withdrawal from a course while a possible violation of the Academic Honor Code is under review will not preclude the assignment of a course grade that appropriately reflects the student's performance prior to withdrawal if the violation is substantiated.

Procedure for Suspected Violation

In the event of a suspected violation of the Academic Honor Code, UAB follows this procedure:

1. Upon reaching the conclusion that academic dishonesty may have occurred and that action is warranted, the instructor should inform the student of the charge as soon as possible. The student has the right to hear the instructor's reasons for making the charge, to inspect all relevant evidence in the instructor's possession, and to respond to the charge. Based on the student's response and all the evidence, the instructor will determine if a penalty is appropriate. If a penalty is deemed appropriate, the instructor will inform the student of the action to be taken. If the student is not in agreement with the findings or the penalty, the instructor will provide the student with a written statement of the action taken and the basis for it. A copy of this letter will be sent to the chair of the department.
2. Within two weeks of this notification of a judgment of academic dishonesty, the student may appeal the instructor's decision by letter to the chair of the department or his/her designated representative. The chair, acting expeditiously, should take testimony from the student, the instructor, and all appropriate witnesses and make a decision. If the chair reverses the finding of academic misconduct, the instructor must reexamine the work in question and assign credit without prejudice. In the event that the chair is the instructor in the course, the dean will replace the chair in the appeal process.
3. In cases where a grade of F is assigned in the course and the student has utilized the appeal process described above (in section 2), the student has two weeks to appeal the decision by letter to the dean of the school responsible for the course. The dean should acknowledge receipt of the student's appeal and inform the student of the course of action within 10 working days of the date the appeal is received in the dean's office. At the dean's discretion, an advisory panel may be appointed to study the appeal and make a recommendation to the dean. However, it is the responsibility and prerogative of the dean alone to make, in a timely manner, the final decision. The decision of the dean is final.
4. In cases where the final decision concerning an academic misconduct charge is an F for the course, a letter to this effect will be sent to the Office of the Registrar and be kept on file. The course

repeat policy will not apply to course grades resulting from instances of academic misconduct. In these cases, the grades of F received will be computed in the UAB grade point average.

A student who has received the grade of F for two instances of academic misconduct will be expelled from the university. Under certain circumstances, a student may be expelled on the first offense. The student will be duly informed of the pending expulsion and will be provided the opportunity to be heard. The student has two weeks after notification to file a request for an appeal hearing with the Office of the Provost. The ad hoc appeals committee will consist of two people designated by the Provost, one student appointed by the President of the USGA, and two faculty members appointed by the chair of the Faculty Senate. The Provost will designate the person to serve as chair who will coordinate and preside at all meetings. Students expelled from UAB for academic misconduct will have that noted on their transcripts.

In addition, students should consult the policies of the school/program in which they are enrolled to determine school/program guidelines and penalties regarding academic misconduct and suspension for academic misconduct. Schools that suspend a student on the first offense may post this offense on the student's UAB academic record.

A student suspended from a UAB school for academic misconduct will have a hold placed on his/her registration and will not be permitted to enroll in another UAB school without that school's permission. Some UAB programs have policies preventing enrollment of students with past academic misconduct offenses.

Note that individual schools may have academic misconduct rules in addition to the above.

Non-Academic Conduct

Your first priority at UAB is to get a great education, plain and simple. The Non-Academic Conduct Policy, maintained by the office of Student Engagement, provides the guidelines that protect your chance at getting that top-quality education by setting the standard for what it means to be a successful student.

Non-Academic Student Conduct Policy (<http://www.uab.edu/students/sarc/student-conduct>)

Student Engagement, specifically regarding student conduct is one of many channels that the university can use to foster the personal development of its students. In cases where a student engages in non-academic misconduct, the conduct process is also an approach that we use to protect the safety of the university community. While the conduct process does adjudicate misconduct, it is not a legal system. The conduct process does not use the same procedures, burdens of proof, or rules of evidence as the legal systems. In order to maintain an educational tone, the university takes steps to ensure that the process is as non-adversarial as possible, while still safeguarding the rights of students.

The non-academic misconduct process is an integral part of the educational mission and goals of UAB and Student Life. The Office of Student Engagement oversees and implements the non-academic misconduct process. The nonacademic misconduct process is designed to provide and help maintain an educational atmosphere with emphasis on developing individual understanding and acceptance of personal and social responsibilities; creating a sense of belonging within a welcoming environment; and challenging and supporting students to reflect, integrate, and act upon their UAB experience.

Report a violation of the Code of Conduct (<http://www.uab.edu/students/sarc/student-conduct>)

Student Complaints

Academic Matters

Judgments on academic matters are most appropriately made by individuals with expertise in the particular academic discipline involved. For this reason, complaints by students on academic matters are the responsibility of the department and school involved. Normally, such complaints can be resolved quickly through discussion with the faculty directly involved. In rare situations where such resolution does not occur, the student should contact the chair of the appropriate academic department to file a formal grievance. The student's grievance should be submitted in writing and accompanied by any appropriate documentation. Grievances should be submitted at the earliest possible time. Consideration will not be given to any grievance submitted later than the end of the term immediately following the term in which the matter in question arose. The department should acknowledge the date the grievance is received and provide notice to the student of when an answer may be expected. It is the responsibility of the department chair to provide an answer to the student within 10 working days. If the matter cannot be settled within the department, the student has 10 working days from the day the department's response is received to appeal to the dean of the school in which the department is located. The dean should acknowledge receipt of the student's appeal and inform the student of the course of action within 10 working days of the date the appeal is received in the dean's office. At the dean's discretion, an advisory panel may be appointed to study the disagreement and make a recommendation to the dean. However, it is the responsibility and prerogative of the dean alone to make, in a timely manner, a decision on any academic disputes which have not been resolved at lower levels, and the decision of the dean is final.

Non-Academic Matters

When complaints on non-academic matters cannot be settled by the persons directly involved, a written complaint should be forwarded to the appropriate office. If the administrative officer is unsuccessful in resolving the complaint, it may then be forwarded in writing to the Provost or a designee for further consideration. For specific information concerning the procedures and processes for non-academic complaints and grievances, contact the Office of Student Engagement or visit the following web site <http://www.uab.edu/students/sarc/>

Graduate School Appeals Board (GSAB)

A. Purpose:

The purpose of the GSAB is to review appeals brought by graduate students of decisions made by university representatives concerning:

1. retention in graduate programs,
2. charges of academic misconduct or dishonesty,
3. selected other issues related to graduate education as deemed appropriate to forward to the GSAB by the Graduate Dean, the provost, or other university officials.

B. Limitations:

The GSAB **will not** review:

1. appeals of course grades,
2. appeals of a dismissal based on lack of adequate progress toward meeting degree requirements,
3. appeals for which the student has not previously fully used all other applicable appeal or review processes,
4. appeals filed more than 30 calendar days from the date of a prior review or 30 calendar days from the date of receiving notification of an action or decision,
5. misconduct in research which falls under the Policy Concerning the Maintenance of High Ethical Standards in Research and Scholarly Activities.
6. grievances brought against the faculty of a specific program. Program faculty report to the chairpersons and deans in the schools in which they hold their primary appointments. Accordingly, it is the responsibility of those chairpersons and deans to adjudicate at the school level any appeals brought by graduate students against their faculty. Decisions made at the school level in such cases will not be reviewed by the Graduate School Appeals Board.
7. grievances or appeals brought forth by masters (Plan II) students in professional/practice-based programs. These will be adjudicated exclusively within the school in which the program is housed. Any questions related to whether a program is considered professional/practice-based should be referred to the program's director.

C. Composition:

The GSAB will consist of five members of the graduate faculty and three graduate students in good standing, all broadly representative of the graduate

programs in the university. The GSAB will be chaired by a designee of the Graduate Dean. Members of the committee will be appointed on an ad hoc basis as needed by the Graduate Dean. The Graduate School will provide support personnel for the board to record proceedings of hearings.

D. Meetings:

The GSAB will meet as soon as possible after assembly by the Graduate Dean to adjudicate a pending appeal. A quorum for a meeting will be at least five persons: three graduate faculty members and at least two graduate student members. Any member of the GSAB may disqualify himself or herself. After notification of the Board composition, the student bringing the appeal may disqualify one faculty and one student member of the board. If the disqualification of board members results in absence of a quorum, the process will be suspended until the Graduate Dean can appoint additional members.

E. Notification:

The chair of the GSAB will notify the student bringing the appeal and the student's program director of the decision reached by the GSAB in the initial review of the appeal—specifically, whether an appeal will be heard. If a hearing is to be held, the chair will notify the student and student's program director of the date, time, and place for the hearing. The chair of the GSAB is responsible for notifying the Dean of the Graduate School of the findings and recommendations reached by the GSAB after the hearing. The Dean of the Graduate School will notify the student and student's program director of his or her action.

F. Authority:

The GSAB may recommend affirming or reversing the decision being appealed and making such recommendations for further actions as seem appropriate. In the course of any hearing, the GSAB is authorized to request additional evidence from, or the appearance of, any student, faculty or staff member, or other employee of the university, or other individual as a witness. The GSAB shall have final authority in procedural matters. The GSAB will forward recommendations to the Dean of the Graduate School along with a record of the hearing proceedings. The Dean will make a final independent decision, taking into account the findings and recommendations of the GSAB and the records of the hearing. The Dean will inform the relevant parties and the GSAB of the decision in writing within 14 calendar days of receiving the GSAB recommendation.

Procedures

A. Filing an appeal:

Before a request for an appeal is accepted by the GSAB, the normal channels for resolving disputes must have been followed. First, the student should consult with their advisor to resolve the issue at that level. If the issue is not then resolved, the student should seek out the program director or department chair to request a resolution. If the program director and department chair have not been able to resolve the appeal or the action still needs to be pursued, it is then appropriate to pursue the issue with the academic college or school dean. At that point either the Honor Code of the school in which the student is enrolled should be invoked, or if no school based Honor Code exists, the Honor Council procedure described previously should be followed. If the concern has not been resolved to the satisfaction of the student at any one of these levels, an appeal to the GSAB may then be pursued.

All requests for appeals to be considered by the GSAB must be submitted to the Dean of the Graduate School, in writing, on the approved form (available in the Graduate School office and online) along with supporting documents and any other pertinent evidence. The written appeal must specify the grounds for the appeal. It is the responsibility of the student making the appeal to demonstrate to the GSAB that grounds for the appeal exist.

The Dean of the Graduate School will notify those individuals whose decisions are being appealed and will request relevant information. Information and evidence will be transmitted to The Graduate School Dean and to all members of the GSAB. Any additional evidence brought to the hearing is subject to acceptance or rejection by the GSAB. All information submitted becomes part of the permanent record of the GSAB hearing record maintained by the Graduate School.

B. Initial review of appeals:

The GSAB will be convened by the chair to conduct an initial review of the appeal to determine whether the appeal is subject to dismissal or if further action by the GSAB is warranted. Appeals that fail to set forth grounds for a full review by the GSAB shall be dismissed. The GSAB will consider appeals when:

1. all other levels of appeal have been exhausted.
2. the student can show grounds that he or she was previously denied a fair hearing.
3. the decision being appealed is not supported by substantial evidence.
4. the sanction being imposed is beyond the authority of the personnel involved.

5. the sanction or action is unduly severe or disproportionately harsh in comparison to similar cases.

When the GSAB determines that a graduate student should be afforded a hearing on an appeal, the chair of the GSAB shall give written notice to all parties involved in the appeal, allowing no less than one week of preparation time before the hearing.

C. Hearings:

All hearings by the GSAB shall be subject to the following requirements:

1. Any additional materials requested by the GSAB at the time of the initial review to be considered at the hearing shall be made available to all parties prior to the hearing.
2. Parties to the appeal have the right to be present and hear all arguments and oral statements made to the GSAB committee.
3. Parties to the appeal shall make arguments, present oral statements and written documents, and question witnesses with regard to any issues of fact relevant to the grounds for appeal.
4. Hearings shall not be adversarial in nature and shall be conducted in a manner conducive to ascertaining the facts of the case upon appeal.
5. The GSAB may establish time limitations for presentations before the board.
6. Hearings shall be closed to the public.
7. GSAB members may address questions to any person giving testimony before the board.
8. In hearings involving more than one student, a single hearing may be scheduled for each.
9. It shall be the responsibility of the GSAB chair, together with the recording secretary, to see that the integrity of the record is maintained.
10. The chair shall preside and rule on matters of procedure and evidence.
11. The chair shall have the right to dismiss anyone from the hearing should his or her conduct become disorderly.

D. Findings, decisions and recommendations of the GSAB:

Upon completion of hearings, the GSAB shall meet in closed session for deliberations. A simple majority vote of the GSAB is required to substantiate all findings and recommendations. In determining its findings and recommendations, the board shall concern itself only with whether reasonable people, acting on the available evidence, could have made the same decision or taken the same action as the one being appealed.

The GSAB shall prepare written findings addressing all issues presented in the appeal and shall make a recommendation that indicates whether the appealed decision or sanction should be affirmed, set aside, or modified. The GSAB may also make recommendations, if appropriate, for further actions by university authorities.

The Dean of the Graduate School has 14 calendar days to act upon the findings and recommendations of the GSAB. If no action is taken within the 14 days, except when extenuating circumstances justifying a delay are involved, the findings and recommendations of the GSAB will be final. Further appeal is not available within the university.

The application for a hearing before the GSAB is available in the Graduate School office, Lister Hill Library, Suite G03, and at the Graduate School's Web site (<http://www.uab.edu/graduate/images/>)

acrobat/forms/ acadappeal.pdf (<http://www.uab.edu/graduate/images/acrobat/forms/acadappeal.pdf>)).

Completion of a Degree

Steps Toward Earning a Master's Degree

1. Admission to master's degree program
2. Selection of faculty advisor
3. Maintenance of academic good standing (<http://catalog.uab.edu/graduate/academicprogress>)
4. Appointment of graduate study committee— Plan I (Thesis) only
5. IRB and/or IACUC approvals obtained and renewed annually
6. Admission to candidacy—at least one semester before graduation is expected— Plan I (Thesis) only
7. Application for Degree—See (<https://www.uab.edu/graduate/students/current-students/completing-your-degree/application-deadlines>)www.uab.edu/graduate/students/current-students/completing-your-degree/application-deadlines for each semester's deadline
8. Production of a preliminary version of thesis (Plan I only)
9. Defense of thesis (for Plan I only) (see www.uab.edu/graduate/students/current-students/theses-dissertations/candidacy-deadlines)
10. One PDF of the defended committee- approved thesis (Plan I only) submitted online no later than 2 weeks (10 business days) after the published public defense deadline
11. Conferring of degree

Faculty Advisor

Immediately after a degree-seeking student enters the UAB Graduate School, a member of the faculty of the graduate program to which the student has been admitted should be assigned to serve as the student's advisor. The assignment may be a temporary arrangement. The student and the advisor should confer about courses and any special work to be taken on the basis of the student's previous experience and the requirements of the graduate program.

Plan I or Plan II

The Graduate School recognizes two principal paths, known as Plan I and Plan II, that lead to the master's degree. Where both Plan I and Plan II are available within the same graduate program, an early and meaningful choice should be made by the student, in close consultation with the student's advisor. A change in choice of plans requires the approval of the program director.

Plan I requires the completion, in good academic standing, of at least 24 semester hours of appropriate graduate work and 6 semester hours of thesis research for a total of at least 30 semester hours, with the presentation of an acceptable thesis embodying the results of original research work.

Plan II may not require research and does not require a formal thesis. A minimum of 30 semester hours of appropriate graduate work must be completed in good academic standing. Although thesis research is not required as part of a Plan II course of study, the student is often expected to gain insight into the techniques of problem posing and problem solving and to use these insights to prepare a written report.

Graduate Study Committee

Traditionally, graduate study is highly flexible and individualized. A specific plan of study should be developed as soon as possible upon matriculation. Graduate study committees, often chaired by the student's advisor, are appointed to guide the student toward their degree. Some graduate programs do not use a graduate study committee for Plan II students, particularly when flexibility in the course of study is limited by accreditation and other external constraints. Graduate study committees should consist of at least three Graduate Faculty members, each of whom must have credentials equal to or exceeding that of the degree that the student is pursuing, must have been approved by the Graduate School Dean for Graduate Faculty status, and should be able to contribute some relevant insight and expertise to guide the student. In addition, one committee member should be from outside the student's graduate specialization.

Recommendations for graduate study committee membership are submitted by the advisor and the student to the graduate program director, who subsequently submits these recommendations to the Graduate School Dean. Changes to a student's committee must be submitted on the Request to Change Graduate Study Committee form available at www.uab.edu/graduate/online-forms. Graduate faculty appointees and instructions for requesting new appointments are available at www.uab.edu/graduate/gradfaclist. New Graduate Faculty appointments should be requested by the department and approved by the Graduate School Dean prior to being listed on the recommendation form to serve as a member of a student's committee. Graduate Faculty status definitions are available at www.uab.edu/graduate/definitions-of-graduate-faculty-categories.

Minimum Course Credit Requirements

The Graduate School requires a minimum of 30 semester hours for students in masters programs. Program requirements for course work may exceed the Graduate School minimum but may not be less than the Graduate School minimum.

- Plan I requires the completion of at least 24 semester hours of appropriate graduate work, of which a maximum of 9 hours of non-thesis research (i.e. 698) can be applied, and 6 semester hours of thesis research (i.e. 699) over a minimum of one semester in candidacy.
- Plan II requires the completion of 30 semester hours of core graduate coursework directly related to the discipline. A maximum of 9 semester hours of non-thesis research (i.e. 698) may be applied.

Additional Program Requirements

In consultation with the faculty, the director of each graduate program will specify any additional requirements, such as a reading knowledge of a foreign language or a working knowledge of statistics, which are considered essential to mastery of the academic discipline. Such requirements become conditions for the completion of the degree. The program may also adopt a system of examinations that the student must pass at various points in the program.

Admission Into Degree Candidacy (Plan I Only)

Admission to candidacy is a formal step acknowledging that the student has been performing well and is likely to complete the degree. Candidacy admission is recommended by the student's graduate study committee

and approved by the graduate program director and the Graduate School Dean. For Plan I students, admission should occur when the student has obtained an adequate background and has provided the committee with an acceptable proposal for thesis research. In addition, the Vice President for Research requires that all students engaging in research complete the applicable Responsible Conduct in Research requirements which can be found here (<http://www.uab.edu/graduate/images/acrobat/RCRrequirements.pdf>). Responsible Conduct in Research requirements must be completed within four (4) years prior to applying for candidacy as they expire after that time. Students do not have to complete all coursework prior to admission to candidacy if the graduate study committee ascertains that the student has an adequate foundation in the discipline. Students must be in good academic standing to be eligible for admission to candidacy, and admission must take place no later than one semester before the expected graduation. Before being admitted to candidacy, students must complete a Research Compliance Verification form and attach photocopies of the appropriate assurance letters and/or forms. Students must be admitted to candidacy before they can register for thesis research hours (i.e., 699). Applications for Admission to Candidacy are available online at www.uab.edu/graduate/online-forms.

IRB and IACUC Approval

If a student's research involves human or animal subjects, approval from the IRB or IACUC must be documented before admission to candidacy can be approved. IRB/IACUC approvals must be kept current until the research is completed. For ways in which students can be added to a protocol, refer to the Tip Sheet for Students Involved in Research Involving Human or Animal Subjects (<http://www.uab.edu/medicine/mssrp/tip-sheet-humansanimal-subjects>). ([http://uab-preview.courseleaf.com/student-handbook/sexual-violence-misconduct-policy-student-affairs/resources-and-options/ed.gov/OCR%20error%20code:%20404%20\(not%20found\),%20linked%20from%20page\(s\):%20http://uab-preview.courseleaf.com/student-handbook/sexual-violence-misconduct-policy-student-affairs/resources-and-options/%20http://uab-preview.courseleaf.com/student-handbook/sexual-violence-misconduct-policy-student-affairs/resources-and-options/uab.edu/sarc%20error%20code:%20404%20\(not%20found\),%20linked%20from%20page\(s\):%20http://uab-preview.courseleaf.com/student-handbook/sexual-violence-misconduct-policy-student-affairs/resources-and-options/%20http://uab-preview.courseleaf.com/student-handbook/sexual-violence-misconduct-policy-student-affairs/resources-and-options/uab.edu/titleix%20error%20code:%20404%20\(not%20found\),%20linked%20from%20page\(s\):%20http://uab-preview.courseleaf.com/student-handbook/sexual-violence-misconduct-policy-student-affairs/resources-and-options](http://uab-preview.courseleaf.com/student-handbook/sexual-violence-misconduct-policy-student-affairs/resources-and-options/ed.gov/OCR%20error%20code:%20404%20(not%20found),%20linked%20from%20page(s):%20http://uab-preview.courseleaf.com/student-handbook/sexual-violence-misconduct-policy-student-affairs/resources-and-options/%20http://uab-preview.courseleaf.com/student-handbook/sexual-violence-misconduct-policy-student-affairs/resources-and-options/uab.edu/sarc%20error%20code:%20404%20(not%20found),%20linked%20from%20page(s):%20http://uab-preview.courseleaf.com/student-handbook/sexual-violence-misconduct-policy-student-affairs/resources-and-options/%20http://uab-preview.courseleaf.com/student-handbook/sexual-violence-misconduct-policy-student-affairs/resources-and-options/uab.edu/titleix%20error%20code:%20404%20(not%20found),%20linked%20from%20page(s):%20http://uab-preview.courseleaf.com/student-handbook/sexual-violence-misconduct-policy-student-affairs/resources-and-options)) The IACUC form must display the appropriate research protocol number.

Application for Degree/Certificate

Candidates for a master's degree must notify their program and the Graduate School of their intent to graduate by submitting the Application for Degree/Certificate by the appropriate deadline (<http://www.uab.edu/graduate/graduate-school-quicklinks/deadline-dates/#Awarding>). The application is accessible through BlazerNET by clicking Links/Forms and selecting Apply for Graduate Degree/Certificate. Note that some programs may have an earlier submission deadline than the Graduate School so students should check their department/program website for more information. Upon receipt of the Application for Degree/Certificate, both the graduate program and the Graduate School will audit the students' requirements to ensure the degree can be awarded. UAB's Graduation Planning System (GPS) contains a personalized degree audit which includes all courses required to earn the degree and will display

completed, in-progress, and outstanding requirements. GPS is accessible through BlazerNET by clicking the GPS button in the menu on the right side of the page.

Master's students must be registered during the semester in which degree requirements are completed. Plan I students must be registered for at least one (1) hour of 699 research credit during their term of graduation. If degree candidates are covered by the student health insurance policy, hold an assistantship, or have student loans, it may be necessary to register for a prescribed minimum number of credit hours to retain these benefits. Students should check with the appropriate office(s) if retention of these benefits is a concern.

Thesis

The thesis required under Plan I should present the results of the candidate's original research and the interpretation of those results. The document should also demonstrate the candidate's acquaintance with the literature of the field and the proper selection and execution of research methodology.

The final approved version of the thesis must be submitted as a single PDF for final review no later than 2 weeks (10 business days) following the public defense. Master's students must submit the Approval Form, signed by each committee member and the program director. Signatures of committee members and program directors on the approval form indicate their assurance that they have examined the document and have found that it is of professional quality from all standpoints, including writing quality, technical correctness, and professional competency, and that the document conforms to acceptable standards of scholarly presentation. The Graduate School is then responsible for ensuring that the final version of the thesis meets the physical standards required of a permanent, published document and for adherence to the requirements stated in the UAB Format Manual (available online at www.uab.edu/graduate/images/acrobat/forms/theses/FormatManual.pdf (<http://www.uab.edu/graduate/images/acrobat/forms/theses/FormatManual.pdf>)).

The UAB Publication Agreement form is submitted online. Additional information concerning completing the final steps of the publication process is available online at www.uab.edu/graduate/submitting-your-thesis-or-dissertation-to-the-graduate-school (<http://www.uab.edu/graduate/submitting-your-thesis-or-dissertation-to-the-graduate-school>).

If, in the opinion of more than one member of the thesis committee, the student has failed the thesis defense, there is no consensus to pass. The chair of the committee shall notify the student in writing that the thesis fails to meet the requirements of the program and will share the reason(s) for failure. If the student resubmits or submits a new thesis for consideration by their graduate program, at least two members of the new examining committee shall be drawn from the original committee. If the modified or new thesis also fails to meet the requirements of the program, the student shall be dismissed from the graduate program.

If only one of the three committee members dissent, that individual must submit a letter outlining the reasons for their dissent to the student's advisor. The advisor and student may then prepare a rebuttal statement that is submitted, along with the letter of dissent, to the advisory or executive committee of the program for review. The advisory committee can then decide to accept or reject the rebuttal statement. If the rebuttal is accepted, the student is passed on their thesis defense. If the rebuttal is rejected, the advisory committee can recommend to the student or advisor potential steps necessary to remediate the thesis and potentially

also the work therein, or the committee can recommend that the student be dismissed from the program.

Thesis Defense

Under Plan I, the final examination should take the form of a presentation and public defense of the thesis, followed by an examination of the candidate's comprehensive knowledge of the field. The time, date, and location of this examination is reported to the Graduate School via the online Request for Thesis or Dissertation Approval forms and must be (submitted at least 10 days before the public defense). The meeting must be appropriately announced on campus, must be open to all interested parties, **and must take place before the posted semester Thesis or Dissertation defense deadline.**

The final examination for Plan II students should take the form of a comprehensive survey of the candidate's activities in the graduate program. A Plan II final examination is not required in some graduate programs.

Award of Degree

Upon approval by the Graduate School Dean and payment of any outstanding financial obligations to the university, the President confers students' degrees by authority of the Board of Trustees. UAB does not determine the official degree type awarded as this is governed by the Alabama Commission on Higher Education and the Board of Trustees after receiving a program proposal. Students' majors will be reflected on their transcript.

Steps Toward Earning a Doctoral Degree

1. Admission to doctoral degree program
2. Selection of faculty advisor
3. Maintenance of good academic standing
4. Appointment of graduate study committee
5. Passing of comprehensive examination
6. IRB and/or IACUC approvals obtained and renewed annually
7. Admission to candidacy— no later than two semesters before expected graduation
8. Application for degree— by the posted deadline available at <https://www.uab.edu/graduate/students/current-students/completing-your-degree/application-deadlines>
9. Draft of preliminary version of dissertation
10. Review of the draft by committee members
11. Revisions made to dissertation in response to committee feedback
12. Defense of dissertation (see <http://www.uab.edu/graduate/deadline-dates> (<https://www.uab.edu/graduate/students/current-students/theses-dissertations/candidacy-deadlines>))
13. A PDF of the defended committee-approved dissertation to UAB/ProQuest submission web site --no later than 2 weeks (10 business days) following the published deadline date for the public defense
14. Conferring of the doctoral degree

Doctoral Degree Overview

The doctoral degree is granted in recognition of scholarly proficiency and distinctive achievement in a specific field of an academic discipline. The first component is demonstrated by successful completion of advanced coursework of both a didactic and an unstructured nature as well as by

adequate performance on the comprehensive examination. Traditionally, the student demonstrates the second component by independently performing original research. In certain doctoral programs, performing a major project may be acceptable even though it may not consist of traditional research. However, in all programs, with the exception of DPT and DNP, a dissertation presenting the results of the student's independent study is required.

The Graduate School also recognizes professional doctorates awarded in preparation for the autonomous practice of a profession. Professional doctorates are accredited programs of study usually designed to prepare students for the delivery of clinical services or to assume specific types of administrative responsibilities. Students in professional doctorate programs must demonstrate competence in clinical practice and/or scholarship but are not required to conduct and defend original independent research. In lieu of a dissertation, students in programs designated as professional doctorate programs are required to demonstrate that they are capable of evaluating existing research, applying it to their professional practice, and expanding the body of knowledge on which their professional practice is based. This requirement is often met by the design and completion of a research or scholarly project submitted in writing and presented formally before the faculty in the program.

Faculty Advisor

Immediately after a degree-seeking student enters the UAB Graduate School, a member of the faculty of the graduate program to which the student has been admitted should be assigned to serve as the student's advisor. The assignment may be a temporary arrangement. The student and the advisor should confer about courses and any special work to be taken on the basis of the student's previous experience and the requirements of the graduate program.

Graduate Study Committee

A graduate study committee should be formed as soon as possible upon matriculation to guide the student in a program of courses, seminars, and independent study designed to meet the student's needs and to satisfy program and Graduate School requirements. Doctoral graduate study committees should consist of at least five graduate faculty members, each of whom should be able to contribute some relevant insight and expertise to guide the student and must have credential equal to or exceeding that of the degree the student is pursuing. In addition, one or two committee member(s) should be from outside the student's graduate specialization. In all cases, at least three of the committee must be comprised of UAB Graduate Faculty members. Committee members who are not already UAB Graduate Faculty must be granted Ad Hoc Graduate Faculty status. Recommendations for graduate study committee composition are submitted by the advisor and the student to the program director, who subsequently submits these recommendations to the Graduate School Dean. Changes to a student's committee must be submitted on the Request to Change Graduate Study Committee form available at <http://www.uab.edu/graduate/online-forms>. Graduate faculty appointments and instructions for requesting new appointments are available at <http://www.uab.edu/graduate/gradfaclist>. New Graduate Faculty appointments should be requested by the department and approved by the Graduate School Dean prior to any faculty member being recommended for placement on a student's committee. Graduate Faculty status definitions are available at <http://www.uab.edu/graduate/definitions-of-graduate-faculty-categories>.

Minimum Course Credit Requirements

The Graduate School has minimum course credit requirements for students in doctoral programs. Program requirements for course work may exceed the Graduate School minimum but may not be less than the Graduate School minimum.

If entering with a baccalaureate degree, a student is required to earn a minimum of 72 credit hours comprised of the following:

1. Completion of 48 semester hours of coursework prior to candidacy:
 - A minimum of 22 hours of core coursework directly related to the discipline
 - No more than 16 hours of non-dissertation research (i.e. 798) can be counted
 - No more than 10 hours of labs, seminars, or GRD and CIRTLL courses can be counted
2. Completion of 24 semester hours of research-based work over a minimum of two semesters in candidacy which can be designated as either:
 - A minimum of 24 semester hours in 799 dissertation research **OR**
 - A minimum of 12 semester hours in 799 dissertation research **AND**, either during or before candidacy, 12 semester hours in other appropriate research-based coursework which has been approved by the graduate student's program

If entering with a previously earned master's degree appropriate to the doctoral degree field, a student is required to earn a minimum of 51 credit hours comprised of the following. These requirements also apply to students with previously earned M.S., D.V.M., D.M.D., D.D.S., etc.:

1. Completion of 27 semester hours of coursework prior to candidacy:
 - A minimum of 15 hours of core coursework directly related to the discipline
 - No more than 6 hours of non-dissertation research (i.e. 798) can be counted
 - No more than 6 hours of labs, seminars, or GRD and CIRTLL courses can be counted
2. Completion of 24 semester hours of research-based work over a minimum of two semesters in candidacy which can be designated as either:
 - A minimum of 24 semester hours in 799 dissertation research **OR**
 - A minimum of 12 semester hours in 799 dissertation research **AND**, either during or before candidacy, 12 semester hours in other appropriate research-based coursework which has been approved by the graduate student's program

Up to 12 credits of course work that have not been applied toward meeting the requirements for an earned degree taken at UAB or other institutions may be used to satisfy these course credit requirements upon approval of the graduate program director and the Graduate School Dean. Courses which have been previously applied toward meeting the requirements of another degree are not eligible to satisfy minimum course credit requirements. The student's graduate department or program should provide a course planning curriculum worksheet along with the student's application for degree. This worksheet should detail the courses taken which are intended to be used toward meeting degree requirements.

Residence Requirement

The nature of doctoral study requires close contact between the student and the faculty of the graduate program, and the individual investigation or other special work leading to the dissertation must be performed directly under the guidance and supervision of a full member of the UAB graduate faculty. The Graduate School requires doctoral students to enroll for a minimum of nine semesters at UAB although individual graduate programs may require a longer period of residence. The Graduate School does not require these nine semesters to be consecutive (i.e. fall, spring, and summer of each year); however, many programs choose to do so and as such, students are responsible for being aware of program-specific requirements.

Additional Program Requirements

In consultation with the faculty, the director of each graduate program will specify any additional requirements, such as a reading knowledge of a foreign language or a working knowledge of statistics, that are considered essential to mastery of the academic discipline. Such requirements become conditions for the completion of the degree.

Comprehensive Examination

The scholarly proficiency of a doctoral student in the chosen field of study must be evaluated by comprehensive examination. The conduct of these examinations is the responsibility of the graduate program in which the student is enrolled and may consist of either individual examinations in several appropriate areas or a single combined examination. When both written and oral examinations are given, the written examination should precede the oral so that there is an opportunity for the student to clarify any misunderstanding of the written examination questions. Comprehensive exams should be administered no later than the end of the third year of the student's program.

Admission Into Degree Candidacy

Admission to candidacy is a formal and important step forward in a student's pursuit of the doctoral degree. By approving admission to candidacy, the graduate student's committee indicates its confidence that the student is capable of completing the proposed research project and the doctoral program. When the student has passed their comprehensive examination, satisfied any program requirements for foreign language proficiency or mastered special research tools, and presented to the graduate study committee an acceptable proposal for dissertation research or special study, the committee will recommend to the Graduate School Dean that the student be admitted to degree candidacy. In addition, the Vice President for Research requires that all students engaging in research complete the applicable Responsible Conduct in Research requirements which can be found here. (<https://www.uab.edu/research/administration/Resources/Pages/Responsible-Conduct-of-Research.aspx>) Responsible Conduct in Research requirements must be completed within four (4) years prior to applying for candidacy as they expire after that time. A student must be in good academic standing to be admitted to candidacy and admission to candidacy must take place at least two semesters before the expected completion of the doctoral program. Students must be admitted to candidacy before they can register for dissertation research hours (i.e., 799).

IRB and IACUC Approval

If the research involves human or animal subjects, approval from IRB or IACUC must be documented before admission to candidacy can be approved and IRB/IACUC approvals must be kept current until the

research is completed. For ways in which students can be added to a protocol, refer to the Tip Sheet for Students Involved in Research Involving Human or Animal Subjects. (<http://www.uab.edu/medicine/mssrp/tip-sheet-humansanimal-subjects>) The IACUC form must display the appropriate research protocol number.

Application for Degree/Certificate

Candidates for a doctoral degree must notify their program and the Graduate School of their intent to graduate by submitting the Application for Degree/Certificate by the appropriate deadline (<http://www.uab.edu/graduate/graduate-school-quicklinks/deadline-dates/#Awarding>). The application is accessible through BlazerNET by clicking Links/Forms and selecting Apply for Graduate Degree/Certificate. Note that some programs may have an earlier submission deadline than the Graduate School so students should check their department/program website for more information. Upon receipt of the Application for Degree/Certificate, both the graduate program and the Graduate School will audit the students' requirements to ensure the degree can be awarded. UAB's Graduation Planning System (GPS) contains a personalized degree audit which includes all courses required to earn the degree and will display completed, in-progress, and outstanding requirements. GPS is accessible through BlazerNET by clicking the GPS button in the menu on the right side of the page.

Doctoral students must be registered for at least one (1) hour of 799 dissertation research credit during their term of graduation. If degree candidates are covered by the student health insurance policy, hold an assistantship, or have student loans, it may be necessary to register for a prescribed minimum number of credit hours to retain these benefits. Students should check with the appropriate office(s) if retention of these benefits is a concern.

Dissertation

The results of a candidate's individual inquiry must be presented in a written dissertation comprising a genuine contribution to knowledge in the particular academic field. The document should also demonstrate the candidate's acquaintance with the literature of the field and the proper selection and execution of research methodology.

Signatures of committee members and program directors on a student's approval forms indicate their assurance that they have examined the document and have found that it is of professional quality from all standpoints, including writing quality, technical correctness, and professional competency, and that the document conforms to acceptable standards of scholarly presentation. The Graduate School is then responsible for ensuring that the final version of the dissertation meets the physical standards required of a permanent, published document and for adherence to the requirements stated in the UAB Format Manual which is available online at <http://www.uab.edu/graduate/images/acrobat/forms/theses/FormatManual.pdf>. (<http://www.uab.edu/graduate/images/acrobat/forms/theses/FormatManual.pdf>)

The final committee-approved dissertation must be submitted for final review as a single PDF no later than 2 weeks (10 business days) following the published deadline date for the public defense. One copy of the signed approval form is submitted to the Graduate School office. Additional information concerning completing graduation requirements and the dissertation submission and publication process is available online at <http://www.uab.edu/graduate/theses-and-dissertations-at-uab>. (<http://www.uab.edu/graduate/theses-and-dissertations-at-uab>) The UAB

Publication Agreement, Survey of Earned Doctorates, and Graduate School Exit Survey must also be submitted.

Dissertation Defense

The dissertation defense should take the form of a presentation and defense of the dissertation work, which may include an examination of the candidate's comprehensive knowledge of the field. The time, date, and location of this examination is reported to the Graduate School via the online Request for Thesis or Dissertation Approval forms and must be submitted at least 10 days before the public defense. The meeting must be open to all interested parties, publicized on the UAB campus, and must take place before the posted semester thesis and dissertation defense deadline. In addition, candidates must be registered during the semester in which the final examination is taken.

If, in the opinion of one or two of the five members of the dissertation committee, the student has failed the dissertation defense, there is no consensus to pass. The chair of the committee shall notify the student in writing that the dissertation fails to meet the requirements of the program and will share the reason(s) for failure. If the student resubmits or submits a revised dissertation for consideration by their graduate program, at least three members of the new examining committee shall be drawn from the original committee. If the revised dissertation also fails to meet the requirements of the program, the student shall be dismissed from the graduate program.

In the event that only one of the five committee members dissent, that individual must submit a letter outlining the reason(s) for their dissent to the student's advisor. The advisor and student may then prepare a rebuttal statement that is submitted, along with the letter of dissent, to the advisory or executive committee of the program for review. The advisory committee can then decide to accept or reject the rebuttal statement. If the rebuttal is accepted, the student is passed on their dissertation defense. If the rebuttal is rejected, the advisory committee can recommend to the student or advisor potential steps necessary to remediate the dissertation and potentially also the work therein, or the committee can recommend that the student be dismissed from the program.

Graduate Student Exit Survey

Doctoral graduates are required to take the *Graduate School Exit Survey* as part of graduation requirements. Collecting important information and feedback from graduate students will help to improve the quality of graduate program offerings. After submission of the revised version of a student's final dissertation, they will be contacted via email and provided the secure link to take the electronic survey.

Award of Degree

Upon approval by the Graduate School Dean and payment of any outstanding financial obligations to the university, the President confers students' degrees by authority of the Board of Trustees. UAB does not determine the official degree type awarded as this is governed by the Alabama Commission on Higher Education and the Board of Trustees after receiving a program proposal. Students' majors will be reflected on their transcript.

Graduate Level Postbaccalaureate or Post-Master's Certificates

Several UAB graduate programs offer Certificates which do not involve conferral of either a Masters or Doctoral degree. Earning a certificate usually involves taking a specific set of graduate level courses which is designed to provide the Certificate holder expertise in a specialty area of a profession or practice. Certificate programs often consist of 12 or more credits of course work. In some cases the nature of the course work is specified by skill requirements, or may be mandated by State level requirements, for example, by the Alabama State Department of Education.

Certificate requirements vary by discipline. Therefore students should determine what the requirements are of the Certificate program in which they are interested by communicating directly with the program director of the program in which the Certificate is offered. In general, financial aid is not available for certificate programs.

Application for Degree/Certificate

Candidates for a graduate-level certificate must notify their program and the Graduate School of their intent to graduate by submitting the Application for Degree/Certificate by the appropriate deadline (<http://www.uab.edu/graduate/graduate-school-quicklinks/deadline-dates/#Awarding>). The application is accessible through BlazerNET by clicking Links/Forms and selecting Apply for Graduate Degree/Certificate. Note that some programs may have an earlier submission deadline than the Graduate School so students should check their department/program website for more information.

Students pursuing state teacher certification do not need to complete this process.

Upon receipt of the Application for Degree/Certificate, both the graduate program and the Graduate School will audit the students' requirements to ensure the certificate can be awarded. UAB's Graduation Planning System (GPS) contains a personalized audit which includes all courses required to earn the certificate and will display completed, in-progress, and outstanding requirements. GPS is accessible through BlazerNET by clicking the GPS button in the menu on the right side of the page.

Financial Information

Tuition and Fees

Graduate Courses and Fees

The Detailed Tuition and Fee Schedule is available online <https://www.uab.edu/students/paying-for-college/detailed-tuition-and-fees> under Graduate Programs.

Deadlines

Student account payment deadlines are available on the Academic Calendar for each term at <http://www.uab.edu/academiccalendar>. Students who do not make the initial payment of 100 percent of the total account balance by the first payment deadline will automatically be enrolled in the Blazer Flex Plan which will include a \$25 enrollment fee. The Blazer Flex Plan allows students to make payments in three equal installments. Payment deadline dates are available on the Academic Calendar and at <http://www.uab.edu/students/paying-for-college/when-to-pay>.

Penalties

Students who fail to pay by the deadline are subject to substantial late fees. Students with delinquent accounts will not be allowed to register at UAB, and transcript requests will not be honored until all accounts are paid in full. The list of penalties is available online at <http://www.uab.edu/whentopay/penalties>.

How to Pay

Payments can be made via the web with a Blazer ID and Password at www.uab.edu/blazernet. Payments can also be made in Student Accounting Services located on the ground level of the Lister Hill Library. All fees are due by the published deadline, as indicated on the UAB Academic Calendar at <http://www.uab.edu/academiccalendar>. For tuition questions please call Student Accounting Services at (205) 934-3570.

Contact

Student Accounting Services
1700 University Blvd.
Lister Hill Library G10
Birmingham, AL 35294-0013
(205) 934-3570

Assistantships and Fellowships

In many programs, graduate student awards are available in limited number in the form of assistantships, which require service to the department, or fellowships, which do not require service. The Graduate School also assists students in preparation of applications for extramural fellowships. The university's Financial Aid Office administers traditional loan, grant, and work-study programs, and students in certain graduate programs may participate in UAB's Cooperative Education Program, combining their studies with paid work experiences. Only degree-seeking graduate students who are registered for at least 5 hours of graduate coursework are eligible for financial aid. For information concerning these programs, contact the Office of Student Financial Aid at (205) 934-8223, or via email at finaid@uab.edu. Students can also visit the office in the Lister Hill Library G20, 1700 University Blvd or view information online at <https://www.uab.edu/students/paying-for-college/>.

Veterans

Enrolled veterans and dependents who are eligible for federal educational benefits through the Department of Veterans Affairs should apply online at the VA website, www.GIBILL.va.gov (<http://www.benefits.va.gov/gibill>). UAB-VA is responsible for verifying enrollment and semester hours and forwarding the information to the Regional VA office. For more information about federal educational benefits, contact UAB-VA in the Office of Veteran Recruitment and Student Services at (205) 934-8804 or via email at veteransaffairs@uab.edu. Students can also visit the office in the Hill Student Center, Room 313, 1400 University Boulevard.

Withdrawing from Courses

To avoid academic penalty, a student must withdraw from a course by the withdrawal deadline shown in the academic calendar and the UAB Class Schedule and receive a grade of W (withdrawn). Failure to attend class does not constitute a formal drop or withdrawal.

Withdrawal from courses can only be accomplished using official procedures. The official withdrawal must be completed online in BlazerNET. The student must submit a completed withdrawal form to the

Graduate School. This office will date stamp the form and return a copy. These documents should be carefully retained by the student. The date printed on the receipt is the official date of withdrawal.

In extraordinary circumstances, if it is impossible for the student to withdraw online or obtain an official withdrawal form, the student may mail a withdrawal letter to the Graduate School. The official date of withdrawal will be the date the letter is received in this office. If the official date of withdrawal is after the last day to drop without paying, no tuition or fees will be refunded.

For financial aid purposes, the date of last class attendance will be the official date of withdrawal unless otherwise documented. Note that individual schools may have withdrawal rules in addition to the above.

Withdrawal from a course while a possible violation of the Academic Honor Code is under review will not preclude the assignment of a course grade that appropriately reflects the student's performance prior to withdrawal if the violation is substantiated.

Exceptions

All students are responsible for adhering to UAB's academic policies, as published in the UAB Graduate Catalog and the current UAB Class Schedule. The Graduate Dean may make exceptions to policies. Exceptions will only be made in extraordinary circumstances. Only in cases of serious illness, which precludes a student from attending classes, or a call to active military service, can a student qualify under this policy for either administrative or academic withdrawal from courses from that semester. In such instances, students requesting an exception to policy must provide the cause-specific documentation in order for the request to be considered.

Requests are evaluated only from written documentation and not through appointments or telephone calls. Information and forms are available online at <http://www.uab.edu/graduate/images/acrobat/forms/acadapeal.pdf>. Requests for exceptions must be submitted at the earliest possible time. Consideration will not be given to any request submitted later than the term immediately following the term for which the exception is being requested. A full reduction in tuition and associated fees will be made for appropriately documented serious illnesses or military service activation, which preclude a student from continuing his/her studies at UAB. For students receiving refunds, such refunds will first be applied to any outstanding obligations and to any scholarship, grant, or loan the student has received for that term. A student who is receiving any form of Federal Title IV Financial Aid will be liable for any unearned funds received as determined by the Federal Return of Funds Policy (check with Student Accounting Office for details.)

Failure to adhere to the published drop and withdrawal deadlines (as outlined in the UAB Catalog and the UAB Class Schedule) does not qualify under this policy as an Academic Exception.

Contact

Graduate School
1700 University Boulevard
G03 Lister Hill Library
Birmingham, AL 35294-0013
(205) 934-8227

Financial Aid to Students

Students should apply for financial aid if they need assistance in paying for the cost of education. Students applying for financial

aid are considered for all programs for which they are eligible.

Assistance generally takes the form of a combination of grant, loan, and employment. The amount of the award is based on the financial need of the student, taking into consideration the student's total expenses and the family's financial circumstances. A nationally recognized method of analysis approved by the federal government is used to determine the family's ability to pay toward the cost of education.

Applying for Financial Aid

Students are encouraged to complete the Free Application for Federal Student Aid (FAFSA) available online at <http://fafsa.gov/> in early October. The earliest students can submit the FAFSA is October 1. Instructions and UAB forms are available online at <https://www.uab.edu/students/paying-for-college>. Since some of the aid programs have limited funding, students are encouraged to submit all required forms to the financial aid office by December 1 for financial aid for the following fall to ensure they receive aid from all programs for which they are eligible. In order to meet the tuition and fee deadlines, completed applications should be submitted no later than 30 days prior to the tuition due date. Students must reapply for financial aid each academic year.

Since procedures and rules are subject to change, students interested in applying for financial aid can receive further information online at <https://www.uab.edu/financialaid>.

Contact

Student Financial Aid
finaid@uab.edu
(205)934-8223

Mailing address

Student Financial Aid
1720 2nd Ave South
Birmingham, AL 35294

Financial Aid Programs

Federal College Work-Study Program

Eligible graduate students may work part time and earn money to help pay their educational expenses while attending school. On-campus and off-campus jobs are available in areas related to the student's educational interests.

Federal Direct Unsubsidized Stafford/Ford Loan

This is a non-need-based loan with a current fixed rate of 6.595%. Interest must be paid while the student is in school or must be capitalized as agreed upon by the borrower and lender. Repayment of the principal and any capitalized interest begins when the student's enrollment status drops below half time. The maximum annual loan amount is \$20,500.

Federal Direct PLUS Loan for Graduate and Professional Students

This is a non-need-based loan with a current fixed rate of 7.595%. Annual loan limits are the cost of living minus other aid.

Student and Faculty Educational Opportunities (<http://www.orau.gov/orise/educ.htm>)

Research participation and science education programs administered by Oak Ridge Institute for Science and Education (ORISE).

UAB Financial Information

UAB Graduate Family Assistance Scholarship (<http://www.uab.edu/graduate/images/acrobat/funding/FAS.pdf>)
Scholarship funds will be provided to graduate students who have family-related financial commitments that would, if not resolved, prevent them from enrolling in a degree-granting graduate program. **ONLY INCOMING STUDENTS WHO ARE ALREADY ACCEPTED INTO A RESEARCH BASED DOCTORAL PROGRAM ARE ELIGIBLE TO APPLY.**

Comprehensive Minority Faculty and Student Development Program (CMFSDP) Fellowships (<http://www.uab.edu/equityanddiversity/studentawardscmfspd2.html>)

Graduate Fellowships are available to qualified African American students, newly enrolled at UAB and seeking to earn a Ph.D. degree.

License to Learn Scholarship (<http://www.uab.edu/alumni/students/scholarships/61-l2l>)

UAB National Alumni Society License To Learn Scholarships are designed to provide additional financial aid to currently enrolled, undergraduate and graduate level UAB students.

Joseph F. Volker Alumni Scholarship (<http://www.uab.edu/alumni/students/scholarships/60-volker>)

In an effort to recognize the accomplishments of currently enrolled UAB students, the UAB National Alumni Society established a scholarship award program named in honor of the late Dr. Joseph F. Volker.

Distinguished Alumni Scholarship (<http://www.uab.edu/alumni/students/scholarships/58-distinguished>)

Distinguished Alumni Scholarship The Student Relations Committee established a new scholarship endowment in 1994 to honor the Society's Distinguished Alumni Award recipients.

Dr. Charles A. McCallum International Scholarship (<http://www.uab.edu/alumni/students/scholarships/59-mccallum-international>)

This scholarship is awarded annually to recognize UAB National Alumni Society international chapters located in Thailand and Taiwan, and to honor Dr. Charles "Scotty" McCallum, UAB president emeritus, who helped to establish these two chapters.

BBVA Compass Mortgage Graduate Student Scholarship (<http://www.uab.edu/alumni/students/scholarships/65-compass-bank>)

For graduate students.

Other Sources of Financial Aid (<http://www.finaid.org>)

Funding Links

Revised PHS 398 and PHS 2590 Forms (<http://grants.nih.gov/grants/forms.htm>)

Community of Science (<http://www.cos.com>)

The Foundation Center (<http://www.fdncenter.org>)

National Science Foundation (<http://www.nsf.gov>)

NSF Graduate Research Fellowship Program (<http://www.fastlane.nsf.gov>)

GrantsNet

ScienceCareers (<http://www.sciencecareers.org>)

Academic Position Network

Employment Resources from the Alabama Department of Rehabilitation Guidance on job searching and lists of available state jobs

Academic Common Market

The Academic Common Market is an interstate agreement among selected southern states for sharing academic programs at both the baccalaureate and graduate levels. Participating states are able to make arrangements for their residents who qualify for admission to enroll in specific programs in other states on an in-state tuition basis. Participating states are Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

If you are not an Alabama resident and you wish to enroll at UAB as an Academic Common Market student, you must be accepted for admission into a UAB program to which your state has obtained access for its residents through the Academic Common Market coordinator in your home state.

Certification of eligibility must be received by the Graduate School before the first day of class in the initial semester of registration to obtain in-state tuition status for the entire program; otherwise, in-state tuition status will be awarded beginning with the semester following receipt of this certification. Please note that if a student who enrolls at UAB as an Academic Common Market student changes majors, the student will revert to paying out-of state tuition.

To obtain the name and address of a state coordinator, visit the Academic Common Market web site (www.sreb.org/page/1304/ (<http://www.sreb.org/page/1304/>)).

Graduate Assistantships and Traineeships (Fellowships)

Graduate Assistants and Trainees are obligated at all times to maintain high ethical standards in academic and non-academic activities, and to report violations of these standards to the faculty mentor and/or program director. Such students should stay well informed of departmental, school, and institutional regulations, and follow them consistently. In general, Graduate Assistants and Trainees are expected to be engaged in activities associated with their graduate programs year-round, including the periods between academic terms.

Responsibilities of Graduate Trainees

Graduate Trainees are supported by fellowship and other institutional funds that do not have a service requirement but are instead intended to allow the student to be committed full-time to their graduate studies. The fundamental responsibility of Graduate Trainees is to immerse themselves full-time in their graduate studies, carrying out those activities required by their program, including course work and any original research necessary to fulfill thesis, pre-dissertation, or dissertation requirements that the program stipulates.

Responsibilities of Graduate Assistants

In general, Graduate Assistantships (including Graduate Research Assistantships and Graduate Teaching Assistantships) provide support from research grants or other institutional funds for students engaged in activities that support the research, teaching, and service missions of the university. The fundamental responsibility of Graduate Assistants is to work closely with their faculty mentors in carrying out research, teaching,

or service activities, while at the same time making good progress toward the completion of the degree program. If a student's assistantship responsibilities and academic program are properly coordinated, these responsibilities will be compatible. The assistant and mentor should articulate their goals early in the term of appointment and work together to achieve them. If problems arise in the assistantship assignment, the Graduate Assistant should seek help first from the faculty mentor. If problems cannot be resolved, the student should consult their program director.

Qualifying for an Assistantship/ Traineeship

Students who are receiving a Graduate Assistantship or Traineeship are required to be enrolled according to the following criteria:

- at least 9 credit hours in the fall and spring terms, and
- registration for credit hours in the summer at a minimum level established by their academic School or College. Students should consult with their program director before registering for summer credit hours.

Students enrolled in programs that traditionally only offer course work and research opportunities during fall and spring terms are considered to be full-time even if they do not enroll during the summer term.

Graduate Assistant and Trainee Leave

Graduate assistants and trainees are not entitled to paid leave. Any schedule time away must be coordinated between the student and the mentor. Additional information regarding assistantships and traineeships can be found here (<https://www.uab.edu/graduate/programdirectors/administering-fellowships-and-assistantships>).

Student Life

Graduate students at UAB have many opportunities to become involved in the life of the university. Information about additional groups, both on and off campus, can be found in the UAB Student Handbook, *Direction* at <http://www.uab.edu/handbook/>

UAB Student Experience would like to invite you to complete your UAB experience by becoming involved in the many activities and organizations available to you as a student. Events range from relaxing at free movies or comedy shows, involvement in student governance, cheering on the Blazers, writing for the Kaleidoscope student newspaper, rappelling down a cliff, hiking the Grand Canyon and so much more. Each semester brings new events, new organizations, opportunities to make friends, get physically fit, learn, socialize, relax, and have a good time becoming a part of the Blazer community! We want you to get involved!!

This section of the catalog contains an alphabetical list of many of the activities and organizations and activities available to students.

Contact Us:

Department of Student Experience

205-934-4175
studentlife@uab.edu
 Physical Address:
 Hill Student Center, Suite 401

1400 University Boulevard

Student Involvement & Leadership

205-934-8020
getinvolved@uab.edu
 Physical Address:
 Hill Student Center, Suite 230
 1400 University Boulevard

Student Multicultural & Diversity Programs (<https://www.uab.edu/students/diversity>)

205-996-6778
diversity@uab.edu
 Hill Student Center, Suite 311
 1400 University Boulevard

Student Organizations (<http://www.uab.edu/bsync>)

205-934-8020
bsync@uab.edu
 Hill Student Center, Suite 230
 1400 University Boulevard

Black Graduate Student Association

The Black Graduate Student Association (BGSA) was founded in 1993 and is dedicated to the pursuit of academic excellence and social and political awareness with respect to African-Americans at UAB.

The BGSA sponsors social events, pertinent forums dedicated to issues of interest in the African-American community at our Black Lecture Series "Meeting of the Minds," activism opportunities, and an annual conference. For detailed information about the BGSA, visit the Web site at <http://www.uab.edu/bgsa/>.

Graduate Student Government

UAB graduate students are represented by the Graduate Student Government (GSG), which works closely with the Graduate School and other offices of the university administration in formulating policies and meeting student needs. All graduate students are automatically members of the GSG, and the GSG Senate is composed of student representatives from the various graduate programs. The GSG provides partial funding for graduate student travel to professional meetings. The organization co-sponsors a variety of services and activities, including the Honors Convocation, Graduate Student Research Days, and Graduate Student Orientation. Information on the Graduate Student Medical Assistance Fund and travel grants may be obtained on the GSG Web site (www.uab.edu/gsg).

Three Minute Thesis

Three Minute Thesis (3MT) is an annual competition in which graduate students present their original research in an open forum. Information regarding participating in UAB's 3MT competition is available at the Graduate School Web site (<https://www.uab.edu/graduate/events/3-minute-thesis>).

UAB Graduate Career Awareness Trends

The UAB GCAT, previously called the Industry Roundtable, is sponsored by the UAB Graduate School. The GCAT is a student-initiated and student run informal discussion group open to all graduate students and dedicated to fostering a greater awareness of career opportunities outside academia. Its goals are to provide a forum for networking with industry representatives; establish an interface between academia and industry; introduce students to the process of making industry contacts; encourage students to comment, ask questions, and seek advice from non-academics; stimulate students to begin career development early in their educational experience; and provide information to students about career opportunities outside academe. More information regarding the GCAT can be found at <http://www.uab.edu/gcat/>.

Student Outreach

Student Outreach supports students through life challenges and connects them with university and community supports to best address their diverse needs. Student Outreach provides individualized assistance to promote student safety and well-being, collaboration and resilience, personal accountability, and self-advocacy. Our team consults and collaborates with campus partners to balance the needs of individual students with those of the overall campus community.

The goals and objectives of Student Outreach include the following:

- Promote personal responsibility and peer accountability,
- Empower students to address any conflict that may arise in a safe, respectful, and socially conscious manner.
- Educate and support the existing need of students facing insecurities related to basic needs by reducing and empowering students to access campus and community resources, such as the Blazer Kitchen at Hill Student Center and dining meal vouchers.
- Connect students to available resources and options in order to manage their responsibilities and work toward their goals.
- Engage students to take full advantage of available resources and opportunities to make informed decision on their academic success.

For additional information, contact Student Outreach, a function of the Office of Student Conduct & Outreach, at <https://www.uab.edu/studentoutreach>, 205-975-9509, studentoutreach@uab.edu, or stop by 303 Hill Student Center.

Title IX

The University of Alabama at Birmingham Department of Student Experience oversees the University's compliance with Title IX of the Education Amendments of 1972. The Office works with students, University administration, departments, faculty, staff, campus police, and other support services to ensure that University policies and programs foster a campus community free of illegal gender discrimination and from all forms of violence, including sexual misconduct, examples of which can include acts of sexual assault, domestic violence, dating violence, stalking, and gender based discrimination. Visit the Title IX Website at uab.edu/titleix

UAB CARE Team

When you are concerned about a student, know that the CARE Team is here to help. The UAB CARE Team (Communicate, Assess, Refer, Educate) helps find solutions for students experiencing academic, social, and crisis situations, including mental health concerns. Members of the University community can report a concern for a student who might

benefit from services. We review these reports to understand each student issue and the on and off campus resources that may guide them to success.

The CARE Team steps in to connect students with relevant campus resources and outside agencies. Most times, we may need to communicate with the reporting party to help accurately assess the needs of the student. The CARE Team will also reach out to the student to understand his/her situation and develop a plan of action leading towards his/her success.

Student Services & Facilities

This page contains a list of facilities and services available to UAB students. For further information on these and other facilities and activities, contact the Information Desk (<https://www.uab.edu/studentaffairs/studentcenter>), located at the Hill Student Center or refer to the UAB student handbook, *Direction*, at <https://www.uab.edu/students/> and on BlazerNET (<http://www.uab.edu/blazernet>) on the Student Resources tab.

University Recreation

The Campus Recreation Center (CRCT) offers students, faculty, staff, and alumni access to a state-of-the-art recreation facility. The UAB Campus Recreation Center offers premier programs, facilities, and services! You will find something for everyBODY – free weights, multipurpose courts, an aquatic center, group fitness studios, nutrition education, cardio-fitness areas, a climbing and bouldering wall, and much more.

The 152,000 square foot facility covers three floors housing: four basketball/volleyball courts; five racquetball courts (one of which can be converted to squash and four for walleyball); four aerobics studios; one performance studio on RB court 5; 18,000 square feet of weight and cardio-fitness areas and iron cave; a game room; an aquatics center with both lap and leisure components; a multi-purpose court used for indoor soccer, floor hockey, indoor flag football and badminton; an indoor track; and a climbing and bouldering wall. University Recreation is also responsible for the scheduling of the Campus Green and the full operation of the Intramural and Club Sports Field on the north side of campus.

Patrons can also take advantage of the wellness services here at the Campus Recreation Center, which offer personal fitness assessments, massage therapy, UFit and F45 classes and personal training. In addition, we have a University Rec Pro Shop in house, so if you forget something we've got you covered and the PowerZone to keep you fueled before and after your workout. Lastly, we have a number of lockers available for rent in 12 month or 3 month contracts. Space is limited, so contact membership services at 205-996-5038 today if you are interested! If you prefer not to purchase a locker, we have several areas in the facility, including the locker rooms, with day use lockers available; just bring a lock, store your belongings while you workout with your own lock, and take it with you when you leave - Free of charge! The CRCT is located at 1501 University Boulevard next to the Campus Green.

Aquatics (<http://www.uab.edu/students/campusrecreation/facility-information/aquatics-center-wet-classroom>)

The Aquatic Center housed within the Campus Recreation Center provides a place for members to swim laps as well as meet their leisure

aquatic needs by swimming laps, floating through the river or taking a dip in the hot tub. In addition, the aquatics program offers swim classes, private lessons, life-guarding certifications WSI (Water Safety Instructor) classes, and pool parties for special events. For questions about pool party requests and/or other pool activities, please visit our website www.uab.edu/students/universityrecreation/.

Fitness & Wellness Services (<https://www.uab.edu/students/campusrecreation>)

The Fitness and Wellness programs offered at the UAB Campus Recreation Center range from traditional Ufit classes and F45 classes to personal training packages to campus rec kitchen and wellness massage services. For more information on all of our fitness and wellness services or to schedule an appointment today, please contact fitness@uab.edu.

Ufit & Instructional Group Fitness Classes

Ufit classes are FREE to anyone with an active CRCT membership. Feel free to drop in any time or day of the week to participate in the wide variety of classes available! Instructional classes are offered throughout the year and provide anyone pre-registered with a more advanced learning experience. If you are interested in participating in any of the F45 classes please register at our Membership desk.

We offer a wide variety of fitness classes, designed to fit your scheduling needs. From seasoned cyclers to those wanting to try yoga for the first time, Ufit has a class that will get you moving! Please visit our website to view our current schedule.

Rec On The Go

Rec on the Go is a program designed to cater any recreation, health, and/or wellness topic to the UAB community. All programs are presented by a recreation professional and can be modified for your groups exact needs. Topics covered vary from fitness classes to chair massages and nutrition demonstrations. Departments have the opportunity to pick a topic to be presented at a staff meeting, lunch group, or any time of your choice!

Complete Fitness Assessments

Fitness Assessments provide individuals with their baseline measurements of flexibility, endurance, blood pressure, muscular strength, body composition, and cardiovascular fitness. The results of these tests are reviewed by a certified Personal Trainer and are used to help personalize a tailored workout plan specifically for you.

To schedule your Fitness Assessment please email Brianna Lee @ bclee@uab.edu and complete the Health History Questionnaire (http://www.uab.edu/students/campusrecreation/images/documents/health_history.pdf) as well as the Fitness Assessment Form (<http://www.uab.edu/students/campusrecreation/images/documents/FIT.ASSESSMENTFORM.FALL2014.pdf>) prior to the appointment.

Personal Training

Do you want to get back into shape or simply looking to kick start a new workout? Personal Training is the service for you! Here at the UAB Campus Recreation Center we offer a variety of Personal Training packages for both members and students. Check out our www.uab.edu/students/universityrecreation/programs/fitwell/personal-training now for complete pricing, packing, and details.

Massage Therapy Services

Celebrate a little YOU time by scheduling yourself a massage today! Appointments are available for 30 or 60 minutes and are performed by certified massage therapists. Choose from a variety of massage packages in order to customize the perfect relaxation for you. Massage therapy appointments are based upon the therapists' schedules and availability. Please allow at least 24 hours advanced notice of your preferred appointment time in order for us to best schedule your appointment.

For more information or to schedule your next appointment, please email a completed Health History Form (https://www.uab.edu/graduate/images/acrobat/forms/SHW_nonclinicalinternational.pdf) and preferred days/times for your appointment to fitness@uab.edu today!

Competitive Sports (<http://www.uab.edu/campusrecreation/programs/competitive-sports>)

The Competitive Sports program offers activities such as Intramurals and Club Sports that involve individual and team competition.

Intramurals

All UAB students, staff, and faculty are eligible to participate in intramural sports. Faculty and Staff must adhere to the specific entrance policies if they are not campus recreation facility members. Individuals in any team league must have their campus card in possession to be eligible to participate.

Every team league is offered in men's, women's and co-rec format. Each league will have a 4 week regular season followed by a single elimination playoff. For more information please visit our www.uab.edu/students/universityrecreation/ or contact intramurals@uab.edu.

Want to sign up? (<http://www.imleagues.com/School/Home.aspx?&SchId=927a5b3b6e944220acad259198fe8f2>)

Club Sports

A club sport is an organized group of individuals established to promote interest in a sport and develop skills of its members in that sport. A club sport may be organized for recreational, instructional, performance, or competitive purposes. For more information please visit our website: www.uab.edu/students/campusrecreation/programs/competitive-sports/club-sports or contact spettigr@uab.edu.

O (<http://www.uab.edu/students/campusrecreation/programs/adventure-recreation>) **Outdoor Pursuits**

Adventure Recreation offers outdoor trips and clinics throughout the year including: kayaking, backpacking, camping, climbing, canoeing and whitewater rafting. Also offered are belay certification and lead climbing programs. Trips and clinics, such as the Wilderness First Responder training, are open to university students, faculty/staff, alumni, and the community. Contact outdoors@uab.edu for more information on trips, clinics, and rentals.

Climbing Wall & Bouldering Wall

Located on the mezzanine level of the Campus Recreation Center, the 42' tall by 36' wide climbing wall offers 1,512 square feet of climbing. The wall's climbing surface is constructed of reinforced polymer concrete panels and imprinted to match the look and feel of natural rock. We also have a 12 foot bouldering wall for everyone to enjoy. Open to university

students, faculty/staff, and alumni. The community may use the wall by private group rental.

Team Building

Campus recreation offers many opportunities for team building initiatives, catering toward campus groups, corporate outings, school groups and more! Our enthusiastic and skilled facilitators will guide your group through fun activities focused on enhancing or developing vital workplace and life skills such as teamwork, cooperation, communication, and trust. Our program can accommodate groups of any size. Initiatives work on developing or enhancing: communication, teamwork, trust, cooperation, team building, planning, and other common work place functions. Contact pjoyner@uab.edu.

Rentals

The Outdoor Pursuits Rental Center offers outdoor equipment for various events and is open to university students, faculty/staff, alumni, and the community. Whether backpacking, camping, or canoeing, the rental center has multiple rental time spans on the equipment you might need like sleeping bags, tents, backpacks, and cooking sets.

Campus Dining

Dining on-campus gives you the advantage of never having to worry about keeping cash on hand and never losing your parking space. At UAB we have thirteen (13) restaurants on-campus. Just swipe your ONE Card and dine! For more information about Campus Dining, please stop by the UAB Campus Dining office located on the top floor of the Commons on the Green next to the Den, or call (205) 996-6567. You can also visit us online at www.uab.edu/dining/.

For a map of dining locations and updated hours of operation visit: www.uab.edu/students/dining/locations-hours.

Meal Plans

Your meal plan gives you the advantage of never having to worry about keeping cash on hand to eat on-campus. Just swipe your ONE Card and dine. For meal plan options and requirements visit www.uab.edu/students/dining/meal-plans.

Dining Dollars

Dining Dollars are funds that you receive from your campus dining fee. All full-time undergraduate students (those students taking twelve (12) or more credit hours on campus) will be assessed a **\$225 Campus Dining Fee** during fall and spring semesters. This Dining Dollars fee is loaded onto a student's OneCard and is used as a declining balance account accepted at all on campus dining locations. Dining Dollars are not part of a student's meal plan.

Libraries

UAB Libraries hold more than two million volumes and provide access to thousands of relevant digital resources for information, instruction, and research in support of UAB's vast academic and medical enterprise. The UAB Libraries system comprises Mervyn H. Sterne Library (<http://www.mhsl.uab.edu>) as well as Lister Hill Library of the Health Sciences (<http://www.uab.edu/lister>), which includes Lister Hill Library at University Hospital (<http://www.uab.edu/lhluh>) and UAB Historical Collections (<http://www.uab.edu/historical>) Reynolds-Finley Historical Library (<http://www.uab.edu/reynolds>), UAB Archives (<http://www.uab.edu/archives>), and the Alabama Museum of the Health Sciences (<http://www.uab.edu/>

amhs). The faculty and staff of UAB Libraries provide the resources and essential expertise to support excellence in education, research, patient care, and community outreach. Priorities for UAB Libraries include increased access to resources, seamless cloud-based single search capability, campus-wide digital asset management, and increased support for distance and international students and researchers.

Mervyn H. Sterne Library (<http://www.mhsl.uab.edu>)

The **Mervyn H. Sterne Library** houses a collection of more than one million items and numerous electronic resources that support teaching and research in the arts and humanities, business, education, engineering, natural sciences and mathematics, and social and behavioral sciences. The library is located at 917 13th Street South and online at www.mhsl.uab.edu. (<http://www.mhsl.uab.edu>) The website is the gateway to all library services and collections including the Undergraduate Research Toolkit, subject- and course-specific Library Guides, and a list of FAQs. Services include research assistance, citation consultations, workshops and faculty-requested classes, assistance with locating materials, and interlibrary loan.

Named in memory of the late Birmingham philanthropist and civic leader Mervyn H. Sterne shortly after it opened in 1973, the library has seminar rooms, study rooms, lockable study carrels, computers, printers, scanners, copiers, and seating for 1,350 users. The first floor of the library was renovated in 2010 to make it even more user-friendly and houses the University Writing Center and a Starbucks. Due to student requests, Sterne Library has extended hours, opening 24 hours a day for five days a week except during holidays and summer terms. For more information on resources and services, visit the Sterne Library website at www.mhsl.uab.edu, call Reference Services at (205) 934-6364 or User Services at (205) 934-4338, or request help by email, text, or chat at <http://www.mhsl.uab.edu/2009/contact> or <http://library.uab.edu/help>.

Lister Hill Library of the Health Sciences (<http://www.uab.edu/lister>)

The **Lister Hill Library of the Health Sciences**, the largest biomedical library in the state, provides services and resources for UAB students, research and teaching faculty, and clinicians in medicine, nursing, optometry, dentistry, public health, health professions, and joint health sciences. The library was established in 1945, and then dedicated in 1971 in honor of Senator Joseph Lister Hill, a champion for health care and library legislation.

Lister Hill Library, located at 1700 University Boulevard, provides collaborative and group study space on the first floor and quiet study space on the second floor. Lister Hill Library's website at www.uab.edu/lister provides 24/7 access to databases, electronic journals, ebooks, LHL Guides, FAQs, and recorded classes and tutorials. Services include consultations for conducting searches, guidance for citing resources, assistance with locating materials, and interlibrary loan services. For more information on resources and services, visit the Lister Hill Library website at www.uab.edu/lister, call (205) 934-2230, or request help by email, text, or chat at www.uab.edu/lister/ask.

The **Lister Hill Library at University Hospital**, located in the West Pavilion, provides onsite support for education, research, and patient care. Access the resources and services for clinicians through the LHL@UH website at www.uab.edu/lhluh or call (205) 934-2275 for more information.

The **UAB Historical Collections**, located on the third floor of Lister Hill Library, includes the **Reynolds-Finley Historical Library** (<http://www.uab.edu/reynolds>), **UAB Archives** (<http://www.uab.edu/archives>), and the **Alabama Museum of the Health Sciences** (<http://www.uab.edu/amhs>). The Reynolds-Finley Historical Library contains rare books, pamphlets, and manuscripts in the history of medicine, science, and health-related fields. This collection dates from the mid-14th century to the early 20th century and includes a core of world-renowned medical classics with important concentrations on medicine in the Civil War, the South, and early Americana. UAB Archives is the official repository for the permanent records of the University and for archival collections held by UAB. One collecting area for manuscripts is the history of the health sciences, but the repository preserves collections with a wide variety of topics. The Alabama Museum of the Health Sciences preserves over seven hundred years of medical history with instruments, specimens, equipment, and pharmacology used by health care professionals throughout the world, with a special emphasis on material used on and around the University of Alabama at Birmingham campuses. Please call (205) 934-4475 for more information on the Reynolds-Finley Historical Library (<http://www.uab.edu/reynolds>) or the Alabama Museum of the Health Sciences (<http://www.uab.edu/amhs>). Call (205) 934-1896 for more information on UAB Archives (<http://www.uab.edu/archives>).

Smolian International House

The Bertha and Joseph Smolian International House, 1600 10th Avenue South, offers services and activities for international students and scholars. Known as the I-House, it provides a focal point for programs and activities designed to foster a free exchange of information and international understanding. The facility includes meeting space for campus groups, as well as community groups having an international purpose. For additional information or a schedule of activities, call (205) 934-3328.

<http://www.uab.edu/global/international-students-and-scholars>

The UAB Bookstore

The UAB Bookstore is located at 1400 University Boulevard inside the new Hill Student Center. The bookstore posts official lists of UAB courses and stocks the textbooks and all other items necessary for successful UAB coursework. Most textbooks can be purchased new or used. The option to rent textbooks is also available for most courses. The bookstore carries study aids, reference materials, school and office supplies; medical instruments, lab coats, and scrubs; and the largest assortment of UAB logo apparel and gifts available. Contact the UAB Bookstore at (205) 996-2665 or visit the store online at www.shopuab.com (<http://www.shopuab.com>)

University Writing Center

Located on the first floor of Mervyn Sterne Library, the University Writing Center (<http://www.uab.edu/writingcenter>) (UWC) is UAB students' go-to place for writing assistance, whether the task at hand is a Freshman Composition paper, a lab report, or a graduate school application essay. In a friendly and professional one-on-one setting, UWC tutors teach students to use writing to discover, apply, and communicate knowledge in all disciplines. Students commonly visit to get help with understanding a writing assignment; brainstorming ideas; developing outlines and claims; understanding and applying instructor feedback; and revising and editing complete drafts. While UWC tutors do not edit *for* students, they can help students identify their common errors and develop stronger editing processes.

In addition to one-on-one sessions in the Sterne Library location, the UWC offers online consultations for students enrolled in online courses; Ask-a-Tutor, an email service for short writing questions; and regular workshops on topics of common interest. To make an appointment, visit the UWC's website (<http://www.uab.edu/writingcenter>) and log onto the online scheduling system with your Blazer ID and password. Like the UWC's Facebook (<http://www.facebook.com/UABWritingCenter>) page and follow the UWC's Twitter (<http://www.twitter.com/UABWritingCntr>) page to stay in touch and find out about upcoming workshops.

One Stop

What if you could get answers to your questions about your student account, financial aid and registration all in one place?

Stop running from office to office and make the One Stop (<https://www.uab.edu/students/one-stop>) your first and possibly your only stop! If we can't help you on the spot, we'll do the leg-work for you or connect you to the appropriate resource.

Contact us by email, phone, or in person.

One Stop Student Services (<https://www.uab.edu/students/one-stop>), Room 103 of the Hill Student Center, 1400 University Blvd

onestop@uab.edu

(205) 934-4300

855-UAB-1STP (822-1787)

8:00 am - 5:00 pm, Monday - Thursday

9:00 am - 5:00 pm, Friday

Information Center

Information regarding programs, services, and activities at UAB is available at the UAB Information Center. Referrals to the appropriate department, office, or person may be made for more specific information. The Information Center is located just inside the 14th Street entrance of the Hill Student Center, 1400 University Blvd.

For additional information, call (205) 934-8000, or see the Web page at <https://www.uab.edu/studentaffairs/studentcenter/>

UAB Career Center

The UAB Career Center (<https://www.uab.edu/students/cpd>), in the Division of Student Services, assists undergraduate and graduate students in selecting appropriate fields of study, furthering their education, learning effective job searching strategies, and making connections with employers.

Career Consultants (<https://www.uab.edu/students/cpd/student>) and Peer Career Advisors (<https://www.uab.edu/students/cpd/student/peer-advisors>) are available to meet one-on-one with students to explore career or educational options, revise résumés and cover letters, hone interviewing techniques, conduct searches for internships and full-time jobs, and ready themselves for interviews with employers. In addition, students may utilize HireABlazer (<https://padlock.idm.uab.edu/cas/login?service=https%3A%2F%2Fconnect.purplebriefcase.com%2FSSO%2Fcas.php%2F3282780>), the UAB Career Center's online recruiting system, to view part-time jobs, internships, and full-time job postings and to sign up for on-campus interviews.

The mission of the UAB Career Center to engage and empower members of the UAB community through meaningful career and experiential learning opportunities, to revolutionize the future of work. Nearly 7,000 employers use the UAB Career Center to connect with students through job postings, on-campus interviews, information sessions, and career

events via our online recruiting system HireABlazer. The UAB Career Center hosts a number of events throughout the year to further connect students and employers, including career fairs, employer meet-ups, and on-campus interviews.

Other information can be obtained from the UAB Career Center's website at <https://www.uab.edu/students/cpd/> or by calling 205.934.4324.

Disability Support Services

Disability Support Services (DSS), located in the Hill Student Center, serves as the central campus resource for students with disabilities. The goal of DSS is to provide a physically and educationally accessible university environment that ensures an individual is viewed on the basis of ability, not disability. DSS staff members work individually with students to determine appropriate accommodations. To be eligible for services, students need to complete an application, submit documentation of their disability and meet with our counseling staff.

For more information, contact Disability Support Services at (205) 934-4205 (voice) or 934-4248 (TTY) or <http://www.uab.edu/students/disability/> E-mail contacts are welcome at dss@uab.edu.

Physical Address

Hill Student Center
1400 University Boulevard

Mailing Address

UAB One Stop
1400 University Blvd., Hill 103
Birmingham, AL 35294

Director: Ashley Neyer

Advisor: Felicia Baltzell

Contact: www.uab.edu/educationabroad | 205-975-6611

Mission

The mission of the UAB Office of Education Abroad (UABEA) is to administer, establish, and send UAB students on high-quality education abroad opportunities to prepare them for success in the globalized world.

Description

Pursuant to our mission, UABEA engages in the activities described below.

Study Abroad: Take courses for which academic credit is received and transferred to UAB on our supported study abroad programs. This includes academic credit for student exchanges, UAB affiliate programs, and faculty-led programs that feature traditional classes, research, service learning, internships, volunteerism, shadowing, clinical rotation, and observations. Our office can help students with aspects from selecting a program to facilitating their transition back to UAB.

Student Organizations Abroad: Travel abroad as part of a UAB student organization; including Outreach Abroad, Outdoor Pursuits, artistic performances, athletic activities, or other student organization travel. Our office can help students register travel with the university, obtain the necessary education abroad insurance, and prepare for the trip.

Student Conference Travel Abroad: Present at or attend a conference that takes place abroad as a UAB representative. Our office can

help students register travel with the university, obtain the necessary education abroad insurance, and prepare for the trip.

Passport Services: Apply for a passport conveniently on campus. As an official U.S. Department of State Passport Acceptance Facility, we are happy to accept passport applications for students, employees, and members of the community. Our passport service is open to the public.

Destinations

With programs in over 50 different countries, there's something for everyone. Programs are available in the United Kingdom, Italy, Spain, France, China, Germany, Costa Rica, Australia, Ireland, Japan, and many more countries. Over 40 UABEA programs cost approximately the same as UAB tuition + room + board.

Dates

Programs are available for fall semester, spring semester, academic year, calendar year, summer, Thanksgiving Break, and Spring Break.

Languages

Programs are available in English, as well as all of the foreign languages taught at UAB (and a few that aren't).

Eligibility

To be eligible to apply for our programs, one must:

1. be an enrolled UAB student;
2. be 19 years of age or older (or have parental permission); and
3. be in good academic, disciplinary, and financial standing with UAB.

Some programs have additional eligibility requirements, such as GPA minima, listed on the individual program webpages.

Students may petition to the Director of Education Abroad for a possible exception to the eligibility criteria.

Subjects of Study

Students may take core curriculum courses while abroad, as well as courses for their major and minors. Elective credits are also available.

Course Articulation

Students need to consult with UABEA before studying abroad to initiate course articulation, the process by which UAB course equivalency is determined for each course to be taken while studying abroad. Course articulation involves the student, UABEA, the host study abroad university, and UAB department chairs and advisors all working together and commonly takes approximately one month to complete.

It is highly recommended that the students contact UABEA to begin the course articulation process at least one month before the application deadline for the selected program. Students who don't begin the articulation process early enough prior to studying abroad, may not know how, or if, their courses abroad will count toward completion of a UAB degree.

Grade Posting

All grades earned while abroad will be posted to the student's UAB transcript and included in GPA calculations. Letter grades are used rather than pass/fail marks. In all cases, students must participate fully in

all course activities and meet all stated course requirements. Auditing of any course abroad is not permitted. The process of grade posting varies depending on the program type:

UAB Exchanges are programs for which UABEA has established an exchange agreement with a university abroad. Students earn direct UAB course credit. Students on exchanges are usually mainstreamed into regular classes with the student body at their university abroad. Courses taken on student exchanges will begin with IN ("INternational" indicating that the course took place at an international UAB exchange location) and a two-letter subject code such as ME (Mechanical Engineering), GN (German), SP (Spanish), etc. to indicate the subject that was studied. Additionally, each of the courses are numbered. All courses are variable in the number of credit hours students can receive based upon their enrollment at the host university. INxx courses are repeatable. INxx courses include:

Subject	Description
INAB	Study Abroad Arabic
INAH	Study Abroad Art History
INAN	Study Abroad Anthropology
INAR	Study Abroad Art Studio
INAT	Study Abroad Astronomy
INBE	Study Abroad Biomedical Engineering
INBU	Study Abroad Business
INBY	Study Abroad Biology
INCH	Study Abroad Chinese
INCM	Study Abroad Communication Studies
INCS	Study Abroad Computer & Information Science
INCY	Study Abroad Chemistry
INDC	Study Abroad Digital Community
INEC	Study Abroad Economics
INED	Study Abroad Education
INEE	Study Abroad Electrical Engineering
INEH	Study Abroad English
INES	Study Abroad Earth Science
INEV	Study Abroad Environmental Science
INFN	Study Abroad Finance
INFR	Study Abroad French
INGN	Study Abroad German
INHJ	Study Abroad History
INIS	Study Abroad International Studies
INIT	Study Abroad Italian
INJP	Study Abroad Japanese
INJS	Study Abroad Justice Sciences
INMA	Study Abroad Mathematics
INME	Study Abroad Mechanical Engineering
INMG	Study Abroad Management
INMK	Study Abroad Marketing
INMU	Study Abroad Music
INPC	Study Abroad Physics

INPE	Study Abroad Physical Education
INPH	Study Abroad Philosophy
INPS	Study Abroad Political Science
INPY	Study Abroad Psychology
INSC	Study Abroad Sociology
INSP	Study Abroad Spanish
INTH	Study Abroad Theatre
INTL	Study Abroad Special Topics

UAB Affiliate Programs are co-organized by UABEA in cooperation with an education abroad provider and/or a foreign university. Students receive a transcript from the foreign university or U.S. university of record and have transfer credit appear on their UAB transcript. UAB affiliate programs include the CISAbroad, ISA, and USAC programs listed here (<http://educationabroad.uab.edu/index.cfm?FuseAction=Programs.ListAll&>). These courses will transfer into UAB just as any other transfer institution credit posted. All courses are variable in the number of credit hours students can receive based upon their enrollment at the host university.

UAB Faculty-Led Programs are UAB courses that are developed and taught by UAB faculty and have a travel component, usually outside of the United States. The programs are typically about 1 to 2 weeks in duration and the entire class, faculty leader and students, travel together. Students earn direct UAB course credit. For UAB Faculty-Led Programs, the instructor will assign the final grade as is normally done for any UAB class taught on campus. (See the Grading Policies and Practices (<http://catalog.uab.edu/undergraduate/progresstowardadegree/#gradestext>) section of the UAB Catalog of Undergraduate Programs). UAB Faculty-Led Programs are designated with SA following the course title.

UAB Internship/Practicum Courses Abroad are UAB courses through which students do an internship or practicum, actually working abroad in a company or organization related to the student's area of study, and earn direct UAB course credit. For UAB Internship/Practicum Courses Abroad the instructor will assign the final grade as is normally done for any UAB internship/practicum course taken domestically.

Residency

Courses taken on UAB Exchanges, USAC programs, ISA programs, CISAbroad programs, U.S. - UK Fulbright Commission Summer Institutes, U.S. Department of State Critical Language Scholarship Program, Clinton Scholarship at the American University in Dubai, UAB Faculty-Led Programs, and UAB Internship/Practicum Courses Abroad will satisfy the UAB residency requirement. Students need to contact UABEA to ensure their Graduation Planning System records are noted accordingly.

Changes of Grades

Requests for grade changes to UABEA must be accompanied by official documentation sent directly from the host university.

International Student and Scholar Services

ISSS provides immigration compliance expertise and cultural exchange events for approximately 1,600 international students, scholars, clinical faculty, researchers, IT professionals, staff, and visitors. Our vision is to provide cutting-edge immigration advising and programming to UAB and its international community, preserving the integrity of our programs while

advocating for the unique needs of international students and scholars, leading to enriched educational and research opportunities, broadened cultural perspectives, and ease of adjustment to life in the US. Our work supports the university's four pillars of education; research, innovation & economic development; community engagement; and patient care by bringing the best and brightest international talent to Birmingham to internationalize our campus and our city. We are located in the beautiful international center on the second floor of Mervyn H. Sterne Library (<http://www.uab.edu/map/?sterne-library>) on the corner of 9th Avenue and 13th Street South.

For additional information, visit <https://www.uab.edu/global/international-students-and-scholars>.

ONE Card

The UAB ONE Card serves as the official student ID and offers access to a variety of services and resources on and around campus. Students use their ONE Card to enter residence halls and the Campus Recreation Center, attend UAB athletic and cultural events and check out materials from UAB libraries. With their ONE Card, students can enjoy discounts on tickets to a wide variety of on and off-campus events through the UAB Ticket Office. The ONE Card also functions as a debit card, allowing students a convenient and secure way to pay for goods and services at a variety of on campus and local area merchant locations.

General information about the UAB ONE Card, including a list of carding locations, is available at www.uab.edu/onecard.

Questions about ONE Card services can be directed to onestop@uab.edu or (205) 934-4300.

Note: A photo ID is required to have your initial ONE Card made.

Parking

All students who desire to park in UAB student parking facilities must purchase a permit from Parking and Transportation Services. Permits can be purchased by the term or for the full academic year. Fees vary according to lot. Contact Parking and Transportation Services at (205) 934-3513, for details, or visit online at www.uab.edu/parking/.

Both the university and the City of Birmingham issue citations in student lots to vehicles illegally parked or not displaying a proper permit. Students are responsible for paying all fines and fees imposed. Any delinquent ticket payments may be added to the student's account in the Student Accounting Office. If a student accumulates three or more delinquent tickets and/or accumulates more than \$45.00 in citations, the student's vehicle may be immobilized or impounded at his or her expense.

Handicapped spaces are conveniently located throughout campus. A valid handicap permit must be displayed to park in a handicapped space in addition to the applicable parking permit. All state issued handicap parking permits MUST be registered with the UAB Parking Office in order to avoid a citation and park in a restricted UAB lot or deck.

For additional information and a campus parking map, contact:

UAB Parking and Transportation Services

608 Eighth Street South • Telephone (205) 934-3513 • E-mail: uabparking@uab.edu • Website: www.uab.edu/parking/

Blazer Express

The UAB Blazer Express Transit System is a service that provides transportation throughout the University campus. With a valid UAB ID badge, students, employees, and authorized visitors can enjoy fare-free bus transportation along 6 designated routes. Buses are ADA-accessible and can seat up to 35 riders. Bus service is provided Monday – Friday from 5:30A – 12:00A. Safety escort service is available through Blazer Express seven days a week from 9:00PM – 5:30 AM by calling (205) 934-8772.

Motorist Assistance Roadside Service (MARS)

Motorist Assistance Roadside Service (MARS) is a free service available to all visitors, students, and employees parking on campus who need help with a dead battery, flat tire, keys locked in a car, or empty gas tank. The service is available weekdays 7:30 AM - 10:00 PM, except University holidays. For assistance, call (205) 975-6277.

Student Health & Wellness Center

The Student Health & Wellness Center (SHWC) provides a comprehensive and integrated program of services to meet the medical, counseling and wellness needs of UAB's undergraduate, graduate and professional students. Creating a healthy campus and promoting student wellness are essential to supporting student learning and success. The SHWC is staffed by a group of committed medical providers, counselors, nurses, clinicians, wellness promotion professionals, and support staff who embrace the opportunity to meet your wellness, medical and counseling needs. Those services and resources are available in the state-of-the-art Student Health & Wellness Center located at 1714 9th Ave. South (LRC building), Birmingham, AL 35294-1270. Blazer Express has convenient drop-off and pick-up locations near the Student Health & Wellness Center. Patient and client parking is available at the South entrance to the building.

Health Services

Student Health Services offer comprehensive primary care services including acute and chronic care, women's health, a Registered Dietitian, mental health evaluation and treatment, immunizations, allergy immunotherapy, and treatment of minor emergencies. A Sports Medicine and Sexual Health Clinic are also available, as well as Certified Athletic Trainers located in the UAB Recreational Center. On-site lab and x-ray services are available. After-hour's consultation is provided through provider on call coverage, 24 hours a day/7 days a week/365 days a year. To ensure convenience and access, Student Health Services operates under an open-access appointment scheduling system. Go to www.uab.edu/students/health for more information or to schedule an appointment through our patient portal (https://studentwellness.uab.edu/login_directory.aspx). You may also call (205) 934-3580 to schedule an appointment or for general information. All currently enrolled UAB undergraduate and graduate students are eligible for services at a low to no out-of-pocket cost under the student benefit. Many carriers have agreed to waive copays for these services. A more complete listing of low to no out-of-pocket cost services and those services available, but at additional cost, can be accessed at <http://www.uab.edu/students/health/health-services>.

Counseling Services

Counseling Services assists in developing students' potential in physical, academic, spiritual, psychosocial, emotional, and vocational areas. Common presenting concerns include depression, anxiety, grief, relationship concerns, stress management, eating disorders, alcohol or substance abuse concerns, identity, conflict, gender transition and trauma. In addition to individual and couples counseling, services include wellness programs, group opportunities, and educational resources. Confidential counseling services are available to all currently enrolled UAB students at no cost. For more information or to schedule an appointment call (205) 934-5816 or visit <http://www.uab.edu/students/counseling/>.

Wellness Promotion

Wellness Promotion aims to provide students with programs, education, and resources toward personal wellness. Currently focusing on Interpersonal Violence Prevention and a Collegiate Recovery Community, Wellness Promotion is committed to equipping students with the information and resources needed to achieve healthy and balanced lives. Our Interpersonal Violence Prevention services include large scale events such as Take Back the Night, workshops, trainings, and internship and volunteer opportunities. Our Collegiate Recovery Community welcomes students and participants committed to long-term recovery, health, and wellness. Collegiate Recovery Community services include health and wellness events, sober social options, community involvement, and academic support. Wellness Promotion has also launched a peer education program, the Promoters of Wellness, which is a group of students who are nationally Certified Peer Educators that provide peer education through outreach and coaching services. A complete list of programs, services, and information to schedule a peer coaching session can be found at www.uab.edu/students/wellness or www.uab.edu/pow.

Student Insurance Coverage (Mandatory and Optional)

All full time students enrolled in a degree seeking program have a mandatory requirement to have major medical health insurance to ensure coverage for hospital, emergency room, specialty physician care and diagnostic testing. For more information on the mandatory insurance coverage requirement go to the SHWC website <https://www.uab.edu/students/health/insurance-waivers>.

Information regarding the Student Health Insurance Plan for full-time registered undergraduate students taking a minimum of **9 credit** hours and full-time graduate students taking a minimum of **6 credit** hours can be found at <https://www.uab.edu/students/health/insurance-waivers/insurance-requirement-overview>. All students enrolled in a **clinical program** that has a mandatory health insurance requirement will continue to have the same requirement regardless of the number of credit hour of enrollment.

To learn more about services available through the Student Health and Wellness Center, please visit any of the following website.

Student Health Services	http://www.uab.edu/students/health/
Student Counseling Services	http://www.uab.edu/students/counseling/
Wellness Promotion	http://www.uab.edu/students/wellness/

You can also contact us at one of the following phone numbers for assistance.

Call **Health Services** at (205) 934-3580 or schedule/cancel an appointment through the patient portal (https://studentwellness.uab.edu/login_directory.aspx).

Call **Counseling Services** at (205) 934-5816 for questions or to schedule an appointment. Appointments can be canceled through the patient portal (https://studentwellness.uab.edu/login_directory.aspx). Appointments cannot be scheduled through the patient portal.

Call **Wellness Promotion** at (205) 996-0834 for appointments. *Office hours vary for this department.*

Office Hours

Day	Hours
Monday - Friday	8:00 a.m.- 5:00 p.m.

UAB Testing Office

The UAB Testing Office provides testing services for UAB students, prospective students, and the community at large. The following tests and/or services are available:

- Admissions examinations for undergraduate and graduate programs
- American College Testing Program (ACT)
- Scholastic Aptitude Test (SAT)
- Miller Analogies Test (MAT) (acceptable to some graduate programs)
- College Level Examination Program (CLEP)—General and Subject Examinations
- Correspondence examination monitoring
- Professional licensing/certification/registration examinations

For further information on any of the above, contact the UAB Testing Office, 936 Building, 936 19th Street South, Telephone (205) 934-3704.

UAB Ticket Office

The UAB Ticket Office is an excellent source for discounted tickets to local and regional attractions along with on-campus events. Discounted tickets are available for AMC and Regal Cinemas, and to most major theme parks across the southeast, including Six Flags over Georgia, Alabama Splash Adventure and Dollywood. Discounts to the major aquariums in the area are also available including: Georgia Aquarium and Ripley's Aquarium of the Smokies. First-class postage stamps are also available for purchase (UAB internal requisitions are accepted).

For additional information, contact the UAB Ticket Office, located inside One Stop Student Services in Room 103 of the Hill Student Center, 1400 University Blvd., Birmingham, AL 35294-1150 Telephone: (205) 934-8001.

Visit our website <https://www.uab.edu/students/one-stop/ticket-office>

Veterans Services

UAB Veterans Services (UAB-VS) assists veterans, reservists, guardsmen, and dependents of disabled or deceased veterans to access their educational benefits. UAB-VS serves as a liaison between the student and the local and federal agencies, including the State Department of Education, Department of Defense, and the Department of Veterans Affairs. The office staff assist students in applying for educational benefits, securing tutorial assistance and obtaining veterans work-study positions. For further information, contact UAB Veterans

Services, Hill Student Center, Room 313, 1400 University Blvd.,
Telephone (205) 996-0404 or read about our programs and services at
www.uab.edu/students/veterans

VA Complaint Policy

Any VA Complaint against the school should be routed through the VA GI Bill Feedback System by going to the following link: <http://www.benefits.va.gov/GIBILL/Feedback.asp>. The VA will then follow up through the appropriate channels to investigate the complaint and resolve it satisfactorily.

Choice Act

The University of Alabama at Birmingham in the State of Alabama complies with section 702 - Tuition under Veteran's Access Choice and Accountability Act of 2015, providing for resident (in-state) tuition and fees for the following:

- A Veteran using educational assistance under either chapter 30 (Montgomery G.I. Bill – Active Duty Program) or chapter 33 (Post 9/11 G.I. Bill), of title 38, United States Code, who lives in the State of Alabama while attending a school located in the State of Alabama (regardless of his/her formal State of residence) and enrolls in the school within three years of discharge from a period of active duty service;
- Anyone using transferred Post – 9/11 G.I. Bill benefits (38 U.S.C. § 3319) who lives in the State of Alabama while attending a school located in the State of Alabama (regardless of his/her formal State of residence) and enrolls in the school within three years of the transferor's discharge from a period of active duty service;
- A spouse or child using benefits under the Marine Gunnery Sergeant John David Fry Scholarship (38 U.S.C. § 3311 (b) (9) who lives in the State of Alabama while attending a school located in the State of Alabama (regardless of his/her formal State of residence) and enrolls in the school within three years of the Service member's death in the line of duty following a period of active duty service.
- Anyone described above while he or she remains continuously enrolled (other than during regularly scheduled breaks between courses, semesters, or terms) at the same school. The person so described must have enrolled in the school prior to the expiration of the three-year period following discharge or death described above and must be using educational benefits under either chapter 30 or chapter 33, of title 38, United States code.

Veteran Student Resident Tuition Rates

The University of Alabama at Birmingham complies with veteran student regulations regarding tuition rates. The following individuals shall be charged a rate of tuition not to exceed the in-state rate for tuition and fees purposes:

- A Veteran using educational assistance under either chapter 30 (Montgomery G.I. Bill – Active Duty Program) or chapter 33 (Post-9/11 G.I. Bill), of title 38, United States Code, who lives in Alabama while attending a school located in Alabama (regardless of his/her formal State of residence) and enrolls in the school within three years of discharge or release from a period of active duty service of 90 days or more.
- Anyone using transferred Post-9/11 GI Bill benefits (38 U.S.C. § 3319) who lives in Alabama while attending a school located in Alabama (regardless of his/her formal State of residence) and enrolls in the school

within three years of the transferor's discharge or release from a period of active duty service of 90 days or more.

- Anyone described above while he or she remains continuously enrolled (other than during regularly scheduled breaks between courses, semesters, or terms) at the same school. The person so described must have enrolled in the school prior to the expiration of the three year period following discharge or release as described above and must be using educational benefits under either chapter 30 or chapter 33, of title 38, United States Code.
- Anyone using benefits under the Marine Gunnery Sergeant John David Fry Scholarship (38 U.S.C. § 3311(b)(9)) who lives in Alabama while attending a school located in Alabama (regardless of his/her formal State of residence).
- Anyone using transferred Post-9/11 G.I. Bill benefits (38 U.S.C. § 3319) who lives in Alabama while attending a school located in Alabama (regardless of his/her formal state of residence) and the transferor is a member of the uniformed service who is serving on active duty.
- Anyone using educational assistance under chapter 31, Vocational Rehabilitation/Employment (VR&E), also be charged the resident rate. Effective for courses and terms beginning **after March 1, 2019**, a public institution of higher learning must charge the resident rate to chapter 31 participants, as well as the other categories of individuals described above. When an institution charges these individuals more than the rate for resident students, VA is required to disapprove programs of education sponsored by VA.
- The policy shall be read to be amended as necessary to be compliant with the requirements of 38 U.S.C. 3679(c) as amended.

Collat School of Business

Dean: Dr. Eric P. Jack

The Collat School of Business offers the following graduate programs:

Degree Programs

- Master of Accounting (M.Ac.) (<http://www.uab.edu/business/degrees-certificates/master-of-accounting>)
- Master of Business Administration (M.B.A.) (<http://www.uab.edu/business/degrees-certificates/mba>)
- Master of Science in Management Information Systems (M.S.MIS) (<https://www.uab.edu/business/degrees-certificates>) - Online only

Certificate Programs

- Graduate Certificate in Social Media (<http://www.uab.edu/business/degrees-certificates/certificates/graduate-certificate-in-social-media>)
- Graduate Certificate in Technology Commercialization and Entrepreneurship (<http://www.uab.edu/business/degrees-certificates/certificates/graduate-certificate-in-technology-commercialization-and-entrepreneurship>)

Located in the heart of Alabama's business center, the UAB Collat School of Business offers an engaging learning environment with classrooms extending well beyond the walls of the UAB campus. Our unique location allows our faculty to integrate the practical experiences of the State's leading companies - from Fortune 500 corporations to entrepreneurial start-ups - into the programs we offer. Our students gain valuable,

real-world experience through a wide variety of internships and other opportunities in the business community.

The UAB Collat School of Business is accredited at the baccalaureate and master's level by AACSB International (<http://www.aacsb.edu>) and holds separate AACSB International accreditation of the undergraduate and master's programs in accounting. AACSB International is the largest and longest standing specialized accrediting agency for business and accounting programs in the world and represents the highest standard of achievement. UAB is among only 187 universities worldwide to achieve this seal of excellence in both business and accounting.

Certificate in Technology Commercialization and Entrepreneurship

Requirements	Hours
MBA 673 Planning and Pitching a New Business Concept	3
MBA 681 From Idea to IPO	3
MBA 683 Leading Innovation	3
MBA 691 MBA Independent Study	3
Total Hours	12

Certificate in Social Media

Requirements	Hours
MBA 614 Social Media and Virtual Communities in Business	3
MBA 616 Web Analytics	3
MBA 617 Data Science for Business	3
MBA 690 Directed Study	3
Total Hours	12

Accounting

Degree Offered: Master of Accounting

Degree Offered:	Master of Accounting
Director:	Dr. James Byrd
Phone:	(205) 934-8829
E-mail:	jimbyrd@uab.edu
Website:	www.uab.edu/mac

The Department of Accounting and Finance (ACFN) in the Collat School of Business is proud to offer a Master of Accounting (M.Ac.) program that holds a separate accreditation by the Association of Advance Collegiate Schools of Business (<http://www.aacsb.edu>) (AACSB), the highest honor a business school can achieve for its accounting programs.

Courses in the program are offered in the classroom primarily in an evening format, with some classes having an online option. A completely online program is also offered. More information on the online program can be found at businessdegrees.uab.edu.

High-achieving UAB accounting undergraduate students interested in pursuing the M.Ac. degree should consider the UAB Fast-Track Master of Accounting Program. Details are outlined below.

Admission

To obtain specific admissions requirements on how to apply to Graduate School, prospective students should visit this page:

<https://www.uab.edu/business/home/master-of-accounting/mac-admission>

The course requirements are listed under the M.Ac. tab, above.

Admission Requirements

1. A bachelor's degree from an institution that is AACSB or regionally accredited, received within the five-year period immediately preceding the desired term of enrollment (or a bachelor's degree in any discipline from a regionally accredited institution). Applicants who do not have an undergraduate accounting degree will be required to complete up to nine foundation courses in addition to the classes listed in the Program Description section and will be required to earn at least a B in the foundation courses numbered 300 and above. The foundation courses that must be completed are as follows:

- AC 200 Principles of Accounting I
- AC 201 Principles of Accounting II
- AC 300 Financial Accounting I
- AC 304 Accounting Information Systems
- AC 310 Financial Accounting II
- AC 401 Cost Accounting
- AC 402 Income Taxation I
- AC 423 External Auditing
- AC 430 Financial Accounting III

International Applicants' prerequisite requirements:

Please note that only courses covering US Generally Accepted Accounting Principles (GAAP), Generally Accepted Auditing Standards (GAAS), and U.S. Taxation will be accepted as meeting prerequisite requirements. Applicants without these courses will be required to complete the prerequisite courses at UAB (listed above).

2. A minimum score of 500 on the Graduate Management Admission Test (GMAT) administered by the Graduate Management Admission Council (GMAC, www.gmac.com) within the five-year period immediately preceding the desired term of enrollment. **The GMAT is waived for UAB accounting graduates and other students with an overall GPA of 3.4 or higher who take all of the foundation accounting courses at the undergraduate level at UAB.**

The GMAT requirement may also be waived by the M.Ac. Director if one of the following conditions apply:

- Applicant earned or will have earned an undergraduate accounting degree from an AACSB accredited institution and have achieved an overall GPA of 3.4 or higher.
- Applicant is completing the accounting bridge program at UAB.
- Applicant has an advanced degree in a business related field (e.g. MBA) from an AACSB accredited institution.
- Applicant has a terminal degree in another discipline.
- Applicant has a professional accounting certification (CPA or equivalent) which requires continuing professional education.

- **Applicant has significant (3-5 years) experience at the executive level.**

3. Satisfactory academic performance as measured by the undergraduate accounting grade point average (3.0 or higher). [Note: UAB undergraduates planning to pursue the M.Ac. degree should take **AC 423** as their accounting elective. If they do not take **AC 423**, they should plan to take **AC 523** as an elective in the M.Ac. program before taking **AC 606**.]

Application Deadlines*

*Deadlines for On-campus Master of Accounting Program:

Fall semester: August 1st
Spring semester: December 1st
Summer semester: May 1st

*Deadlines for the Online Master of Accounting Program:

Fall semester: August 1st
Spring semester: December 1st
Summer semester: May 1st

Required Documents

- **Application form** including 2 evaluation forms/letters of reference
- Current resume/CV detailing work experience
- Official transcripts from all colleges and universities attended (including dual enrollment and Community Colleges) sent directly by the Registrar or responsible head of the institution to the UAB Graduate School, LHL G03, 1720 2nd Ave. S., Birmingham, AL 35294-0013. Transcripts may also be sent electronically to gradschool@uab.edu.
- GMAT score* sent directly from the testing agency. Institution code: 1CB5S61
- 500 word Statement of Purpose

International Applicants

The following additional documents are required of international applicants:

A minimum composite score of 80 with a minimum score of 20 in each section of the Test of English as a Foreign Language (TOEFL) administered by the Educational Testing Service (ETS, www.toefl.org) within the five-year period immediately preceding the desired term of enrollment. We will also accept an IELTS score of 6.5 in lieu of the TOEFL.

Financial Affidavit of Support

Immigration documentation if currently residing in the United States, or proof of citizenship if currently a U.S. citizen.

A transcript evaluation report prepared by Educational Credential Evaluators, Inc. (ECE, www.ece.org) or World Education Services (WES, www.wes.org) (<http://www.wes.org>)

Full Time Student Enrollment Status

To be enrolled as a full-time graduate student, a student must register for at least 9 semester hours in the fall, spring, and summer semesters. <http://catalog.uab.edu/graduate/enrollment/>. If a student is enrolled in

courses offered in a 7-week format, those credit hours are applied toward the 9 semester hour requirement for the entire 14-week term.

Example: If a student is enrolled in 6 credit hours in the Spring A term (first 7 weeks) and 3 credit hours in the Spring B term (second 7 weeks), the university recognizes this student to be enrolled in 9 semester hours for the entire period (14-week term), and of full time status.

Fast-Track Master of Accounting Program

The Fast-track Master of Accounting (M.Ac.) Program is open to high-achieving undergraduate students pursuing a BS degree in accounting at UAB. Students admitted to the Fast-Track M.Ac. Program can take up to 12 hours of graduate courses at undergraduate tuition rates while they are completing their Bachelor's degree in accounting and have these graduate courses count toward the M.Ac. degree as long as A's or B's are earned in the courses. After earning the BS degree, students in the Fast-Track Program continue pursuing the M.Ac. degree as described above. Students in the Fast-Track M.Ac. program are not required to take the GMAT.

Fast-Track M.Ac. Program Admission Requirements

To be admitted to the Fast-Track Master of Accounting Program, students must:

- Have completed at least 15 hours of coursework at UAB.
- Be within 45 hours of graduation.
- Have a cumulative GPA of 3.4 or higher.
- Have completed the following courses with at least a "B" in each course and have at least a 3.3 average in the three courses:

AC 300 Financial Accounting I

AC 304 Accounting Information Systems

AC 310 Financial Accounting II

Students who think they are eligible for the Fast-Track M.Ac. Program should contact the M.Ac. Program Director at (<http://www.uab.edu/business/degrees-certificates/master-of-accounting/contact>) (<http://www.uab.edu/business/degrees-certificates/master-of-accounting/contact>) the Collat School of Business.

Early Acceptance Program

Early Acceptance Programs are designed for academically superior high-school students. Early Acceptance Programs allow high achieving students to be admitted to the Master of Accounting (M.Ac) program at the same time they are admitted to an undergraduate program.

Eligible students are required to maintain a 3.5 undergraduate GPA and complete the following pre-requisite courses: AC 200, AC 201, AC 300, AC 304, AC 310, AC 401, AC 402, AC 423, and AC 430.

Master of Accounting

Requirements	Hours
Required Courses (5)	
AC 580 Advanced Financial Accounting	3
AC 600 Financial Accounting Research	3

AC 606	Advanced Auditing and Attestation	3
AC 612	Governance and the Business Environment	3
AC 620	Tax Research	3
Elective Courses -Choose Five From:		15
AC 513	Internal Auditing ¹	
AC 514	Governmental and Not-for-Profit Accounting	
AC 523	External Auditing ¹	
AC 530	Financial Accounting III ¹	
AC 540	International Accounting: From a User's Perspective ¹	
AC 541	International Accounting: Study Abroad ¹	
AC 564	Accounting Internship ¹	
AC 573	Fraud Examination ¹	
AC 574	Forensic Accounting Practicum ¹	
AC 672	Advanced Information Technology Auditing	
IS 607	Introduction to Cyber Security	
IS 613	Information Security Management	
IS 620	Cyber Attacks and Threat Mitigation	
IS 621	Incident Response and Business Continuity	
IS 644	Digital Forensics	
LS 571	Legal Elements of Fraud Investigation	
LS 557	Business Law for Accountants	
MBA 613	Information Security Management	
MBA 614	Social Media and Virtual Communities in Business	
MBA 617	Data Science for Business	
Total Hours		30

¹ May be taken as graduate courses only if not previously taken as undergraduate level courses.

Uniform CPA Examination

Eligibility requirements for sitting for the Uniform CPA examination vary among the states. The state of Alabama, through its Accountancy Laws and the Alabama State Board of Public Accountancy (ASBPA, www.asbpa.alabama.gov/ (<http://www.asbpa.alabama.gov/>)), requires that applicants for the Uniform CPA Examination hold a baccalaureate degree from an accredited institution and possess a total of 120 semester hours of postsecondary education, including at least 24 semester hours of accounting in specified areas at the upper-division or graduate level. However, 150 hours will still be required for certification effective January 1, 2016. UAB students can meet these requirements in several ways:

1. By obtaining an undergraduate accounting degree (or its equivalent) and completing certain additional course work as specified under the Board's Accountancy Rules. Students interested in this option and those interested in this option who already hold degrees from other institutions should contact the accounting advisor in the Collat School of Business (<http://www.uab.edu/business/degrees-certificates/master-of-accounting/contact>), for specific guidance.
2. By obtaining a Master of Accounting degree. Those who hold a Master of Accounting degree from an accounting program accredited by AACSB International (as is UAB's) meet the academic requirements for taking the Uniform CPA Examination.
3. By obtaining a Master of Business Administration degree. Those who already hold an undergraduate accounting degree (or its equivalent) and who desire a graduate degree in business may establish their academic eligibility under the Board's Accountancy Rules by completing as part of their M.B.A. requirements certain

graduate accounting course work as determined by the Master of Accounting Program Director. Students interested in this option should first contact the Program Coordinator in the Graduate School of Management (<http://www.uab.edu/business/degrees-certificates/mba/contact>).

Other Professional Accounting Certifications

Other examinations leading to professional certification (CMA, CIA, CFE, CISA, etc.) generally do not require academic course work beyond the baccalaureate degree. Students interested in other accounting certifications should contact any member of the accounting faculty for further information.

Business Administration

Degree Offered:	Master of Business Administration (M.B.A.)
Director:	Kenneth L. Miller, MBA, EdD
Phone:	(205) 934-8855
E-mail:	klmiller@uab.edu
Website:	http://www.uab.edu/mba

Master of Business Administration

The UAB MBA is designed to provide competency in management and to acquaint the student with all aspects of business activity. In order to deal effectively with increasingly complex and ambiguous problems of business and organizations, managers require training in sophisticated analytical techniques, appreciation for the behavioral facets of management, as well as an ability to anticipate and adapt to changes in an industrial environment. The program stresses critical thinking and is decision oriented, focusing on key aspects of business administration.

The MBA program is suitable not only for students with baccalaureate degrees in business but also for those who have degrees in engineering, the sciences, or liberal arts.

UAB's MBA program offers an online MBA (http://businessdegrees.uab.edu/lpap-mba/?Access_Code=UAB-MBA-SEO2&utm_campaign=UAB-MBA-SEO2), and an on-campus program where students may take a mixture of face-to-face and online classes. Students may choose to follow either a one or two-year-plan of study to guarantee graduation with a specified time-frame, or pursue the degree at their own pace. Students have 5 years from term of entry to complete degree requirements.

Concentrations are available in finance, management information systems, marketing, and health services, and entrepreneurship. Dual Degree options available include MD/MBA, DMD/MBA, OD/MBA, MPH/MBA, MSHA/MBA, and ASEM/MBA and require applicants to apply and be accepted to both degree programs.

Quantitative Requirement

Applicants are expected to have completed a pre-calculus class with a grade of "C" or better within the last five years. If an applicant does not

meet this requirement, they may be admitted with the contingency of satisfying the requirement before their first term of enrollment.

More information about this can be found on the Collat School of Business website (<http://www.uab.edu/business/degrees-certificates/mba>).

Grade Point Average Policy

Any student who receives three "C"s or one "F" in any graduate level course while in the MBA Program will be dismissed from the program.

Admission

To obtain specific admissions requirements on how to apply to Graduate School, prospective students should visit this page:

<https://www.uab.edu/business/home/mba/mba-admission>

Application Deadlines

Fall semester - August 1st

Spring semester - December 1st

Summer semester- May 1st

**It is suggested that international applicants should apply at least 6 months in advance of the deadline in order to ensure processing of all Visa paperwork*

Required Documents

- **Application form** including 2 evaluation forms/letters of reference
- Current resume detailing work experience
- Official transcripts from all colleges and universities attended sent directly by the Registrar or responsible head of the institution to the UAB Graduate School, 1720 2nd Ave. S., LHL G03, Birmingham, AL 35294-0013.
- GMAT score* sent directly from the testing agency. (it is recommended that you repeat the GMAT if score is below 480)

GMAT requirement is waived for applicants holding terminal degrees. Applicants holding master degrees from regionally accredited institutions may be considered for a waiver as long as a comparable standardized test was required for entry into their program. In addition, the GMAT **may be waived for applicants with 3-5 years of demonstrated professional work experience and exceptional undergraduate academic performance. Professional experience is determined on a case-by-case basis using a resume, and any requested supporting documents, including undergraduate transcript. Our admissions committee evaluates an individual's accomplishments, roles, and responsibilities to determine the total number of years of profession experience. UAB considers the applicant's managerial responsibilities, role in setting direction and strategy, and his/her role in allocating resources. Normally, professional experience begins at the point of graduation; however, we may consider prior work experience based on type of experience. Students who wish to petition for a GMAT waiver based on professional work experience may submit a resume and unofficial transcript to **MBA Admissions** prior to applying.*

Additional Documents Required for International Applicants

- TOEFL IBT score of 80 or IELTS of 6.5 (international applicants only)
- General academic credentials evaluation (**ECE** or **WES** report) for international applicants required if transcripts are not in English

Non-Degree Seeking Admission

Candidates interested in non-degree seeking admission must have an undergraduate cumulative GPA of 3.0 or higher. Non-degree seeking students are limited to earning 12 hours credit in this status. The option to enter as non-degree seeking will be offered to candidates who miss the application deadline for applying to the MBA program, but who submit all materials prior to the beginning of the term and meet admission requirements, provided that there are seats available. We will require a resume, copies of transcripts, and GMAT scores along with the application. Permission of the MBA office is needed in order to register for classes as a non-degree seeking student.

Full Time Student Enrollment Status

To be enrolled as a full-time graduate student, a student must register for at least 9 semester hours in the fall, spring, and summer semesters. <http://catalog.uab.edu/graduate/enrollment/>. If a student is enrolled in courses offered in a 7-week format, those credit hours are applied toward the 9 semester hour requirement for the entire 14-week term.

Example: If a student is enrolled in 6 credit hours in the Spring A term (first 7 weeks) and 3 credit hours in the Spring B term (second 7 weeks), the university recognizes this student to be enrolled in 9 semester hours for the entire period (14-week term), and of full time status.

Contact the UAB Collat School of Business, Graduate School of Management (<https://www.uab.edu/business/degrees-certificates/mba>) with any questions concerning UAB's MBA program.

Collat School of Business Fast-Track MBA Program

The Fast-track Master of Business Administration (MBA) in the Collat School of Business is open to highly qualified undergraduate students. Students admitted to the fast-track can take up to 12 hours of graduate courses at undergraduate tuition rates and have these courses count towards the MBA degree. After completing the B.S. degree, students in the fast-track Master's will continue pursuing the MBA degree.

Admission Requirements:

- Be currently enrolled in one of the specified programs
- Have completed between 60 and 90 hours of undergraduate coursework
- Have an overall GPA of 3.5 or higher
- Completed application through the Graduate School TargetX system
- 2 letters of recommendation, one of which must be a letter of support from the applicant's program
- An interview with the admission committee

Admission Decisions are made by the admission committee and are based on the applicants total application packet.

Application Deadlines:

Follow the deadlines of the graduate school:

Fall: August 1

Spring: December 1

Summer: May 1

If you receive financial aid assistance or scholarships, please speak with the UAB Financial Aid Office at 934-8223 prior to submitting an application to discuss financial coverage of graduate coursework.

Early Acceptance

Early Acceptance Programs are designed for academically superior high-school students. Early Acceptance Programs allow high achieving students to be admitted to the Master of Business Administration (MBA) program at the same time they are admitted to an undergraduate program.

Eligible students are required to maintain a 3.5 undergraduate GPA prior to enrollment in the MBA program.

Requirements for the MBA Program:

- 36 semester hours
- 30 hours of required classes (MBA 601, 608, 619, 621, 631, 634, 637, 642, 651, 662)
- 6 hours of electives (9 hours of electives for concentration)

Master of Business Administration Degree Options

Master of Business Administration

Requirements	Hours
All Concentrations	
MBA 601 Accounting and Finance for Managers	3
MBA 608 Strategic Cost Analysis and Decision Making	3
MBA 619 Information Technology and Business Strategy	3
MBA 621 Topics in Corporate Finance	3
MBA 631 Management and Organizations	3
MBA 634 Strategic Management	3
MBA 637 Operations and Supply Chain Management	3
MBA 642 Economics for Managers	3
MBA 651 Marketing Strategy	3
MBA 662 Quantitative Analysis for Business Managers	3
Two Electives chosen from the following:	6
MBA Courses	
MBA 612 Corporate Governance	
MBA 613 Information Security Management	
MBA 614 Social Media and Virtual Communities in Business	
MBA 617 Data Science for Business	
MBA 618 Technology Based Project Management	
MBA 622 Portfolio Theory and Construction	
MBA 623 Mergers and Acquisitions	
MBA 624 Global Financial Management	
MBA 625 Real Estate Decision Analysis	
MBA 626 Credit Markets and Instruments	

MBA 627	Financial Risk Analysis and Management
MBA 628	Valuation Seminar
MBA 629	Treasury Management
MBA 635	International Business Policy
MBA 636	Human Resource Administration
MBA 638	Managerial Communication Skills
MBA 641	Macroeconomics Analysis and Decision Making
MBA 643	Healthcare Leadership Development
MBA 644	Transformational Leadership and Change
MBA 645	Game Theory in Industrial Organization
MBA 652	Sales Management
MBA 653	Marketing Analysis and Decision Making
MBA 654	International Marketing
MBA 658	Applied Marketing Research
MBA 671	Health Care Marketing
MBA 673	Planning and Pitching a New Business Concept
MBA 676	MBA Internship
MBA 681	From Idea to IPO
MBA 683	Leading Innovation
MBA 690	Directed Study
MBA 691	MBA Independent Study
Total Hours	
	36

Marketing Concentration

Requirements	Hours
MBA Required Courses	
MBA 601 Accounting and Finance for Managers	3
MBA 608 Strategic Cost Analysis and Decision Making	3
MBA 619 Information Technology and Business Strategy	3
MBA 621 Topics in Corporate Finance	3
MBA 631 Management and Organizations	3
MBA 634 Strategic Management	3
MBA 637 Operations and Supply Chain Management	3
MBA 642 Economics for Managers	3
MBA 651 Marketing Strategy	3
MBA 662 Quantitative Analysis for Business Managers	3
Choose Three From:	9
MBA 652 Sales Management	
MBA 653 Marketing Analysis and Decision Making	
MBA 654 International Marketing	
MBA 658 Applied Marketing Research	
MBA 671 Health Care Marketing	
Or other Marketing course approved by advisor	
Total Hours	39

Health Services Concentration

Requirements	Hours
MBA Required Courses	
MBA 601 Accounting and Finance for Managers	3
MBA 608 Strategic Cost Analysis and Decision Making	3
MBA 619 Information Technology and Business Strategy	3
MBA 621 Topics in Corporate Finance	3
MBA 631 Management and Organizations	3
MBA 634 Strategic Management	3
MBA 637 Operations and Supply Chain Management	3
MBA 642 Economics for Managers	3

MBA 651	Marketing Strategy	3
MBA 662	Quantitative Analysis for Business Managers	3
Health Services Concentration		
MBA 671	Health Care Marketing	3
Two MBA or HCO electives at the 600 level or other health-related courses approved by advisor		6
Total Hours		39

Finance Concentration

Requirements	Hours	
MBA Required Courses		
MBA 601	Accounting and Finance for Managers	3
MBA 608	Strategic Cost Analysis and Decision Making	3
MBA 619	Information Technology and Business Strategy	3
MBA 621	Topics in Corporate Finance	3
MBA 631	Management and Organizations	3
MBA 634	Strategic Management	3
MBA 637	Operations and Supply Chain Management	3
MBA 642	Economics for Managers	3
MBA 651	Marketing Strategy	3
MBA 662	Quantitative Analysis for Business Managers	3
Choose Three From:		9
MBA 622	Portfolio Theory and Construction	
MBA 624	Global Financial Management	
MBA 625	Real Estate Decision Analysis	
MBA 626	Credit Markets and Instruments	
MBA 627	Financial Risk Analysis and Management	
MBA 629	Treasury Management	
Or other Finance course approved by advisor		
Total Hours		39

Management Information Systems Concentration

Requirements	Hours	
MBA Required Courses		
MBA 601	Accounting and Finance for Managers	3
MBA 608	Strategic Cost Analysis and Decision Making	3
MBA 619	Information Technology and Business Strategy	3
MBA 621	Topics in Corporate Finance	3
MBA 631	Management and Organizations	3
MBA 634	Strategic Management	3
MBA 637	Operations and Supply Chain Management	3
MBA 642	Economics for Managers	3
MBA 651	Marketing Strategy	3
MBA 662	Quantitative Analysis for Business Managers	3
Choose Three From:		9
MBA 613	Information Security Management	
MBA 614	Social Media and Virtual Communities in Business	
MBA 616	Web Analytics	
MBA 617	Data Science for Business	
MBA 618	Technology Based Project Management	
Total Hours		39

Entrepreneurship Concentration

Requirements	Hours	
MBA Required Courses		
MBA 601	Accounting and Finance for Managers	3
MBA 608	Strategic Cost Analysis and Decision Making	3
MBA 619	Information Technology and Business Strategy	3
MBA 621	Topics in Corporate Finance	3
MBA 631	Management and Organizations	3
MBA 634	Strategic Management	3
MBA 637	Operations and Supply Chain Management	3
MBA 642	Economics for Managers	3
MBA 651	Marketing Strategy	3
MBA 662	Quantitative Analysis for Business Managers	3
Choose Three From:		9
MBA 673	Planning and Pitching a New Business Concept	
MBA 681	From Idea to IPO	
MBA 683	Leading Innovation	
MBA 691	MBA Independent Study	
Total Hours		39

Dual Degree Option for M.B.A./D.M.D., M.B.A./M.P.H., M.B.A./O.D.

Requirements	Hours	
MBA 601	Accounting and Finance for Managers	3
MBA 631	Management and Organizations	3
MBA 642	Economics for Managers	3
MBA 662	Quantitative Analysis for Business Managers	3
MBA 608	Strategic Cost Analysis and Decision Making	3
MBA 619	Information Technology and Business Strategy	3
MBA 621	Topics in Corporate Finance	3
MBA 637	Operations and Supply Chain Management	3
MBA 651	Marketing Strategy	3
MBA 634	Strategic Management	3
Total Hours		30

Dual Degree Option for M.B.A./M.S.H.A.

Requirements	Hours	
MBA 601	Accounting and Finance for Managers	3
MBA 631	Management and Organizations	3
MBA 642	Economics for Managers	3
MBA 662	Quantitative Analysis for Business Managers	3
MBA 608	Strategic Cost Analysis and Decision Making	3
MBA 629	Treasury Management	3
or MBA 621	Topics in Corporate Finance	
MBA 637	Operations and Supply Chain Management	3
MBA 651	Marketing Strategy	3
MBA 634	Strategic Management	3
MBA 500/600 level elective		3
Total Hours		30

Dual Degree Option for M.B.A./M.D.

Requirements	Hours	
MBA 601	Accounting and Finance for Managers	3
MBA 631	Management and Organizations	3
MBA 642	Economics for Managers	3

MBA 690	Directed Study (Healthcare Innovation)	3
MBA 608	Strategic Cost Analysis and Decision Making	3
MBA 619	Information Technology and Business Strategy	3
MBA 621	Topics in Corporate Finance	3
MBA 637	Operations and Supply Chain Management	3
MBA 651	Marketing Strategy	3
MBA 634	Strategic Management	3
Total Hours		30

MBA Degree Requirements

Total Hours for Degree: 36 (12 courses)

Requirements	Hours	
Tools and Perspectives on Business (12 Hours)		
MBA 601	Accounting and Finance for Managers	3
MBA 631	Management and Organizations	3
MBA 642	Economics for Managers	3
MBA 662	Quantitative Analysis for Business Managers	3
Functional Core (15 Hours)		
MBA 608	Strategic Cost Analysis and Decision Making	3
MBA 619	Information Technology and Business Strategy	3
MBA 621	Topics in Corporate Finance	3
MBA 637	Operations and Supply Chain Management	3
MBA 651	Marketing Strategy	3
Capstone (3 Hours)		
MBA 634	Strategic Management	3
Electives (6 Hours)		6
Total Hours		36

Degree with Concentration requires additional approved elective in selected area of study: 39 Total Hours (13 Courses). Concentrations are offered in Finance, Health Services, Information Systems, and Marketing.

MBA Plans of Study (Full Time 1-Year-Plan and Part time 2-Year-Plan) (<https://www.uab.edu/business/component/content/article/92-degrees-certificates-mba/master-of-business-administration/945-mba-plans-of-study>)

Management Information Systems

Degree Offered:	Master of Science in Management Information Systems (MS MIS)
Director:	Paul M. Di Gangi, Ph.D.
Phone:	(205) 490-8324
Email:	pdigangi@uab.edu
Website:	http://misdegree.businessdegrees.uab.edu/lp-mis-short/

The UAB Collat School of Business, Master of Science in Management Information Systems (MS MIS) program focuses on the business side of information systems and how to strategically position technology to maximize value for an organization. This program provides the broad perspective needed to advance in the information systems management field, and allow students to tailor their education based on

specific career goals by focusing in one of two areas: **Cyber Security Management or IT Management**. UAB's emphasis is on the managerial aspects of information systems, and although the program does provide opportunities for skill development in the latest technologies, the goal of the program is to help those currently working in information systems related fields move into managerial positions by improving understanding of how to use the latest information technologies to benefit organizational stakeholders, such as managers, organizations, employees, customers and partners.

The Management of Information Systems field is growing at an exponential rate as organizations struggle to stay current with new and emerging technologies, such as mobile applications, social media, and business analytics. Professionals are needed that can help organizations understand the business potential of these new technologies, how to develop new applications to meet changing market dynamics, and how to secure these systems from threats. Students graduating from this program are prepared to succeed in an exciting and dynamic career field combining a solid technical information system foundation with business skills so they can immediately contribute to solving business problems, and can drill down into specific fields, such as IT management, web and mobile development or information security.

Program Details

The MS MIS program is taught completely online. Most students can complete degree requirements within 1.6 years (1 year for full-time students). Concentrations are available in Cyber Security Management and IT Management. Each concentration consists of twelve semester hours. The Collat School of Business is accredited by AACSB—The Association to Advance Collegiate Schools of Business. (<http://www.aacsb.edu/accreditation/accredited-members>)

Master of Science in Management Information Systems -

Concentration in Cyber Security Management

Requirements	Hours	
Core Curriculum		
IS 607	Introduction to Cyber Security ¹	3
IS 611	Information Technology and Business Strategy	3
IS 612	IT Governance and Management ²	3
IS 615	Soc Media/Virtual Communities	3
IS 617	Data Science for Business	3
IS 618	IT Project Management ³	3
Concentration Course Requirements		
IS 620	Cyber Attacks and Threat Mitigation	3
IS 621	Incident Response and Business Continuity	3
IS 613	Information Security Management	3
IS 644	Digital Forensics	3
Total Hours		30

Concentration in Information Technology Management

Requirements	Hours	
Core Curriculum		
IS 607	Introduction to Cyber Security ¹	3
IS 611	Information Technology and Business Strategy	3
IS 612	IT Governance and Management ²	3

IS 615	Soc Media/Virtual Communities	3
IS 617	Data Science for Business	3
IS 618	IT Project Management ³	3
Concentration Course Requirements		
IS 640	Technology Planning and Capital Budgeting	3
IS 641	Leadership in IT	3
IS 616	Web Analytics	3
IS 621	Incident Response and Business Continuity	3
Total Hours		30

Students have a maximum of 3 years to complete degree requirements. Certain professional certifications are eligible for transfer credit upon Program Director approval. Students must be in current good standing and provide proof of completed continuing education requirements if certification is scheduled to expire with the calendar year. No more than 6 semester hours may be credited using certifications.

- 1 Security+ earned through CompTIA, or Certified Information Systems Security Professional (CISSP) earned through ISC2 may satisfy this course requirement.
- 2 Certified Information Systems Auditor (CISA) earned through ISACA may satisfy this course requirement.
- 3 Project Management Professional earned through PMI may satisfy this course requirement.

College of Arts and Sciences

Dean: Dr. Robert E. Palazzo

The College of Arts and Sciences includes departments in the arts, humanities, mathematics, social, behavioral, natural and physical sciences.

The College offers 15 degree programs leading to a master's degree and 7 programs leading to a doctoral degree. Traditional programs as well as interdisciplinary and graduate level certificate programs help to keep the College on the leading edge of progressive academic offerings. Situated at the center of an internationally renowned research university and academic medical center, students and faculty in the College of Arts and Sciences have unparalleled opportunities to be part of the innovative and ground-breaking research and creative work that is the signature of UAB.

We offer a student-centered, experiential curriculum designed to prepare students not only for the careers and challenges of the 21st century, but also to be the leaders in the global marketplace of ideas. Students within arts and sciences programs develop the ability to understand diverse perspectives making them better prepared to work creatively and productively with others to solve the most important problems of our times.

Interdisciplinary Programs

Interdisciplinary programs of study are increasingly popular as we realize the benefits of multiple perspectives and methods to advance understanding and improve solutions. Students in the College of Arts and Sciences may pursue formal interdisciplinary programs such as the Master's degree in Computer Forensics and Security Management, which involves faculty from the departments of Computer & Information Sciences and Justice Sciences (College of Arts and Sciences), and the

Departments of Management, Information Systems Quantitative Methods, and Accounting & Finance (School of Business).

Cyber Security

Program Contact Information

Dr. Nitesh Saxena
 Department of Computer Science
 1300 University Blvd.
 CH 133
 Birmingham, AL 35294-1170
saxena@uab.edu

Program Information

The Master of Science in Cyber Security (formerly known as Computer Forensics and Security Management) (MSSec) is an interdisciplinary program that prepares graduates for a professional career in the field of cyber security by developing in them the necessary skills crucial for success. The program also provides current practitioners the opportunity to obtain advanced-level training to facilitate career advancement. The program includes a set of core, required courses and the opportunity to select from a default option or two tracks of specialization.

Admission Requirements

Students accepted into the program will have earned a bachelor's degree from an accredited college or university or recognized university from abroad. Most of these students will have earned a cumulative undergraduate grade point average (GPA) of 3.0 or higher. Applicants whose native language is not English are required to take either the TOEFL or the IELTS and score 80 or higher on the TOEFL or 6.5 or higher on the IELTS. **The GRE is NOT required.**

Students seeking admission to the program who lack a background in computer science but meet the remaining minimum requirements for admission *may* be admitted contingent on them completing a set of prerequisite courses (or their equivalents) that may include the following (the program directors may require some courses in addition to the ones listed below depending upon the students' specific background):

Requirements	Hours
CS 103 Introduction to Computer Science in Python & 103L and Introduction to Computer Science in Python Lab	4
IS 204 Introduction to Business Programming	3

Master of Science in Cyber Security

A total of 30 semester hours are required for the degree, organized into: (a) 15 hours of required core courses, (b) 9-12 hours of course work following a standard option or one of the two tracks of specialization, and (c) 3-6 hours of electives from an approved list of relevant courses. The two specialization tracks are Cybercrime Investigations and IT Audit/Fraud Examination.

Requirements	Hours
Core courses	
CS 534 Networking	3
CS 534L Networking Laboratory	0
CS 623 Network Security	3

CS 623L	Network Security Laboratory	0
CS 636	Computer Security	3
CS 689	Cyber Risk Management	3
or IS 613	Information Security Management	
CJ 502	Computer Forensics	3
Total Hours		15

In addition to completing the five (5) core courses worth 15 credit hours, students by default may choose three courses worth nine credit hours from the following list of approved courses in cyber security, followed by two additional computer science electives worth six credit hours at the 500+ level or 600+ level¹. Alternatively, students may choose one of the two tracks of specialization (Cybercrime Investigations and IT Audit/Fraud Examination, both worth 15 credit hours) to fulfill the requirements of the Master's degree.

Approved Cyber Security Centric Courses

Requirements	Hours
Choose any three courses	9
CS 645 Modern Cryptography	
CS 646 Blockchain and Cryptocurrency	
CS 657 Penetration Testing and Vulnerability Assessment	
CS 643 Cloud Security	
Total Hours	9

Cybercrime Investigations Track

Requirements	Hours
CS 519 Investigating Online Crimes	3
CS 537 Digital Media Forensics	3
CJ 675 Law Evidence and Procedure	3
CJ 696 Graduate Internship in Criminal Justice	3
Choose one (1) CS elective at the 500+ level¹	3
Total Hours	15

IT Audit/Fraud Examination Track

Requirements	Hours
AC 572 Information Technology Auditing	
AC 573 Fraud Examination	3
LS 571 Legal Elements of Fraud Investigation	3
Select two (2) courses from the IS courses listed below or approved CS courses¹	6
IS 622 CISSP I	
IS 623 CISSP II	
Total Hours	12

¹ **CS 500-level courses:** CS 501 and CS 501L, CS 510, CS 520 and CS 520L, CS 533 and CS 533L, CS 555, CS 591, CS 592, CS 597, CS 598

CS 600-level courses: CS 600, CS 601, CS 602, CS 610, CS 614, CS 616, CS 617, CS 620, CS 621 and CS 621L, CS 622, CS 624, CS 625, CS 626, CS 629, CS 630, CS 631, CS 632, CS 633, CS 634, CS 635, CS 639, CS 640, CS 641, CS 642, CS 646, CS 647, CS 649, CS 651, CS 652, CS 653, CS 654, CS 656, CS 659, CS 660, CS 662, CS 663, CS 665, CS 667, CS 669, CS 670, CS 671, CS 672, CS 673, CS 674, CS 675, CS 676, CS 680, CS 682, CS 683, CS 684, CS 690, CS 691, CS 692, CS 697, CS 698, CS 699

Anthropology

The Anthropology of Peace and Human Rights Master's Program

Anthropology is the science committed to the comparative and historical study of humankind, looking across different cultural circumstances and into the depths of prehistory. Anthropology literally means the study of humanity and considers the interplay of biological and cultural factors. The Master's program at UAB introduces an innovative focus on peace, justice, human rights, and ecology, as considered from anthropological perspectives. The Anthropology of Peace and Human Rights encompasses knowledge and methodologies from social cultural anthropology, archaeology, and biological anthropology to explore these topics. Students are welcome to approach the Anthropology of Peace and Human Rights from the perspectives of these sub-disciplines. The program focuses on peace justice, sustainability, and human rights at different social levels ranging from individuals, families, communities, cultures, nations, to the international. Students consider how factors such as ecological sustainability, human security, democracy, justice, non-violence, conflict resolution, and human rights are interconnected and related to peace.

Anthropology offers a unique set of perspectives. It can contribute to understanding cultural diversity; reflection on cultural relativism; appreciation of multiculturalism; understanding of effective communication in cross-cultural interactions; knowledge regarding cultural variation in norms, values, beliefs, and culturally-embedded conflict resolution styles; and the development of respect for cultural differences and human rights. This unique knowledge-base and set of perspectives is at the heart of the Master's program's focus on peace and human rights, which contributes to the explicitly stated goals of the UAB College of Arts and Sciences to promote diversity and facilitate students meeting the challenges and opportunities posed by globalization. In accordance with the Strategic Plan of the UAB College of Arts and Sciences, the Anthropology of Peace and Human Rights seeks to "enhance students' global perspective" in an era where "globalization is diminishing the importance of national and political boundaries while increasing the opportunity for international harmony."

The history of the Civil Rights Movement in Birmingham, Alabama constitutes one reason why the development of peace and human rights at UAB is historically and culturally important. The Anthropology of Peace and Human Rights, with its educational purpose, can be seen as the continuation of positive developments made in social justice and civil rights in Birmingham and Alabama over the last half century. The Master's program complements the educational and outreach activities of the recently established UAB Institute for Human Rights (<http://www.uab.edu/cas/humanrights>) (IHR). The IHR and the Department of Anthropology work together on a variety of local and global projects. The Department of Anthropology also hosts the Peaceful Societies (<https://cas.uab.edu/peacefulsocieties>) website, which provides a valuable educational resource on peaceful societies from around the globe. Anthropology faculty (<https://www.uab.edu/cas/anthropology/people/faculty-directory>) are involved in a variety of research, educational, and service activities, and work regularly with students to help them pursue their academic interests and to develop the skills needed locally and globally in the 21st century.

Nationwide, the graduates of peace and conflict studies programs have found positions in human and social services, community mediation organizations, in multicultural education, at legal centers, as U.S.

Congressional staffers, at NGOs and human rights organizations, and at the United Nations. In addition to preparing students for such career paths, the Master's in the Anthropology of Peace and Human Rights aims also to ready students for doctoral studies in peace and human rights areas.

Educational Outcomes

Upon completion of the Master's program in the Anthropology of Peace and Human Rights, students will gain relevant and marketable skills and knowledge. Learning outcomes include, for example, for students to be able to:

- 1) Thoroughly integrate and critically analyze how factors such as ecological sustainability, human security, democracy, justice, peace, and human rights are interconnected constructs related to the unifying construct positive peace.
- 2) Discuss and explain the kinds of human rights violations that are currently taking place (e.g., against migrants, indigenous peoples, women, and children) and analyze and critically evaluate the types of efforts that are ongoing to enhance and safeguard human rights worldwide.
- 3) Explain how cultural relativism relates (positively and negatively) to the application of human rights standards internationally, and students will develop culturally relativistic communication skills that are respectful of and open to cultural differences and different points of view.
- 4) Draw from multiple anthropologically relevant models and perspectives (e.g., models of socialization-enculturation, third-party mediation, conflict transformation, nonviolent practice, equity, social reciprocity, peace systems, and so forth) in order to apply anthropological and related theories to problems in areas such as conflict resolution, peace education, social justice, and human rights protection.
- 5) Apply conflict resolution principles and draw upon communication and problem-solving skills to facilitate both the analysis of conflict situations and the development of policy recommendations for conflict resolution at various social levels, from the local to the global.

Program Options: Plan I (Thesis) and Plan II (Exam)

The Anthropology of Peace and Human Rights is a two-year Master's program that requires a total of 36 semester hours. In consultation with an advisor, a student during the first year will make the choice to follow either the Plan I (thesis) or Plan II (no thesis) to complete the master's degree. All students, whether following the Plan I or Plan II path, will take the five required courses, which total to 15 semester hours (see below). Students following Plan I take 5 elective courses (15 semester hours), plus enroll in 6 semester hours of thesis credit. Students opting for Plan II, take 7 elective courses (21 semester hours), and at the end of their studies must pass a final exam that reflects the comprehensive activities of the student in the program, as prescribed in the UAB Graduate Student Handbook.

Required Curriculum

Five required courses are ANTH 504, ANTH 505, ANTH 508, ANTH 509, & ANTH 652. For all students, two of the five required courses are foundational (to be taken in the first year of study). These two courses, "Human Rights, Peace, and Justice" and "Anthropology of Peace, Justice, and Ecology" (the latter being team taught), are designed to provide an introduction to the topic of the Master's program. A required

methods course, "Methods in Peace and Human Rights Research and Practice," can be taken either in the first or second year, and alternates on the calendar with the required "Conflict Resolution in Cross-Cultural Perspective." (In other words, these two courses will be offered on alternating years). The fifth required course, "Sustainable Peace Seminar," is an advanced seminar, to be taken in the second year of study.

All procedures and requirements listed in the UAB Graduate Student Handbook apply to this program. Whereas the program offers a diverse set of electives, a community internship also may be substituted for one 3 credit elective course. Additionally, recognizing both that the particular interests of students will vary and that certain relevant graduate level courses are offered in other UAB schools and College of Arts and Sciences departments or at the UA Anthropology Department, students will have the option of taking a maximum of two electives (6 credits) from other departments (e.g., Biology, History, or Justice Science). Finally, students can pursue their interests by requesting to work on a Special Problems (independent study) course under the guidance of a professor within the Anthropology Department (e.g., ANTH 587, ANTH 588, or ANTH 686).

Advising

Upon entry into the Master's program, each student will be assigned an academic advisor from among the Anthropology faculty. The student and advisor will confer and develop a study plan that is in accordance with the student's interests and the requirements of the Master's program. Early on, students can consult with their advisors about whether to pursue either Plan I (thesis) or Plan II (exam). Advisors will be assigned to match as closely as feasible a student's areas of interest and also in such a way as to distribute the advising duties across the Anthropology faculty. Near the end of the first year, students can request to change advisors if they think a particular faculty member's area of expertise aligns with their thesis topic.

Student Support

Several Graduate Teaching Assistantships and Graduate Research Assistantships are awarded by the Department of Anthropology each semester on a competitive basis. Additionally, some graduate students are employed part-time as assistants on research projects. International students should consult with the Graduate Director about possible tuition reductions. More information can be found here (<http://www.uab.edu/cas/anthropology/graduate-program/financial-aid>).

Admissions

The deadline for applications for the fall semester will be early in the spring semester, and the deadline for applications for the spring semester will be in the fall. Please check with the Graduate School or the Graduate Director for exact deadlines. All of the minimum criteria for admission set by the UAB Graduate School must be met, and the Department of Anthropology has some additional admission requirements.

For details on the Graduate School admission requirements, see the Graduate School website. A brief summary of the requirements is as follows:

- An online application and payment of an application fee.
- A personal statement as part of the application that specifies your academic interests, career goals, and relevant background experience, in this case, in relation the Anthropology of Peace and Human Rights program to which you are applying. Include in your personal statement

any peace and human rights volunteer work or work experience, and any other relevant information as to why you wish to study in this program.

- A recognized baccalaureate, graduate, or professional degree.
- A 3.0 (B average) grade point average over the last two years of study.
- Previous studies that are acceptable in quality and content to the program (see Departmental Requirement below also).
- One official transcript from each postsecondary school attended.
- If currently enrolled at another institution, applicants must provide both provisional and final transcripts, the latter showing the completion of a degree prior to enrollment in UAB.
- For international students whose first language is not English, the recommended scores specified by the Graduate School on either the TOEFL or the IELTS exam.

The following are additional admission requirements of the Department of Anthropology:

- At least two letters of recommendation.
- Official scores on the Graduate Record Exam (GRE), taken within the last five years.
- Applicants who have not 1) majored in anthropology, 2) minored in anthropology, or 3) taken at least five courses in anthropology, with grades of C or, must pass an online “bridge course” that provides a background in anthropology. This bridge course is to be completed within the first year of Master’s study.

Further Information

For more information about the faculty, researchers, direction, and focus of the department, please see our Department of Anthropology web pages (<http://www.uab.edu/cas/anthropology>).

Master of Arts in Anthropology of Peace and Human Rights

The M.A. degree requires a minimum of 36 credit hours for the Anthropology of Peace and Human Rights program.

Plan I

Requirements	Hours
ANTH 504 Human Rights, Peace, and Justice	3
ANTH 505 Anthropology of Peace, Justice, and Ecology	3
ANTH 508 Conflict Resolution in Cross-Cultural Perspective	3
ANTH 509 Methods in Peace & Human Rights Research & Practice	3
ANTH 652 Sustainable Peace Seminar	3
Elective Courses ¹	15
ANTH 512 Peaceful Societies and Peace Systems	
ANTH 513 Peace & Environmental Sustainability	
ANTH 514 Prehistory of War and Peace in North America	
ANTH 515 Peace through Global Governance	
ANTH 516 War & Peace in Ancient Mesopotamia	
ANTH 517 Peace Ethology	
ANTH 518 The Power of Nonviolence	
ANTH 519 Religion, Reconciliation, & Forgiveness	
ANTH 520 Cultural Transformation: Our History, Our Future	

ANTH 521	Technological Monitoring of Human Rights and Conflicts	
ANTH 532	Villains, Victims, & Vigilantes	
ANTH 587	Special Problems in Peace Research	
ANTH 588	Special Problems in Human Rights	
ANTH 601	Forensic Anthropology	
ANTH 633	Anthropology of Development	
ANTH 636	Community Internship	
ANTH 641	Anthropology of Human Rights	
ANTH 645	Medical Anthropology & Health Disparities	
ANTH 650	Nationalism Ethnicity and Violence	
ANTH 654	Biological Anthropology and Contemporary Issues	
ANTH 660	Ecological Anthropology	
ANTH 686	Special Problems in Applied Anthropology	
ANTH 695	Special Problems in Multimedia Anthropology	
ANTH 697	Special Topics in Anthropology ²	
Thesis		6
ANTH 699	Thesis Research	

Plan II

Requirements	Hours
ANTH 504 Human Rights, Peace, and Justice	3
ANTH 505 Anthropology of Peace, Justice, and Ecology	3
ANTH 508 Conflict Resolution in Cross-Cultural Perspective	3
ANTH 509 Methods in Peace & Human Rights Research & Practice	3
ANTH 652 Sustainable Peace Seminar	3
Anthropology Electives ¹	21
ANTH 512 Peaceful Societies and Peace Systems	
ANTH 513 Peace & Environmental Sustainability	
ANTH 514 Prehistory of War and Peace in North America	
ANTH 515 Peace through Global Governance	
ANTH 516 War & Peace in Ancient Mesopotamia	
ANTH 517 Peace Ethology	
ANTH 518 The Power of Nonviolence	
ANTH 519 Religion, Reconciliation, & Forgiveness	
ANTH 520 Cultural Transformation: Our History, Our Future	
ANTH 521 Technological Monitoring of Human Rights and Conflicts	
ANTH 532 Villains, Victims, & Vigilantes	
ANTH 587 Special Problems in Peace Research	
ANTH 588 Special Problems in Human Rights	
ANTH 601 Forensic Anthropology	
ANTH 633 Anthropology of Development	
ANTH 636 Community Internship	
ANTH 641 Anthropology of Human Rights	
ANTH 645 Medical Anthropology & Health Disparities	
ANTH 650 Nationalism Ethnicity and Violence	
ANTH 654 Biological Anthropology and Contemporary Issues	
ANTH 660 Ecological Anthropology	
ANTH 686 Special Problems in Applied Anthropology	
ANTH 695 Special Problems in Multimedia Anthropology	
ANTH 697 Special Topics in Anthropology	

Comprehensive Exam

Total Hours 36

¹ Additional elective options can be approved by the program director.

² Approval of special topics courses is required regarding their topical relevance to the program.

Art History

To obtain specific admissions requirements on how to apply to Graduate School, prospective students should visit this page: <https://www.uab.edu/cas/art/areas-of-study/ma-art-history>

Degree Offered:	M.A.*
Director:	Cathleen Cummings, Ph.D.
Phone:	(205) 934-7909
E-mail:	cathleen@uab.edu
Website:	www.uab.edu/art

* A program leading to the Master of Arts degree in art history is offered jointly by UAB and the University of Alabama (Tuscaloosa). The MA degree in Art History prepares students for further academic study at the doctoral level or for professional careers in museums, galleries, and other arts-related fields.

Admission Requirements

For admission in good standing, applicants to UAB must meet Graduate School requirements for scholarship and GRE General Test scores. A Minimum GPA of 3.0 (B) is required for acceptance into the program. The applicant should have completed 24 semester hours in art history and related areas such as history, aesthetics, archaeology, and anthropology, although this requirement may be reduced depending on the applicant's background and preparation. It is desirable that an applicant be able to read a foreign language related to the proposed field of study. Students may apply for admission for either the fall or spring semester.

Degree Requirements

Plan I: Thesis Track

Courses

Plan I students must complete 24 semester hours in art history.* Students must take courses in **two** of the following **six** general areas: Medieval Art, Early Modern Art (ca. 1400-1700), Eighteenth-Century/ Nineteenth Century Art, Twentieth-Century/Contemporary Art, South Asian Art, and East Asian Art. It is recommended that students take at least one course outside of these two fields for breadth of knowledge. A maximum of 3 semester hours of independent study will be permitted. Each student must take ARH 680 Methods and Approaches to the History of Art, which should be taken in the first semester of enrollment in the M.A. program. Each student must take at least 6 semester hours of coursework at the University of Alabama (Tuscaloosa).

* Note: A maximum of 6 of the required hours in art history may be taken in a related field with the concurrence of the joint faculty.

Foreign Language Requirement

By the completion of 15 hours of coursework towards the M.A., students should have met the language requirement of a reading knowledge of one foreign language relevant to the student's area of study, approved by the Graduate Program Director and Faculty Advisor. Students may demonstrate language competency by passing a translation exam administered by the Department of Foreign Languages (French or German) or by passing a 200-level course (i.e. FR 201 or FR 202 or GN 201 or GN 202). For other languages, students must consult with the Graduate Program Director and Faculty Advisor and arrange an appropriate translation exam or course to fulfill the language requirement.

Students may not sit for the M.A. exam until the language requirement is completed. A reading knowledge of a second foreign language is strongly recommended. Students may not sit for the comprehensive exam until the language requirement is completed.

Comprehensive Examination

For admission to candidacy, the student must pass a comprehensive examination prepared and graded by the joint art history faculty. Written examinations are scheduled twice a year, at the end of fall and spring semesters.

Thesis

The student must present a thesis under the direction of a member of the joint art history faculty. Each student will register for ARH 699 for 6 semester hours of credit. Students must be registered for at least 3 hours of thesis credit (ARH 699) in the semester of graduation.

Plan II: Non-Thesis Track

Courses

Plan II students must complete 24 semester hours in art history.* Students must take courses in **two** of the following **six** general areas: Medieval Art, Early Modern Art (ca. 1400-1700), Eighteenth-Century/ Nineteenth Century Art, Twentieth-Century/Contemporary Art, South Asian Art, and East Asian Art. It is recommended that students take at least one course outside of these two fields for breadth of knowledge. A maximum of 3 semester hours of independent study will be permitted. Each student must take ARH 680 Methods and Approaches to the History of Art, which should be taken in the first semester of enrollment in the M.A. program. Each student must take at least 6 semester hours of coursework at the University of Alabama (Tuscaloosa).

It is recommended that Plan II students take ARH 585 Special Topics: Museum Studies as one of their art history electives in the first 24 hours of coursework.

* Note: A maximum of 6 of the required hours in art history may be taken in a related field with the concurrence of the joint faculty.

Foreign Language Requirement

By the completion of 15 hours of coursework towards the M.A., students should have met the language requirement of a reading knowledge of one foreign language relevant to the student's area of study, approved by the Graduate Program Director and Faculty Advisor. Students may demonstrate language competency by passing a translation exam administered by the Department of Foreign Languages (French or German) or by passing a 200-level course (i.e. FR 201 or FR 202 or GN 201 or GN 202). For other languages, students must consult with the Graduate Program Director and Faculty Advisor and arrange an appropriate translation exam or course to fulfill the language requirement. Students may not sit for the M.A. exam until the language requirement is completed. A reading knowledge of a second foreign language is strongly recommended. Students may not sit for the comprehensive exam until the language requirement is completed.

Comprehensive Exam

Following the completion of 24 hours of coursework, students must pass a comprehensive examination prepared and graded by the joint art history faculty. Written examinations are scheduled twice a year, at the end of fall and spring semesters.

Final Coursework and Capstone Presentation to Faculty

The final two courses (6 hours) are geared toward professional study:
3 hours: ARH 592 Museum/Gallery Internship or ARH 598 AEIVA Internship

3 hours: ARH 585 Special Topics Museum Studies* or ARH 698 Independent Studies or MPA 600 Administrative Ethics or MPA 602 Scope of Public Administration or MPA 671 Marketing and Fundraising or MPA 672 Nonprofit Management or MPA 684 Grants Management

The specific courses will be determined by the Graduate Program Director in consultation with the student.

Upon the successful completion of their coursework, Plan II students will make a capstone presentation to the faculty (summary and analysis of major project undertaken as part of internship or other professional or practicum-based class). This presentation should be completed by the last day of the classes in the student's final semester, before the start of final exam week.

* ARH 585 may be repeated once for credit.

UAB Faculty:

Cummings, Cathleen
Dallow, Jessica
McPherson, Heather
Turel, Noa

UA-Tuscaloosa Faculty:

Castenell, Wendy
Curzon, Lucy
Feltman, Jennifer
Jones, Tanja
Stephens, Rachel
Sung, Doris

Additional Information

Deadline for Entry Term(s):	Fall or Spring Semester
Deadline for All Application Materials to be in the Graduate School Office:	April 1 for Fall, October 1 for Spring
Number of Evaluation Forms Required:	Three
Entrance Tests:	GRE (TOEFL and TWE also required for international applications whose native language is not English.)
Additional Requirements:	Students must provide a writing sample

Contact Information

For detailed information, contact Dr. Cathleen Cummings, Graduate Program Director, UAB Department of Art and Art History:

Telephone 205-934-7909; Fax (205) 996-6986.
E-mail cathleen@uab.edu

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Master of Arts in Art History

Plan I: Thesis Track

Requirements		Hours
ARH 680	Methods and Approaches to the History of Art	3
Select courses from two of the six areas		21
Medieval Art		
ARH 507	The Art of Rome	
ARH 519	Arts of Death in the Middle Ages	
Early Modern Art		
ARH 507	The Art of Rome	
ARH 521	Italian Renaissance Art	
ARH 522	The Birth of Painting: Portable Pictures Across Renaissance Europe	
ARH 523	Study Abroad: European Art	
ARH 524	Northern Renaissance Art	
ARH 530	Eighteenth-Century Art in Europe	
ARH 531	European Painting in the Seventeenth Century	
ARH 535	Arts of Power in Early Modern Europe	
ARH 581	Special Topics: Early Modern Art	
ARH 583	Special Topics: Gender and the Visual Arts	
ARH 595	Seminar: Early Modern Art	
ARH 630	Seminar: Early Modern Art	
Eighteenth-Century/Nineteenth-Century Art		
ARH 540	Nineteenth Century Art I: Neoclassicism, Romanticism, and Realism	
ARH 541	Nineteenth-Century Art II: Impressionism and Post-Impressionism	
ARH 550	American Art to 1900	
ARH 582	Special Topics: Modern Art	
ARH 596	Seminar: Modern Art	
ARH 640	Seminar: Modern Art	
Twentieth-Century/Contemporary Art		
ARH 560	Twentieth Century Art to 1945	
ARH 561	Modern Design	
ARH 564	Art Since 1945	
ARH 565	Aspects of Contemporary Art	
ARH 567	Modern Architecture	
ARH 568	Race and Representation	
ARH 584	Special Topics: Contemporary Art	
ARH 585	Special Topics: Museum Studies	
ARH 598	AEIVA Internship	
ARH 660	Seminar: Contemporary Art	
East Asian Art		
ARH 570	Tomb Art in East Asia	
ARH 573	Japanese Prints and Printmakers	
ARH 574	Landscape and Image in East Asia	
ARH 575	Japanese Art	
ARH 578	Buddhist Arts of East Asia	
ARH 588	Special Topics: East Asian Art	
ARH 594	Seminar: East Asian Art	
South Asian Art		
ARH 571	Topics in Asian Cinema	
ARH 572	Buddhist & Hindu Art in India to 1200	
ARH 577	Piety and Power: Art in India after 1200	
ARH 579	Study Abroad: Art and Culture of South Asia	
ARH 586	Special Topics: South Asian Art	

Foreign Language Competency¹**Comprehensive Examination****Admission to Candidacy**²**Thesis**³

ARH 699	Thesis Research	6
Total Hours		30

- ¹ Demonstrate language competency by passing a translation exam. French & German studies must pass [FR 201](#), [FR 202](#) or [GN 201](#), [GN 202](#). Students must consult with the Graduate Program Director and Faculty Advisor.
- ² For admission to candidacy, the student must pass a comprehensive examination.
- ³ Students must present a thesis. Each student will complete 6 hours of [ARH 699](#) and be registered for at least 3 credits in [ARH 699](#) in the semester of graduation.

Plan II: Non-Thesis Track

Requirements	Hours
ARH 680 Methods and Approaches to the History of Art	3
Select courses from two of the six areas	21
Medieval Art	
ARH 507 The Art of Rome	
ARH 519 Arts of Death in the Middle Ages	
Early Modern Art	
ARH 507 The Art of Rome	
ARH 521 Italian Renaissance Art	
ARH 522 The Birth of Painting: Portable Pictures Across Renaissance Europe	
ARH 523 Study Abroad: European Art	
ARH 524 Northern Renaissance Art	
ARH 530 Eighteenth-Century Art in Europe	
ARH 531 European Painting in the Seventeenth Century	
ARH 535 Arts of Power in Early Modern Europe	
ARH 581 Special Topics: Early Modern Art	
ARH 583 Special Topics: Gender and the Visual Arts	
ARH 595 Seminar: Early Modern Art	
ARH 630 Seminar: Early Modern Art	
Eighteenth-Century/Nineteenth-Century Art	
ARH 540 Nineteenth Century Art I: Neoclassicism, Romanticism, and Realism	
ARH 541 Nineteenth-Century Art II: Impressionism and Post-Impressionism	
ARH 550 American Art to 1900	
ARH 582 Special Topics: Modern Art	
ARH 596 Seminar: Modern Art	
ARH 640 Seminar: Modern Art	
Twentieth-Century/Contemporary Art	
ARH 560 Twentieth Century Art to 1945	
ARH 561 Modern Design	
ARH 564 Art Since 1945	
ARH 565 Aspects of Contemporary Art	
ARH 567 Modern Architecture	
ARH 568 Race and Representation	
ARH 584 Special Topics: Contemporary Art	
ARH 585 Special Topics: Museum Studies	
ARH 598 AEIVA Internship	

ARH 660 Seminar: Contemporary Art

East Asian Art

ARH 570 Tomb Art in East Asia

ARH 573 Japanese Prints and Printmakers

ARH 574 Landscape and Image in East Asia

ARH 575 Japanese Art

ARH 578 Buddhist Arts of East Asia

ARH 588 Special Topics: East Asian Art

ARH 594 Seminar: East Asian Art

South Asian Art

ARH 571 Topics in Asian Cinema

ARH 572 Buddhist & Hindu Art in India to 1200

ARH 577 Piety and Power: Art in India after 1200

ARH 579 Study Abroad: Art and Culture of South Asia

ARH 586 Special Topics: South Asian Art

Foreign Language Competency¹**Comprehensive Examination****Capstone Presentation & Internship**

3

ARH 592 Museum/Gallery Internship

ARH 598 AEIVA Internship

Professional Coursework

3

ARH 585 Special Topics: Museum Studies²

ARH 698 Independent Studies

MPA 600 Administrative Ethics

MPA 602 Scope of Public Administration

MPA 671 Marketing and Fundraising

MPA 672 Nonprofit Management

MPA 684 Grants Management

Capstone Presentation³

Total Hours 30

- ¹ Demonstrate language competency by passing a translation exam. French & German studies must pass [FR 201](#), [FR 202](#) or [GN 201](#), [GN 202](#). Students must consult with the Graduate Program Director and Faculty Advisor.
- ² ARH 585 may be repeated once for credit.
- ³ Students must make a capstone presentation to faculty (summary and analysis of major project undertaken as part of internship or other professional or practicum-based class).

Biology

To obtain specific admissions requirements on how to apply to Graduate School, prospective students should visit this page: <https://www.uab.edu/cas/biology/graduate-program/the-ms-program>

Degree Offered	Ph.D., M.S., 5th Year M.S.
Director:	Stephen A. Watts, Ph.D.
Phone:	(205) 934-9685
E-mail:	sawatts@uab.edu
Website:	http://www.uab.edu/biology/

Program Information**Areas of Specialization**

Graduate students in the M.S. and Ph.D. programs in biology may specialize in research activities at all levels of biological organization,

with emphases on ecophysiology, cellular and molecular biology, endocrinology, and ecology of aquatic organisms, or on models related to human disease.

Admission

For admission in good standing, applicants must meet the following requirements, in addition to the Graduate School's standards: an undergraduate degree in a biological science, B-level scholarship in all biology courses, two semesters of organic chemistry, two semesters of physics, mathematics through calculus, and a minimum of 152 on both the verbal and quantitative portions of the GRE General Test, and a personal statement of career goals. The graduate program director in biology must approve admission on probation or with deficiencies in one of the above requirements. Three letters of evaluation from individuals who have a thorough knowledge of the applicant's academic abilities and potential are also required. It is strongly recommended that a student contact a mentor before applying. Students may enter at the beginning of any semester, with **deadlines of March 1 for summer and fall applicants** and **October 15 for spring applicants**.

Coursework, Thesis, and Dissertation

A dissertation embodying the results and analysis of an original experimental investigation is required for Ph.D. candidates. Students in the M.S. program may write a thesis based on a research project (Plan I) or, alternatively, may elect to submit a nonresearch project incorporating a review and analysis of one or more topics of current or historical interest in biology (Plan II).

Since scientific problems encountered today are multifaceted and require multidisciplinary approaches, students are expected to acquire a broad background in the physical and life sciences. Doctoral students must complete formal course work in or have equivalent training related to six of the following seven areas: ecology, physiology, cell biology, developmental biology, genetics, microbiology, and molecular biology. Master's students must have competency in five of these life-science areas. Each student is also expected to satisfactorily complete a course or sequence in biometry and any advanced courses designated by the student's graduate study committee consistent with the chosen area of specialization.

Each student must also enroll in three seminar courses approved by his or her graduate study committee, and one of the seminars must be outside the student's primary area of specialization. Also, each student is required to demonstrate proficiency in teaching by delivering formal course lectures or by conducting instructional laboratories. Certificates for advanced training in teaching are also available.

Examinations

To qualify for candidacy, a student in the Plan I master's program must satisfactorily complete either a written or an oral comprehensive examination. A doctoral student must take both written and oral comprehensive examinations. As part of a student's final defense of his or her dissertation or thesis, a public departmental seminar must be presented.

Class A Teaching Certification

Under the Alabama Department of Education's "Strengthened Subject Matter Option," students who complete requirements for the master's degree in biology can also receive class A teaching certification, providing that certain prerequisites and requirements are met. Complete details are available from the School of Education Certification Office, EB 100,

1530 3rd Avenue South, Birmingham, Alabama 35294-1250 (Telephone 205-934-5423).

Accelerated Learning Opportunities

Biology offers both a Fast-Track and Accelerated Bachelors/Masters (ABM) (p. 11) option for high-achieving undergraduate students. The following courses are approved for shared credit for students pursuing an ABM in Biology: BY 501, BY 511, BY 520, BY 535, BY 540, BY 567, BY 568, BY 569, BY 570, BY 605, BY 607, BY 618, BY 626, BY 629, BY 633, BY 634, BY 637, BY 640, BY 642, BY 650, BY 651, BY 655, BY 656, BY 656L, BY 668, BY 674, BY 675, BY 689, BY 696

Additional Information & Mailing Address

Deadline for Entry Terms:	Each semester
Deadline for All Application Materials to be in the Graduate School Office:	March 1 for summer and fall; October 15 for spring admission
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)

Contact Information

For detailed information contact Dr. Stephen A. Watts, Graduate Program Director, UAB Department of Biology, CH 375, 1720 2nd Avenue South, Birmingham, Alabama 35294-1170.
Telephone 205-934-9685
Fax 205.975.6097
E-mail sawatts@uab.edu
Web <http://www.uab.edu/uabbio>

Physical Address

UAB Department of Biology, Campbell Hall, Room 464, 1300 University Blvd., Birmingham, Alabama 35294-1170.

Chemistry

To obtain specific admissions requirements on how to apply to Graduate School, prospective students should visit this page: <https://www.uab.edu/cas/chemistry/graduate-program>

Degree Offered:	Ph.D., M.S.
Director:	Aaron L. Lucius, Ph.D.
Phone:	(205) 934-8096
Fax:	(205) 934-2543
E-mail:	allucius@uab.edu
Website:	www.uab.edu/cas/chemistry

Program Information

The UAB Department of Chemistry offers graduate programs leading to the Doctor of Philosophy (Ph.D.) and Master of Science (M.S.) degrees that are designed to ensure disciplinary quality and research competency. The Department of Chemistry has an outstanding research active faculty and highly collaborative culture that is conducive to stimulating graduate studies in a collegial atmosphere. The graduate

program in the Department of Chemistry provides opportunities for research mentors to provide personalized attention to the academic and research progress of each of our graduate students.

Key features of the Department of Chemistry Graduate Program:

- Students are quickly integrated into research laboratories (ideally in first semester)
- Research is highly collaborative, both within the Department of Chemistry and the UAB biomedical research complex
- Interdisciplinary programs to broaden research interests including drug discovery, advanced materials, biophysical chemistry, structural biology, and nanomaterials
- Strong record of career success for graduates in academia, industry, and government

All graduate students are required to pursue a graduate curriculum that provides the general knowledge-based foundation through a series of six core curriculum courses (18 semester hours). All students are required to pass the Foundations Courses. At least four additional chemistry core courses (12 semester hours) are selected by the student and the student's graduate committee. The graduate student and the graduate research mentor (in consultation with the student's graduate research committee) select additional graded graduate courses to complete a minimum of 24 semester hours. There is no semester hour requirement for additional course work but the student must complete a minimum of 24 semester hours of graduate coursework with an overall GPA of 3.0 or higher. Chemistry graduate students may also participate in and enroll in interdisciplinary graduate programs, requiring enrollment in courses in other departments throughout the UAB campus that will broaden the students background in selective areas and greatly strengthen their ability to carry out interdisciplinary research.

All graduate students are to demonstrate communication skill competency. Adequate performance is required on the departmental literature seminar, written responses to essay questions, dissertation defense, teaching, written publications, and professional presentations at scientific meetings. All chemistry graduate students are required to complete GRD 715 (Graduate Teaching Assistantship Training) during their first term in the program. Students with English as a second language enroll for 3 semester hours. All others enroll in this course for 2 semester hours. This course is required but is not counted toward the 24 semester hour minimum.

During the Fall semester, first year graduate students are required to enroll in CH 790 (Introduction to Graduate Research). The student will be introduced to the graduate research faculty and their research interests. The student is required to meet with prospective research mentors to discuss interest in the prospective mentor's laboratory and if needed, schedule a 3-4 week rotations in research laboratories of interest. The process of selecting the graduate research mentor must be completed by the end of the student's first year.

Core Courses:

Requirements	Hours
CH 629/729 Special Topics in Physical Chemistry	3
CH 631/731 Organic Reactions and Their Mechanisms	3
CH 632/732 Organic Reactions and Synthesis	3
CH 633/733 Reactive Intermediates and Conservation of Bonding	3
CH 639/739 Special Topics in Organic Chemistry	1-3
CH 642/742 Organometallic Chemistry and Catalysis	3

CH 649/749	Special Topics in Inorganic Chemistry	1-3
CH 659/759	Special Topics in Analytical Chemistry	3
CH 664/764	Biophysical Chemistry	3
CH 669/769	Special Topics in Biochemistry	3
CH 671/771	Medicinal Chemistry and Drug Discovery	3
CH 689/789	Special Topics in Polymer Chemistry	3
Total Hours		32-36

Substitutions are permitted with the approval of the student's research advisory committee and director of the graduate program. Master's students choose from the 600 courses, Ph.D. students from the 700 courses.

M.S. Program

Plan I

Plan I is a research program that requires a minimum of 24 semester hours (including 18 semester hours of core courses) of formal academic coursework approved by the student's graduate study committee. The progress of the student's research program is monitored by the graduate study committee. The student, having been admitted to candidacy and having completed an approved plan of research, will complete and defend a thesis.

Plan II

Plan II is a non-thesis program that requires a minimum of 30 semester hours (including 18 semester hours of core courses) of appropriate graduate work that has been approved by the student's graduate study committee and Department of Chemistry Graduate Program Director.

Entry Term	Deadline
Deadline for Entry Term(s)	Each semester
Deadline for All Application Materials to be in the Graduate School Office	Six weeks before term begins
Number of Evaluation Forms Required	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)
Comments	None

5th Year Master's Degree in Biochemistry

This is a research intensive degree program and to be eligible for admission in the senior year, students must start their undergraduate research experience as early as possible, preferably in their sophomore year.

Admission Requirements:

- Achieved status of Senior chemistry major
- GPA of 3.0 or higher
- Enrolled in CHEM 297 (Introduction to Undergraduate Research) by the Fall semester of the Junior year
- Selection of faculty research mentor (in the Department of Chemistry or Department of Biochemistry & Molecular Genetics) by Spring semester of the Junior year and enroll in CHEM 497 (Undergraduate Research) by Spring semester of the Junior year

Admission to the 5th-year MS program will additionally require:

- Satisfactory performance on Graduate Record Exam (GRE) taken in the Senior year (first term)
- Strong letter of nomination for admission to the program from their undergraduate research mentor

The 5th-year M.S. Chemistry/Biochemistry Oversight Committee, composed of two faculty members from the Department of Chemistry (including the Department of Chemistry Graduate Program Director) and two faculty members from the Department of Biochemistry (GBS-BSSB theme including the GBS-BSSB Graduate Program Director) will review applicants and approve admission to the program.

For detailed information, contact Ms. Laura J. Knighten, Graduate Recruitment Coordinator, 1720 2nd Avenue South, Birmingham, AL 35294-1240.

Telephone 205-934-8139 | E-mail knighten@uab.edu | Web www.uab.edu/cas/chemistry

Ph.D. Program

For Ph.D. students, there are no specific course requirements beyond the core courses. The academic program is determined through the action of the student's graduate research mentor and graduate research committee. The student is required to successfully complete their departmental seminar by the end of their second year. A written qualifying examination must be passed in the student's area of specialization. If failure occurs, only one repeat exam is allowed. An original research proposal must be successfully defended within 12 months of completion of the written qualifying examination. If failure occurs, one repeat defense is allowed. Once admitted to candidacy for the Ph.D. degree, the student must write and successfully defend a research dissertation.

Communication Studies

The Department of Communication Studies is concerned with human interaction and communication in all its forms. The Communication Studies Department provides research, teaching and service to enable students to develop understanding and skills in order to thrive in a global communication environment of unremitting change and increasing diversity. To this end the department offers an undergraduate major in Communication Studies, and graduate courses leading to a Master of Arts in Communication Management.

To obtain specific admissions requirements on how to apply to Graduate School, prospective students should visit this page: <https://www.uab.edu/cas/communication/graduate-program>

Master of Arts in Communication Management

The program requires a total of 36 semester hours. Of the 36, no more than 6 hours can be CM 699 (Plan I), no more than 6 hours can be CM 698 (Plan II), and no more than 6 hours can be CM 618 (both Plan I and Plan II). 6 hours of additional coursework may be taken in lieu of a Plan II project. A grade of A or B is required in each course to count toward the degree.

Plan I - 36 hours with Thesis

Requirements		Hours
Select 10 classes from list below ^{1,2}		30
CM 601	Foundations of Communication Management	
CM 602	Source Credibility	
CM 603	Message Construction	
CM 604	Analysis of Communication Audiences	
CM 605	Communication Effects	
CM 607	Seminar in Applied Communication Research	
CM 609	Communiobiology	
CM 610	Instructional Communication	
CM 611	Seminar in Org Communication	
CM 612	Instructional Communication	
CM 613	Nonverbal Communication	
CM 614	Seminar: Political Communication	
CM 615	Intercultural Communication	
CM 616	Health and Med Communication	
CM 617	Training and Development in Communication	
CM 618	Communications Independent Study	
CM 619	Communication and the Law	
CM 620	Persuasion	
CM 621	Seminar in Small Group Dynamics	
CM 622	Interpersonal Communication and Relationships	
CM 623	Deception	
CM 624	Special Topics in Communication Theory and Research	
CM 630	Seminar in Research Classics	
CM 675	Graduate Internship	
CM 690	Communication Theory	
CM 691	Seminar in Communication Models	
CM 694	Quantitative Communication Research	
CM 695	Data Analysis for Quantitative Communication Research	
CM 696	Qualitative Communication Research	
Thesis Research		6
CM 699	Thesis Research	
Thesis		
Total Hours		36

Plan II - 36 hours with Comprehensive Exam

Requirements		Hours
Select 10 classes from list below ^{1,2}		30
CM 601	Foundations of Communication Management	
CM 602	Source Credibility	
CM 603	Message Construction	
CM 604	Analysis of Communication Audiences	
CM 605	Communication Effects	
CM 607	Seminar in Applied Communication Research	
CM 609	Communiobiology	
CM 610	Instructional Communication	
CM 611	Seminar in Org Communication	
CM 612	Instructional Communication	
CM 613	Nonverbal Communication	
CM 614	Seminar: Political Communication	
CM 615	Intercultural Communication	
CM 616	Health and Med Communication	
CM 617	Training and Development in Communication	
CM 618	Communications Independent Study	

CM 619	Communication and the Law	
CM 620	Persuasion	
CM 621	Seminar in Small Group Dynamics	
CM 622	Interpersonal Communication and Relationships	
CM 623	Deception	
CM 624	Special Topics in Communication Theory and Research	
CM 630	Seminar in Research Classics	
CM 675	Graduate Internship	
CM 690	Communication Theory	
CM 691	Seminar in Communication Models	
CM 694	Quantitative Communication Research	
CM 695	Data Analysis for Quantitative Communication Research	
CM 696	Qualitative Communication Research	
Master's Applied Project		6
CM 698	Master's Applied Project	
Comprehensive Exam		
Total Hours		36

- ¹ Up to 6 hours graduate work may be transferred from an accredited graduate program (Non-UAB) with approval from the Graduate Director.
- ² Up to 6 hours of graduate work (600 or above) in another department at UAB may be applied with approval of the Graduate Director.

Computer Science

To obtain specific admissions requirements on how to apply to Graduate School, prospective students should visit this page: <http://www.uab.edu/graduate/admissions>

Degree Offered:	Ph.D., M.S.
Director:	Chengcui Zhang, Ph.D.
Phone:	(205) 934-8606
E-Mail:	czhang02@uab.edu
Website:	http://www.uab.edu/cas/computerscience/graduate-programs

Program Information

The field of computer science deals with theory and methods for processing of information. Graduate programs leading to the M.S. and Ph.D. degrees are designed to prepare individuals for professional and research-level careers in industry, government, and academia. Prospective students should have substantial background in computer science and mathematics.

M.S. Programs

We offer M.S. (<http://www.uab.edu/cas/computerscience/graduate-programs/masters-programs>) degrees in both Computer Science and Data Science. CS and CJ (Dept. of Criminal Justice) also jointly offer the MS in Cyber Security. For details, please check the Cyber Security catalog (<http://catalog.uab.edu/graduate/collegeofartsciences/interdisciplinaryprograms/computer-forensics-security-management>).

Ph.D. Program

The Ph.D. program consists of three phases (with some overlap between phases). The first phase of the program is devoted primarily to formal

coursework and preparation for the qualifying examination. The second phase consists of coursework and research in preparation for the comprehensive examination. This examination requires presentation of a dissertation research proposal. Successful completion of this phase leads to admission to candidacy. The final phase is the completion of the dissertation research and its defense. Ph.D. student progress will be reviewed annually.

Application Deadlines

Masters Programs in Computer Science and Data Science	April 15 for Fall; October 1 for Spring.
Masters Program in Cyber Security	March 1 for Summer; June 1 for Fall; November 1 for Spring.
Doctoral Program in Computer Science	January 15 for Fall; September 1 for Spring.

Accelerated Learning Opportunities

Computer science offers both a Fast-Track and Accelerated Bachelors/Masters (ABM) (p. 11) option for high-achieving undergraduate students pursuing a BS degree in computer science at UAB. The following courses are approved for shared credit for students pursuing an ABM in computer science: CS 522, CS 602, CS 610, CS 615, CS 616, CS 620, CS 621, CS 623, CS 632, CS 633, CS 635, CS 640, CS 643, CS 645, CS 646, CS 650, CS 652, CS 654, CS 657, CS 660, CS 662, CS 663, CS 665, CS 667, CS 670, CS 671, CS 673, CS 675, CS 680, CS 684, CS 685, CS 686, CS 687, CS 689.

Contact Information

For detailed information, after first visiting the website below for basic information including application guidelines and prerequisites, contact Dr. Chengcui Zhang, Professor and Graduate Program Director, UAB Department of Computer Science, Campbell Hall, Room 127, 1300 University Boulevard, Birmingham, Alabama 35294-1170.

Telephone 205-934-8606

E-mail czhang02@uab.edu (puri@uab.edu)

Web <http://www.uab.edu/cas/computerscience/graduate-programs>

Master of Science in Computer Science

Plan 1 - 30 hours with Thesis

Requirements	Hours
Select 24 credit hours of CS courses and approved non-CS electives at the 500+ level ^{1,2}	24
Allowed Electives from other disciplines (up to 3 chrs)	
MA 660 Numerical Linear Algebra ³	
MA 668 Numerical Analysis I ³	
or	
MA 669 Numerical Analysis II ³	
CS 699 Master's Thesis Research	6
Total Hours	30

Plan II - 30 hours

Requirements	Hours
Select 30 credit hours of CS courses and approved non-CS electives at the 500+ level ^{1,2}	30
Allowed Electives from other disciplines (up to 3 chrs)	
MA 660 Numerical Linear Algebra ³	

MA 668	Numerical Analysis I ³	
or		
MA 669	Numerical Analysis II ³	
Total Hours		30

¹ No more than three (9 credit hours of) 500 level courses can count towards the MS degree

² No more than one (3 credit hours of) special course (CS 697 or CS 598) can count towards the MS degree

³ May substitute any other graduate level course approved by the graduate program director

Master of Science in Data Science

Plan I

Requirements	Hours
Core	12
CS 510 Database Application Development or CS 610 Database Systems	
CS 652 Advanced Algorithms and Applications	
CS 667 Machine Learning	
CS 685 Foundations of Data Science	
Electives ¹	12
Data Analytics	
CS 616 Big Data Programming	
CS 660 Artificial Intelligence	
CS 662 Natural Language Processing	
CS 663 Data Mining	
CS 665 Deep Learning	
CS 673 Computer Vision and Convolutional Neural Networks	
CS 675 Data Visualization	
CS 680 Matrix Algorithms for Data Science	
CS 687 Complex Networks	
Cyber Security	
CS 636 Computer Security	
CS 623 Network Security	
CS 645 Modern Cryptography	
CS 643 Cloud Security	
High Performance Computing	
CS 632 Parallel Computing	
CS 633 Cloud Computing	
Digital Forensics	
CS 519 Investigating Online Crimes	
CS 537 Digital Media Forensics	
CS 689 Cyber Risk Management	
Non-Computer Science Electives ²	
Biostatistics	
BST 611 Intermediate Statistical Analysis I	
BST 612 Intermediate Statistical Analysis II	
BST 621 Statistical Methods I	
BST 622 Statistical Methods II	
Bioinformatics	
INFO 601 Introduction to Bioinformatics	
INFO 602 Algorithms in Bioinformatics	
INFO 603 Biological Data Management	
Business Intelligence	
MBA 617 Data Science for Business	

MBA 658	Applied Marketing Research	
MBA 662	Quantitative Analysis for Business Managers	
Thesis Research		6
CS 699	Master's Thesis Research	
Total Hours		30

Plan II

Requirements	Hours	
Core	12	
CS 510 Database Application Development or CS 610 Database Systems		
CS 652 Advanced Algorithms and Applications		
CS 667 Machine Learning		
CS 685 Foundations of Data Science		
Electives ¹	18	
Data Analytics		
CS 616 Big Data Programming		
CS 660 Artificial Intelligence		
CS 662 Natural Language Processing		
CS 663 Data Mining		
CS 665 Deep Learning		
CS 673 Computer Vision and Convolutional Neural Networks		
CS 675 Data Visualization		
CS 680 Matrix Algorithms for Data Science		
CS 687 Complex Networks		
Cyber Security		
CS 636 Computer Security		
CS 623 Network Security		
CS 645 Modern Cryptography		
CS 643 Cloud Security		
High Performance Computing		
CS 632 Parallel Computing		
CS 633 Cloud Computing		
Digital Forensics		
CS 519 Investigating Online Crimes		
CS 537 Digital Media Forensics		
CS 689 Cyber Risk Management		
Non-Computer Science Electives ²		
Biostatistics		
BST 611 Intermediate Statistical Analysis I		
BST 612 Intermediate Statistical Analysis II		
BST 621 Statistical Methods I		
BST 622 Statistical Methods II		
Bioinformatics		
INFO 601 Introduction to Bioinformatics		
INFO 602 Algorithms in Bioinformatics		
INFO 603 Biological Data Management		
Business Intelligence		
MBA 617 Data Science for Business		
MBA 658 Applied Marketing Research		
MBA 662 Quantitative Analysis for Business Managers		
Total Hours		30

¹ At most three credit hours of special courses (CS 697: Directed Readings or CS 598: Practical Work Experience) can count towards the MSDS degree. No more than three (9 credit hours of) 500 level courses can count towards the MSDS degree.

² Students may take up to three (9 credit hours of) non-CS electives upon the approval of the graduate program director.

Ph.D. in Computer Science

Ph.D. students must meet the minimum course credit requirement of UAB Graduate School and may take any course from our graduate catalog and any graduate course approved by their dissertation advisor and the graduate program director.

Degree Requirements:

The program consists of three phases or levels. Level 1 is devoted primarily to formal CS coursework and preparation for a written survey and critique covering the breadth of a research area and an oral presentation of the work. Level 2 consists of additional CS coursework and research in preparation for the comprehensive examination, which requires presentation of a dissertation research proposal. Successful completion of this phase leads to admission to candidacy. The final phase (Level 3) is the completion of the dissertation research and its defense.

There is a residency requirement of at least one consecutive academic year of full-time study.

Requirements	Hours
Computer Science Courses	
Select 45 hours from the Computer Science courses at the graduate level (24 hours if entering with a master's degree appropriate to CS field)	45
GRD 717 Principles of Scientific Integrity	3
Dissertation	24
CS 799 Dissertation Research	
Total Hours	72 (if entering with a baccalaureate degree) 51 (if entering with a master's degree)

Department of Criminal Justice

The Department of Criminal Justice is home to multiple graduate programs, including programs of study leading to the Master of Science in Criminal Justice (p. 57) (MSCJ), the Master of Science in Forensic Science (p. 59) (MSFS), the Master of Science in Cyber Security (p. 45) (jointly with the Department of Computer Science) and "A" and "B" graduate certificates in Computer Forensics. The department also co-sponsors a joint MSCJ/MPA program (<http://www.uab.edu/cas/government/graduate-program/joint-degrees/#MPAMSCJ>) with the Department of Political Science and Public Administration and is a concentration in the Master of Public Health program with the School of Public Health.

Computer Forensics Certificate

Requirements	Hours
CJ 502 Computer Forensics	3
CJ 675 Law Evidence and Procedure	3
CJ 537 Digital Media Forensics	3
CJ 519 Investigating Online Crimes	3
FS 670 Elements of Forensic Science	3
CJ 554 Financial Crimes and Investigations	3
CS 534 Networking	3
Total Hours	21

Criminal Justice

Degree Offered:	M.S.C.J.
Director:	Hayden Griffin, Ph.D.
Phone:	(205) 934-2069
E-mail:	hgriffin@uab.edu
Website:	http://www.uab.edu/cas/criminaljustice/

To obtain specific admissions requirements on how to apply to Graduate School, prospective students should visit this page: <http://www.uab.edu/cas/criminaljustice/graduate/mscj>

Program Information

The criminal justice graduate program requires study in the overall discipline, with intensive focus on the areas of criminal justice policy, criminal justice administration, research methods and statistics, and criminological theory. Beyond a core set of required courses, the program features a **Thesis Track** (Plan I) designed for students interested in pursuing a doctorate in criminal justice or criminology, and a **Non-Thesis Track** (Plan II) designed for students interested in pursuing entry- or advanced-level positions in a criminal justice or related agency setting.

Students selecting the Plan I option are **required** to complete a Thesis project under a faculty adviser, while students selecting the Plan II track are **required** to complete a Demonstration Project and are strongly encouraged to complete a field placement (Internship).

Each year, students are admitted to the M.S.C.J. program for the fall term. **The application deadline for receipt of all admission materials by the Graduate School is July 1 each year.** Students **may** be admitted to the M.S.C.J. program "in good standing" provided they meet all minimum admission criteria established by the Graduate School and the program, which include having taken an introductory-level statistics course and an introductory-level research methods course in which a grade of "B" or better was earned. Most students admitted to the program have earned a cumulative undergraduate grade point of average (GPA) of 3.0 or higher on a 4.0 scale **and** earned a combined score on the verbal and quantitative sections of the Graduate Record Examination (GRE) of 300 or higher. Students who otherwise meet minimum admission criteria but who have not taken both the statistics and the research methods courses **may** be admitted to the M.S.C.J. program on a "contingency" basis. Students so admitted will **not** be allowed to register for graduate coursework until the contingencies are removed. Students meeting the minimum requirements for admission including taking the statistics and research methods courses but who lack a substantive background in criminal justice **may** be admitted to the M.S.C.J. program on a "contingency" basis, but will be required to

take remedial coursework before they will be allowed to register for any graduate courses.

The recommended course sequence for the Plan I MSCJ degree is:

Semester 1 (Fall): CJ 600, CJ 601, CJ 606

Semester 2 (Spring): CJ 583, CJ 605, Elective 1

Semester 3 (Fall): CJ 603, CJ 604, CJ 699

Semester 4 (Spring): CJ 699, Elective 2

The recommended course sequence for the Plan II MSCJ degree is:

Semester 1 (Fall): CJ 600, CJ 601, CJ 606

Semester 2 (Spring): CJ 583, CJ 605, Elective 1

Semester 3 (Fall): CJ 603, CJ 604, Elective 2

Semester 4 (Spring): CJ 697/CJ 698, Elective 3
(recommended CJ 693/CJ 696), Elective 4

M.S.C.J. Online

Students who wish to take courses online may complete all or part of the MSCJ completely on line. There is no "online degree," it is the same degree regardless of how the courses are taken. Students may take some courses in class and some online, or may complete the MSCJ completely online.

The Online MSCJ Degree is designed to mirror the in-class Non-Thesis Plan II degree (<http://www.uab.edu/cas/justice-sciences/graduate-programs/master-of-science-in-criminal-justice-mscj/mscj-program-requirements>). Students enrolled in the online degree are required to take the same courses as the Plan II degree — but the courses may be taken 100% online. The degree is structured so that students can graduate in 4 semesters (fall, spring, summer, fall) by taking 9 hours each semester.

Students are required to complete a Demonstration Project (CJ 697) to display their mastery of the core courses. Specifically, students will complete a research paper that shows they can synthesize a body of literature, create a research question, use appropriate research methods to evaluate the question, and discuss implications (both theory and policy) of the findings. Students are required to work with a faculty member to oversee the project. In their second semester, students will be required to write a brief proposal discussing their topic and potential sources of data. After completing this proposal, they will send it to the Program Director who will then assign a faculty chair based on best fit with the topic. Students can request to work with faculty members, but this does not guarantee they will be assigned to that faculty member. Once a chair is determined, the faculty chair and student will work together until the chair deems the project acceptable.

Under special circumstances, and with permission from the Program Director, students may be allowed to complete a Thesis through the online MSCJ program. In such cases, the student will take 6 hours of Thesis in place of one elective and the Demonstration Project.

The recommended course sequence for the on line MSCJ degree is:

Semester 1 (Fall): CJ 600, CJ 601, CJ 606

Semester 2 (Spring): CJ 583, CJ 605, Elective 1

Semester 3 (Summer): CJ 603, CJ 604, Elective 2

Semester 4 (Fall): CJ 697/CJ 698, Elective 3, Elective 4

Financial Aid

Students who are admitted to the M.S.C.J. program "in good standing" are eligible to receive department-based financial aid in the form of graduate assistantships or scholarships that are awarded on a competitive basis. Students are typically notified of such awards in early June of each year for the following fall.

Additional Information

Deadline for Entry Term(s):	Fall
Deadline for All Application Materials to be in the Graduate School Office:	July 1
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)

Contact Information

For detailed information contact Dr. Hayden Griffin, Department of Criminal Justice, University of Alabama at Birmingham, 1201 University Boulevard Office Building, Suite 210, Birmingham, Alabama 35294-4562. Telephone: 205-934-2069
E-mail hgriffin@uab.edu ([jhopes@uab.edu](mailto:jhcopes@uab.edu))
Web <http://www.uab.edu/cas/criminaljustice/>

Master of Science in Criminal Justice

Plan 1 - 30 hours with Thesis ¹

Requirements	Hours
CJ 583 Patterns in Crime	3
CJ 600 Pro-Seminar in Criminal Justice	3
CJ 601 Seminar in Criminological Theory	3
CJ 604 Seminar in Criminal Justice Policy	3
CJ 605 Seminar in Research Design	3
CJ 606 Seminar in Data Analysis	3
Thesis Research ²	6
CJ 699 Thesis Research	6
CJ Electives ³	6
Total Hours	30

- Students can take up to 6 hours of independent study (CJ 695) and/or up to 9 hours of directed non-thesis research (CJ 698)
- Minimum of 6 hours of CJ 699 required.
- CJ 500+ level courses or substitute approved by a graduate program director

Plan II - 36 hours

Requirements	Hours
CJ 583 Patterns in Crime	3
CJ 600 Pro-Seminar in Criminal Justice	3
CJ 601 Seminar in Criminological Theory	3

CJ 603	Seminar in Criminal Justice Administration	3
CJ 604	Seminar in Criminal Justice Policy	3
CJ 605	Seminar in Research Design	3
CJ 606	Seminar in Data Analysis	3
Electives (CJ 500+ level courses) ²		12
Total Hours		33

¹ Minimum of 6 hours of CJ 697 required.

² CJ 500+ level courses or substitute approved by a graduate program director

Requirements for a Dual Degree - Master of Science in Criminal Justice and Master of Public Administration

Requirements	Hours	
CJ 583	Patterns in Crime	3
CJ 600	Pro-Seminar in Criminal Justice	3
CJ 601	Seminar in Criminological Theory	3
CJ 604	Seminar in Criminal Justice Policy	3
CJ 605	Seminar in Research Design	3
CJ 606	Seminar in Data Analysis	3
Electives ²		12
Total Hours		30

¹ Other courses at 500 level or above may apply with CJ Grad Director approval, except courses in MPA that are required for the MPA.

² 500 level or above.

Forensic Science

Degree Offered	M.S.F.S.
Director	Elizabeth Gardner, Ph.D.
Phone	(205) 934-2069
E-mail	eagard@uab.edu
Website	http://www.uab.edu/cas/justice-sciences/graduate-programs/master-of-science-in-forensic-science-msfs

To obtain specific admissions requirements on how to apply to Graduate School, prospective students should visit this page: <http://www.uab.edu/cas/criminaljustice/graduate/msfs>

Program Information

The Master of Science in Forensic Science program is designed to prepare individuals for careers in various forensic science and conventional analytical laboratories, emphasizing the application of scientific methods and technologies to legal proceedings. With thoughtful planning, many students have found the program helpful in building a strong foundation to pursue doctoral studies.

The program support includes many UAB faculty members from other departments, personnel from the Alabama Department of Forensic Sciences' Birmingham laboratory, the Jefferson County Medical Examiner's Office, and local forensic science-related private institutions.

In addition, the program maintains a close working relationship with

the DNA profiling laboratories of the Alabama Department of Forensic Sciences and hosts the editorial offices of the Forensic Science Review (the only review journal in forensic science). Faculty research and practice focus especially on forensic aspects of drug chemistry and DNA-based identification.

Minimum admission requirements include a B.S. degree from accredited programs in Chemistry, Biology, or Forensic Science. Coursework is designed for qualified students to begin in fall and complete the program in 21 months. Admission is granted for the fall term only.

According to the National Institute of Justice, students wishing to pursue a career in forensic science should be aware that positions in these fields usually require extensive background checks similar to those required for law enforcement personnel, and are likely a condition of employment.

(National Institute of Justice, 2004. Education and Training in Forensic Science: A Guide for Forensic Science Laboratories, Educational Institutions, and Students. NCJ Report 203099. Washington, DC: United States Department of Justice, pp. 7-10).

Graduates from the UAB Master of Science in Forensic Science program are very successful in gaining employment within a year of graduating.

During the period 2012-2015, 31 students completed the program. Of these, 28 are working in a laboratory or continuing their education (e.g., pursuing a doctorate, professional degree, or second master's degree). Eighteen of the graduates are employed in forensic science laboratories, ranging from those operated by the Alabama Department of Forensic Sciences to the Greensboro N.C. Police Department.

Additional Information

Deadline for Entry Term(s)	Fall
Deadline for All Application Materials to be in the Graduate School Office	January 31. Later applications will be considered before April 30th if vacancies are available
Number of Evaluation Forms Required	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)

For detailed information, contact Dr. Elizabeth Gardner, UAB Department of Justice Sciences, 1201 University Blvd., Suite 210, Birmingham, Alabama 35294-4562.

Telephone: 205-934-2069

E-mail: eagard@uab.edu

Physical Address (for directions): 1201 University Blvd. Suite 210, Birmingham, AL 35294.

Master of Science in Forensic Science

Must earn a minimum of 3.0 in required courses. An overall minimum GPA of 3.0 is required to remain in good standing.

Plan I - 39 hours with Thesis

Requirements	Hours	
GRD 708	Writing Successfully	1
FS 567	Forensic Toxicology	3
FS 670	Elements of Forensic Science	3
FS 671	Conventional Criminalistics	3
FS 673	Forensic Drug Analysis	3

FS 674	Molecular Biology in Forensic Science	3
CJ 675	Law Evidence and Procedure	3
Forensic Seminar (taken twice)		6
FS 679	Seminar in Forensic Science	
FS 699	Thesis Research in Forensic Science	6
Leveling Courses (requirements vary by undergraduate background)		6
CH 550 & 550L	Instrumental Analysis for Graduate Study and Instrumental Analysis Laboratory for Graduate Study	
FS 550	Instrumental Analysis	
CH 560	Fundamentals of Biochemistry	
CH 561	Advanced Biochemistry I	
CH 555 & 555L	Quantitative Analysis for Graduate Study and Quantitative Analysis I for Graduate Study Lab	
BY 511	Molecular Genetics	
Electives		3
FS 672	Advanced Conventional Criminalistics	
FS 676	Advanced Biological Methods in Forensic Science	
FS 677	Advanced Drug Chem. & Toxicology	
BST 611	Intermediate Statistical Analysis I	
BST 601	Biostatistics	
FS 680	Graduate Internship in Forensic Science	

Plan II - 39 hours

Requirements	Hours	
GRD 708	Writing Successfully	1
FS 567	Forensic Toxicology	3
FS 670	Elements of Forensic Science	3
FS 671	Conventional Criminalistics	3
FS 674	Molecular Biology in Forensic Science	3
FS 673	Forensic Drug Analysis	3
CJ 675	Law Evidence and Procedure	3
Directed Research (6 hours)		6
CJ 698	Directed Research (Non-Thesis)	
Forensic Seminar (taken twice)		6
FS 679	Seminar in Forensic Science	
Leveling Courses (requirements vary by undergraduate background)		
CH 550 & 550L	Instrumental Analysis for Graduate Study and Instrumental Analysis Laboratory for Graduate Study	
FS 550	Instrumental Analysis	
CH 560	Fundamentals of Biochemistry	
CH 561	Advanced Biochemistry I	
CH 555 & 555L	Quantitative Analysis for Graduate Study and Quantitative Analysis I for Graduate Study Lab	
BY 511	Molecular Genetics	
Electives		
FS 672	Advanced Conventional Criminalistics	
FS 676	Advanced Biological Methods in Forensic Science	
FS 677	Advanced Drug Chem. & Toxicology	
BST 611	Intermediate Statistical Analysis I	
BST 601	Biostatistics	
FS 680	Graduate Internship in Forensic Science	

English

Degree Offered:	M.A.
Director:	Kyle Grimes, Ph.D.
Phone:	(205) 934-8593
Email:	kgrimes@uab.edu
Website:	www.uab.edu/english

Admission Requirements

For admission in good standing, applicants must meet the Graduate School's requirements for scholarship. The applicant should normally have finished the requirements for an undergraduate degree in English with at least a 3.0 GPA. A generally well-prepared applicant who is lacking in some part of the undergraduate preparation may be admitted with the provision that any deficiencies be removed by a time specified by the graduate program director.

Program Description

Students in the graduate program are required to take a total of 31 hours of coursework including one hour of EH 605 ("Introduction to Graduate Studies in English") and at least nine hours of literature classes. In addition, Plan I students must take six hours of EH 699 ("Thesis Research") and must complete and successfully defend a masters thesis; Plan II students must take at least three hours of EH 698 ("Directed Studies") and must propose and then pass a "30-books" examination. All students must take at least 15 hours of coursework at the 600-level, including no more than three hours of EH 698 or EH 699. More detailed coursework options are presented on the English Department website (<http://www.uab.edu/english>).

Additional Information

Deadline for Entry Term(s):	Each semester
Deadline for All Application Materials to be in the Graduate School Office:	Six weeks before term begins
Number of Evaluation Forms Required:	Three

For detailed information, contact Dr. Kyle Grimes, Graduate Program Director, Department of English HB 207F, 1720 2nd Avenue South, Birmingham, AL 35294-1260.

Telephone 205-934-8580

E-mail EnglishGrad@uab.edu

Web <http://www.uab.edu/cas/english/academic-programs>

Master of Arts in English

Students in the graduate program are required to take a total of 31 hours of coursework including one hour of EH 605 ("Introduction to Graduate Studies in English") and at least nine hours of literature classes. In addition, Plan I students must take six hours of EH 699 ("Thesis Research") and must complete and successfully defend a masters thesis; Plan II students must take at least three hours of EH 698 ("Directed Studies") and must propose and then pass a "30-books" examination. All students must take at least 15 hours of coursework at the 600-level, including no more than three hours of EH 698 or EH 699. More detailed

coursework options are presented on the English Department website (<http://www.uab.edu/english>).

Plan I - 31 hours with Thesis

Requirements	Hours
EH 605 Introduction to Graduate Studies in English	1
Select three Literature courses ¹	9
Select any five English graduate courses.	15
EH 699 Thesis Research	6
Total Hours	31

Plan II - 31 hours with 30-Books Exam

Requirements	Hours
EH 605 Introduction to Graduate Studies in English	1
Select three Literature courses. ¹	9
Select any six English graduate courses.	18
EH 697 30-Books Semester	3
Total Hours	31

¹ **Literature courses:** EH 511, EH 512, EH 513, EH 514, EH 515, EH 516, EH 519, EH 520, EH 521, EH 522, EH 523, EH 524, EH 526, EH 527, EH 543, EH 544, EH 546, EH 547, EH 548, EH 560, EH 561, EH 562, EH 563, EH 564, EH 565, EH 566, EH 567, EH 568, EH 569, EH 570, EH 571, EH 573, EH 574, EH 575, EH 576, EH 578, EH 580, EH 581, EH 582, EH 583, EH 585, EH 586, EH 587, EH 588, EH 589, EH 591, EH 677, EH 690, EH 693

Foreign Language

<http://www.uab.edu/languages>

Chair: Julian Arribas

The Department of Foreign Languages and Literatures offers multifaceted French and Spanish graduate-level courses which, in tandem with the offerings in the School of Education, address the diverse global and intellectual challenges facing future educators and citizens of the 21st century.

Whether at the undergraduate or at the graduate level, our programs are rooted in diversity within and across cultures. We foster the international exchange of knowledge and information between humanities scholars, teachers and other professionals. Our instructional methods are aligned with national standards. The foreign language experience at UAB includes classroom learning, scholarship and research, experiential learning, and extracurricular opportunities. We offer graduate students a unique opportunity to interact with scholars and engage as well with faculty dedicated to serving their profession. Our UAB Foreign Languages and Literatures faculty are engaged in their state and/or national professional teaching associations, serving on boards, organizing professional workshops, working every day to build connections and to enhance foreign language education opportunities in our state and beyond.

At the graduate level the UAB Department of Foreign Languages and Literatures offers courses in culture, civilization, cinema and culture studies, linguistics, and literature.

For more information, visit the Department of Foreign Languages and Literatures web site at <http://www.uab.edu/cas/languages/>.

Foreign Language Graduate Studies

M.A. in Education (French/Spanish)

At UAB, the Master of Arts in Education (MAEd) program for the teaching of World Languages (French and Spanish) consists of two tracks —traditional and alternative. The traditional track is for prospective students who completed an undergraduate degree in French or Spanish education, who already hold certification for teaching French or Spanish, and who wish to earn advanced certification. The alternative track is for prospective students who have an undergraduate degree with a 2.75+ GPA from a regionally accredited college, have passed the ETS Core Academic Skills Exam and the Praxis in French or Spanish, and who wish to earn initial certification for teaching French or Spanish in grades PK-12. Detailed information is provided on the School of Education website:

<https://www.uab.edu/education/home/ci/world-languages>

Information sessions are offered on a weekly basis. Confirm your attendance by contacting Dr. Susan Spezzini (spezzini@uab.edu), Program Director for Secondary and K-12 programs. These information sessions take place as follows:

Alternative Master's	Mondays at 5:00 in EB 100
Traditional Master's	Thursdays at 4:00 in EB 100

For advising in World Language Education, contact: Dr. Krista Chambless (kristachambless@uab.edu), Advisor for World Language Education

History

To obtain specific admissions requirements on how to apply to Graduate School, prospective students should visit this page: <https://www.uab.edu/cas/history/graduate-program>

Degree Offered:	M.A.
Director:	Andrew W. Keitt, Ph.D.
Phone:	(205) 934-7083
Email:	akeitt@uab.edu
Website:	www.uab.edu/history

Students interested in Teaching Certification for Public Schools should contact the School of Education.

Additional Information

Deadline for Entry Term(s):	Each semester
Deadline for All Application Materials to be in the Graduate School Office:	Six weeks before term begins
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)

Comments Additional application for financial aid (fellowship or assistantship) is required by program

For detailed information, contact Dr. Andrew W. Keitt, History Graduate Program Director, Department of History, HHB 360, 1720 2nd Avenue South, Birmingham, Alabama 35294-1152.

Telephone 205-934-7083

E-mail akeitt@uab.edu

Master of Arts in History

The history graduate program provides opportunities for students to learn the techniques of research and broaden their knowledge of historical literature. Students may choose Plan I, which includes writing a thesis based on original research using primary sources, or Plan II, which requires the completion of MA exams in three historical topics. All students are required to enroll in HY 601 Historiography and HY 602 Historical Research and Writing and must take at least 30 hours of their course work in graduate seminars. Each student must take a minimum of 9 hours of course work in U.S. history and 9 hours in non-U.S. history (e.g., European, Asian, Latin America, World).

Plan I - 36 hours with Thesis

Requirements	Hours
HY 601 Historiography	3
HY 602 Historical Research and Writing	3
US History ¹	
Three (3) seminars at the 600+ level	9
Non-US History ²	
Three (3) Seminars at the 600+ level	9
Electives ³	6
HY 699 Thesis Research	6
Total Hours	36

Plan II - 36 hours (non-thesis option)

Requirements	Hours
HY 601 Historiography	3
HY 602 Historical Research and Writing	3
US History ¹	
Three (3) seminars at the 600+ level	9
Non-US History ²	
Three (3) seminars at the 600+ level	9
Electives ³	12
Total Hours	36

¹ **Choose from the following:** HY 612, HY 613, HY 614, HY 621, HY 622, HY 623, HY 631, HY 632, HY 633, HY 634, HY 635, HY 637, HY 638

² **Choose from the following:** HY 639, HY 641, HY 650, HY 651, HY 652, HY 653, HY 654, HY 655, HY 656, HY 670, HY 671, HY 672, HY 673, HY 674, HY 675, HY 683, HY 693, HY 694

³ Up to two (2) equivalent graduate 600+ level courses in another discipline, i.e., English, Art History, Anthropology, or Government

Mathematics

The Department of Mathematics offers graduate programs of study leading to the M.S. degree in Mathematics or the Ph.D. in Applied Mathematics.

The master's program aims to give students the background to use mathematics in a variety of ways. We train students in mathematical rigor. This provides training in the ability to analyze and solve problems in all walks of life. We also emphasize the development of communication skills of our students (in the classes they take as well as in the classes they teach). Therefore the M.S. program prepares students not only for a career in secondary or junior college level teaching but provides also a very good preparation for students who go into business, industry, or government. In the past our students have been very successful in obtaining employment. Of course, the M.S. program will also prepare students who wish to pursue a Ph.D. in Mathematics but whose undergraduate education did not provide them with a sufficient background in advanced mathematics to directly enter a Ph.D. program.

The PhD program in Applied Mathematics prepares students interested in an academic career in a college or university as well as students interested in a career in business, industry, or government.

Mathematics

Prospective students that want to apply for admission have to provide academic records, three letters of recommendation, a CV, an Essay, and scores of the Graduate Record Examination (GRE), General Test. There are more requirements for international students. UAB charges an application fee, for details please see the admissions (<http://www.uab.edu/graduate/admissions>) page of the Graduate School (<http://www.uab.edu/graduate>). The Graduate School requires that all applications are submitted online here (https://uabirmingham.force.com/graduate/TX_SiteLogin?startURL=) via the TargetX application portal, required recommendation letters must also be submitted using this application portal.

Degree Offered	M.S.
Director	Dr. Ioulia Karpeshina
Phone	205-934-2154
E-mail	karpeshi@uab.edu
Website	http://www.uab.edu/cas/mathematics

Program Information

Mathematics has always been divided into a pure and an applied branch. However, these have never been strictly separated. The M.S. program in mathematics stresses the interconnection between pure mathematics and its diverse applications.

Areas of Specialization

The student must choose a primary and a secondary specialization from a list of areas determined by the expertise of the faculty. As soon as the student is ready to choose specialization areas, he or she should contact the mathematics graduate program advisor. Courses offered to meet degree requirements must be approved by the mathematics graduate program advisor and the mathematics graduate program director.

Deadline for Entry Term(s)	Each semester
Deadline for All Application Materials to be in the Graduate School Office	Six weeks before term begins
Number of Evaluation Forms Required	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English)

Additional Information

For detailed information, contact Dr. Ioulia Karpechina, Mathematics Graduate Program Director, UAB Department of Mathematics, CH 483B, 1300 University Boulevard, Birmingham, Alabama 35294-1170.

Telephone 205-934-2154

E-mail karpeshi@uab.edu

Web <http://www.uab.edu/cas/mathematics/>

Master of Science in Mathematics

The program requires a total of 30 semester hours where each grade must be an A or B and at least 24 hours must be at the 600-level or above. MA 540, MA 541, and courses below MA 520 can not be counted towards degree requirements. All students, whether following Plan I or Plan II, must choose a primary and secondary area of specialization as indicated below.

Plan I - 30 hours

Requirements	Hours
Primary Area of Specialization (choose 9 hours) and Secondary Area of Specialization (choose 6 hours):	15

Algebra	
MA 534	Algebra I: Linear
MA 535	Algebra II: Modern
MA 631	Linear Algebra
MA 632	Abstract Algebra
MA 637	Graph Theory and Combinatorics
MA 660	Numerical Linear Algebra

Analysis	
MA 544	Vector Analysis
MA 545	Complex Analysis
MA 553	Transforms
MA 554	Intermediate Differential Equations
MA 555	Partial Differential Equations I
MA 556	Partial Differential Equations II
MA 561	Modeling with Partial Differential Equations
MA 562	Intro to Stochastic Differential Equations
MA 566	Introduction to Optimization
MA 642	Calculus of Several Variables
MA 645	Real Analysis I
MA 646	Real Analysis II
MA 648	Complex Analysis
MA 650	Differential Equations
MA 655	Partial Differential Equations
MA 661	Modeling With PDE

Geometry		
MA 570	Differential Geometry	
MA 572	Geometry I	
MA 573	Geometry II	
MA 675	Differential Geometry	
Numerical Analysis		
MA 560	Scientific Programming	
MA 567	Gas Dynamics	
MA 568	Numerical Analysis I	
MA 569	Numerical Analysis II	
MA 660	Numerical Linear Algebra	
MA 665	Partial Differential Equations: Finite Differential Methods	
MA 668	Numerical Analysis I	
MA 669	Numerical Analysis II	
Probability/Statistics		
MA 562	Intro to Stochastic Differential Equations	
MA 584	Mathematical Finance	
MA 585	Intro to Probability	
MA 586	Mathematical Statistics	
MA 587	Advanced Probability	
MA 588	Advanced Statistics	
MA 687	Advanced Probability	
MA 688	Advanced Statistics	
Topology		
MA 574	Intro to Topology I	
MA 575	Intro to Topology II	
MA 670	Topology I	
MA 671	Topology II	
9 additional hours must be outside the primary area of specialization	9	
MA 699	Research for Thesis	6
Total Hours		30

Plan II - 30 hours

Requirements	Hours
Primary Area of Specialization (choose 12 hours) and Secondary Area of Specialization (choose 6 hours):	18

Algebra	
MA 534	Algebra I: Linear
MA 535	Algebra II: Modern
MA 631	Linear Algebra
MA 632	Abstract Algebra
MA 637	Graph Theory and Combinatorics
MA 660	Numerical Linear Algebra

Analysis	
MA 544	Vector Analysis
MA 545	Complex Analysis
MA 553	Transforms
MA 554	Intermediate Differential Equations
MA 555	Partial Differential Equations I
MA 556	Partial Differential Equations II
MA 561	Modeling with Partial Differential Equations
MA 562	Intro to Stochastic Differential Equations
MA 566	Introduction to Optimization
MA 642	Calculus of Several Variables
MA 645	Real Analysis I
MA 646	Real Analysis II

MA 648	Complex Analysis	
MA 650	Differential Equations	
MA 655	Partial Differential Equations	
MA 661	Modeling With PDE	
Geometry		
MA 570	Differential Geometry	
MA 572	Geometry I	
MA 573	Geometry II	
MA 675	Differential Geometry	
Numerical Analysis		
MA 560	Scientific Programming	
MA 567	Gas Dynamics	
MA 568	Numerical Analysis I	
MA 569	Numerical Analysis II	
MA 660	Numerical Linear Algebra	
MA 665	Partial Differential Equations: Finite Differential Methods	
MA 668	Numerical Analysis I	
MA 669	Numerical Analysis II	
Probability/Statistics		
MA 562	Intro to Stochastic Differential Equations	
MA 584	Mathematical Finance	
MA 585	Intro to Probability	
MA 586	Mathematical Statistics	
MA 587	Advanced Probability	
MA 588	Advanced Statistics	
MA 687	Advanced Probability	
MA 688	Advanced Statistics	
Topology		
MA 574	Intro to Topology I	
MA 575	Intro to Topology II	
MA 670	Topology I	
MA 671	Topology II	
9 additional hours must be outside the primary area of specialization		9
3 additional hours can be chosen from the primary, secondary, or any other area		3
Total Hours		30

Applied Mathematics

Prospective students that want to apply for admission have to provide academic records, three letters of recommendation, a CV, an Essay, and scores of the Graduate Record Examination (GRE), General Test. There are more requirements for international students. UAB charges an application fee, for details please see the admissions (<http://www.uab.edu/graduate/admissions>) page of the Graduate School (<http://www.uab.edu/graduate>). The Graduate School requires that all applications are submitted online here (https://uabirmingham.force.com/graduate/TX_SiteLogin?startURL=) via the TargetX application portal, required recommendation letters must also be submitted using this application portal.

Program Information

Mathematics has always been divided into a pure and an applied branch. However, these have never been strictly separated. The Ph.D. program in applied mathematics stresses the interconnection between pure mathematics and its diverse applications.

Admission

Only students with a firm foundation in advanced calculus, algebra, and topology are considered for immediate admission to the Ph.D. program. A student lacking this background will be considered for admission to the M.S. program. Upon passing the qualifying examination, a student may transfer to the Ph.D. program. We expect at least a B average in a student's previous work and a score above 158 on each section of the Graduate Record Examination General Test.

Program of Study

Each student in the Ph.D. program has to take the following steps:

- Passing the Joint Program Exam (JPE), also called the Qualifying Exam. The Joint Program Examinations in Real Analysis and Linear Algebra are given during two periods each year (one in May and one in September). During each period a student may take one or both of the exams but subject to the following restrictions: (1) either exam may be attempted at most twice and (2) a student may participate in exams during no more than three periods.
- Completing 54 semester hours of graduate courses. The grade of each course has to be at least a B. The student's supervisory committee and the Joint Program Committee must approve the selection of courses. At least 18 hours must be in a major area of concentration, selected so that the student will be prepared to conduct research in an area of applied mathematics, while at least 12 hours have to be in a minor area of study, which is a subject outside mathematics. No courses counted towards an MS degree can be used. There are additional requirements by the UAB Graduate School, see "Minimum Course Requirements" in the Graduate Catalog.
- Passing a language or tool of research exam.
- Passing the Comprehensive Exam, which consists of a written part and an oral part.
- Preparing a dissertation, which must be a genuine contribution to mathematics.
- Passing the Final Examination (thesis defense).

Additional Information

For detailed information, contact Dr. Ioulia Karpechina, Mathematics Graduate Program Director, UAB Department of Mathematics, CH 483B, 1300 University Boulevard, Birmingham, Alabama 35294-1170.

Physics

To obtain specific admissions requirements on how to apply to Graduate School, prospective students should visit this page: <https://www.uab.edu/cas/physics/graduate>

Degree Offered:	Ph.D., M.S.
Director:	Mary Ellen Zvanut, Ph.D.
Phone:	(205) 934-6661
E-mail:	mezvanut@uab.edu
Website:	http://www.uab.edu/cas/physics/graduate

Program Information

Students in the M.S. and Ph.D. programs may specialize in any of the areas of interest to the faculty, including experimental physics and theoretical and computational physics.

Admission

Admission into the physics graduate program is by recommendation of the graduate admission committee of the Department of Physics. The committee takes into consideration GRE General Test scores, prior academic performance, personal statement, prior research experiences, and the letters of evaluation, usually from former instructors and research supervisors.

Beginning the Program

All students must take a placement examination on basic physics concepts before registering for any courses. Upon arrival at UAB, international students may be required to take English as a Second Language course or Scientific Communication courses at UAB during their first year of study.

Web <http://www.uab.edu/cas/physics/graduate>

M.S. Program

Plan I

The student must successfully complete at least 30 semester hours of coursework, including at least four core courses selected from PH 635, PH 650, PH 660, and PH 671 and 6 semester hours of Thesis Research PH 699. Equivalent directed reading course or courses may be substituted if approved by the graduate faculty. The student must also write and complete a successful oral defense of a thesis under the direction of a graduate faculty member. Additional coursework should be selected with the advice of the student's graduate study committee to meet the particular needs of the student.

An interdisciplinary track for an M.S. degree Plan I is also offered. Students admitted to this track will typically hold a bachelor's degree in a science area other than physics, such as astronomy, biology, chemistry, geology, mathematics, or psychology, or an engineering degree, including optics and materials science. Thesis research will be in an interdisciplinary in areas such as mathematical physics, optics, materials science, or engineering physics. Students awarded an M.S. degree within this track will be prepared for an Assistant Research Physicist position, including qualification for co authorship, and would typically work under the direction of a doctoral-level person. The acquired skill would be highly marketable, as individuals trained in multidisciplinary areas for basic and applied research are increasingly in demand in industry, government laboratories, and other research institutions.

If this option is approved, the student must complete a total of 30 credit hours which consist of the following:

1. Classical Mechanics, PH 561 or Statistical Mechanics PH532; Electromagnetic Theory, PH 545 - PH 546; and Quantum Mechanics, PH 550
2. 6 hours of Physics graduate level core classes most closely related to your research focus area (PH 635, PH 650, PH 671, PH 660)

3. a minimum of 6 hours of graduate-level courses offered by other departments

4. 6 semester hours of Thesis Research PH 699

Plan II

With approval of the physics graduate program director, a nonthesis option (Plan II) is available for all tracks in the Masters program. In this case, the graduate study committee requires the same total credit hours as for Plan I, but does not require 6 semester hours of Thesis Research (PH 699). The committee gives the student an M.S.-degree exit examination upon successful completion of the coursework.

Ph.D. Program

All students are required to take the following core courses:

PH 760 Methods of Mathematical Physics I (3 CH, 1 semester)

PH 715 Advanced Statistical Mechanics (3 CH, 1 semester)

PH 750 Classical Electrodynamics I (3 CH, 1 semester)

PH 771 Quantum Mechanics I (3 CH, 1 semester)

PH 793-PH 794 Scientific Communications I, II 2 credit hours

In addition, GRD717, Responsible Conduct in Research, must be taken prior to admission to candidacy. Students are encouraged to take the course during their first summer semester in the PhD program.

A qualifying examination is given to test a student's competency in fundamental areas of Physics. This examination is divided into three sections: statistical mechanics, electromagnetic theory, and quantum physics. Each exam must be taken at the first offering following the completion of the related core course, PH 715, 750, and 771. PH 760 should be passed before any of the qualifying exams. The examination may not be taken more than twice. Scientific communications, PH 793 and PH 794, must be taken at the first offering following the completion of the qualifying examinations.

Following satisfactory completion of the core qualifying examinations and consultation with individual faculty members, the student selects a specific area for dissertation research under the supervision of an appropriate graduate faculty member. The student's Graduate Study Committee, chaired by the major advisor, will outline a program of study including graduate courses and appropriate tools of research, such as computer and/or foreign language competency. Also, the Graduate Study Committee will administer an oral selected topic examination to test the student's knowledge in the area of research. The student must pass this oral examination in no more than two attempts. Then, with direction from the major advisor, the student should focus on formulating and writing a formal research proposal that must be presented and defended before the Graduate Study Committee; this should lead to a recommendation from the committee for admission to candidacy. Dissertation research culminates in the successful oral defense of the dissertation.

The Physic Graduate program offers two tracks, the Physics Track and the Applied Physics Track.

Physics Track:

For students entering with a B.S. degree, the program requires a total of 72 credit hours distributed as follows:

- Fourteen semester hours of the core courses listed above
- PH 752, Light-Matter Interactions (3 credit hours)
- GRD 717 (3 credit hours)
- Three credit hours of elective courses approved by dissertation committee and/or graduate program director
- Participation in Colloquium (1 credit hour/semester)
- Directed and Dissertation Research (at least 2 semesters of dissertation research are required to graduate)

For information about transferring credits from a Masters of Science program, please contact the department (mezvanut@uab.edu).

Applied Physics Track:

For students entering with a B.S. degree, the program requires a total of 72 credit hours distributed as follows:

- Fourteen semester hours of the core courses listed above
- PH 746 Applied Physics Internship (3 credit hours)
- GRD 717 (3 credit hours)
- Participation in Colloquium (1 credit hour/semester)
- Three credit hours of elective courses approved by dissertation committee and/or graduate program director
- Directed and Dissertation Research (at least 2 semesters of dissertation research are required to graduate)

For information about transferring credits from a Masters of Science program, please contact the department (mezvanut@uab.edu)

The following is a partial list of elective courses. Others may be suggested by the student or advisor. All electives must be approved by the graduate advisor and/or PhD committee.

Elective Courses for the Applied Physics Track

- PHY 792: Cell Interactions with Biomaterials. 3 credit hours
- PH 753-754: Advanced Solid State Physics. 6 credit hours
- MSE 743-744: Materials Characterization I and II. 6 credit hours
- PH 732-733: Growth and Characterization of Thin Films I, II. 6 credit hours
- BME 590: Tissue Engineering. 3 credit hours
- PH 587: Nanoscale Science and Applications. 3 credit hours
- PH 575-576: Introduction to Biophysics I, II. 6 credit hours
- PH 581-582: Laser Physics I, II. 6 credit hours
- PH 585: Laser Spectroscopy. 3 credit hours
- PH 525-526: Applications of Contemporary Optics I, II. 6 credit hours

The following doctoral fellowships are available to the graduate students enrolled in the PhD program in physics at UAB.

2018 Blazer Graduate Research Fellowship in Physics

Applicants to the PhD program in Physics, who have demonstrated exceptional promise in research and scholarship, will be considered for the UAB Blazer Fellowship. Fellowship recipients will receive a stipend of \$26,000 + tuition and health insurance. Furthermore, they will be able to engage in research at the beginning of their first year with no teaching duties. It is expected that the Blazer Fellow will be able to commence

PhD research and choose a research mentor by the end of their first year.

For information about the 2018 application, contact the Physics Graduate Program director at mezvanut@uab.edu.

Department of Education – Graduate Assistantship in the Areas of National Need (GAANN)

The U.S. Department of Education has funded the University of Alabama at Birmingham (UAB) Department of Physics for three years, 2015-18, to support the department's doctoral students in their academic pursuits. The funding released through the fiscal year 2015 Graduate Assistance in Areas of National Need (GAANN) program, will support four physics Ph.D. students at a stipend level up to \$32,000 depending on the financial need of the applicant as assessed by the UAB Office of Financial Aid. The GAANN program also makes an annual institutional payment of \$14,724 per student to cover educational expenses. The project title for the UAB physics program is "Doctoral Fellowships in Nanoscale Materials and Computational Physics at the University of Alabama at Birmingham". This distinctive program will lead to a Ph.D. degree in physics involving individualized academic course work, closely-supervised research experiences, optional industrial internships, continuous development of pedagogical and communication skills, and comprehensive supervision and evaluation of teaching performance.

NASA-Alabama Space Grant Consortium Fellowships

Awards are up to \$37,000 (\$24K in student stipend, up to \$12K for tuition/insurance and \$1K for student travel allowance) and are made initially for one 12-month period and may be renewed annually for a maximum total award of 36 months (3 years) support. Must be a U.S. citizen, enrolled full-time in good academic standing with a GPA of at least 3.0 on a 4.0 scale at an Alabama Space Grant member university pursuing any space-related field of graduate study (Masters or Doctoral level). Must conduct a specific faculty-mentored research project that has a NASA or aerospace relevance. Cannot receive funds from any source for work other than that defined by the student's approved proposed research and plan of study for which the award is made (supplements to the student's award may be made by the home university using funds from any source, provided the amount and source are disclosed in advance - see information booklet for more details). Awardees must also complete an extramural NASA experience sometime during the fellowship year. The details are to be worked out with the faculty advisor and NASA lab facility where the student plans to participate in a research activity. *It is advisable that a NASA contact be found prior to submission of the fellowship proposal.* Fellows are also expected to be involved in ASGC outreach activities and submit a final report at the end of the award period.

The online Graduate Fellowship Application is available through the department website.

Graduate Research Scholars Program

Graduate students working toward their PhD may compete for a research fellowship based on the quality of their present research and promise of future success through the the Graduate Research Scholars Program (GRSP). The GRSP is designed to strengthen and enhance the research capacity of member institutions of the Alabama Experimental Program to Stimulate Competitive Research (EPSCoR). Students submit a complete

research proposal package to the UAB EPSCoR Coordinator in Spring each year, and successful recipients are announced in early Summer.

For up-to-date information about additional fellowships, please contact the Physics Graduate Program Director, mezvanut@uab.edu

Additional Information

Deadline for Entry Term(s):	Each Fall semester
Deadline for All Application Materials to be in the Graduate School Office:	Six weeks before term begins
Number of Evaluation Forms Required:	Three
Entrance Tests:	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)
Comments:	GRE General Test is required; in addition, subject test is recommended

Political Science and Public Administration

Interim Chair: Angela Lewis, Ph.D.

The Department of Government offers a graduate program of study leading to the Master of Public Administration (MPA) degree.

UAB's nationally ranked Master of Public Administration (MPA) program is NASPAA (National Association of Schools of Public Affairs and Administration) accredited. Our MPA program prepares students for successful careers in public service where they can serve the greater good. We have graduates locally and across the country who have become successful leaders and managers in local, state, and federal government positions, and in nonprofit organizations.

To obtain specific admissions requirements on how to apply to Graduate School, prospective students should visit this page: <https://www.uab.edu/cas/pspa/graduate-program>

Degree Offered:	MPA
Director:	Akhlaque Haque, Ph.D.
Phone:	(205) 934-4653
E-mail:	mpa@uab.edu
Website:	http://www.uab.edu/mpa

MPA Program Mission

In line with the mission of the University, the MPA program is committed to excellence in graduate education through teaching, research, service, and practice. The program focuses on building the next generation of global leaders and responsible decision makers by enhancing their intellectual and social capacities through knowledge and skills provided within the framework of public service values embedded in the MPA curriculum. The Master of Public Administration Program prepares individuals for positions of leadership in the public and nonprofit sectors. It is a professional graduate degree for both pre-career students and in-service administrators. The program is designed to develop the insights and skills needed to plan and formulate policy, and to organize,

manage, and implement programs and operations. The MPA program is accredited by the Network of Schools of Public Policy, Affairs, and Administration (**NASPAA**). Its Board of Advisors consists of internal and external stakeholders comprised of community members, alumni and students.

The MPA curriculum is designed to ensure that students achieve competency in five domains:

- To lead and manage in public governance.
- To participate in and contribute to the policy process.
- To analyze, synthesize, think critically, solve problems and make decisions.
- To articulate and apply a public service perspective.
- To communicate and interact productively with a diverse and changing workforce and citizenry.

Degree Requirements

Students in the MPA program must complete a total of **42 semester hours** or the equivalent, with an overall grade average of at least B. . Students without professional public service experience are required to do a three hour internship in addition to required coursework. Previous graduate work at UAB or another NASPAA accredited MPA program may be credited toward the degree if it is directly applicable. Students may select the thesis option or the non-thesis option.

Joint Degree and Certificate Programs

- For students who are interested in both public administration and the delivery of public health services, a coordinated **MPA/MPH dual degree** is offered.
- For students who are interested in both public administration and the law, a coordinated **MPA/J.D dual degree** is offered.
- For students interested in criminal justice and public administration a coordinated **MPA/MSJ dual degree** is offered.
- For non-traditional students interested in managing nonprofit organizations the program offers a **Graduate Certificate in Nonprofit Management**. Students seeking admission into the Nonprofit Certificate only should apply as non-degree seeking through Graduate School by visiting <https://www.uab.edu/graduate/admissions>. Contact the MPA program coordinator (ccmayo@uab.edu) for additional information regarding the Certificates.

Admission Requirements

Because of its multidisciplinary nature, persons from all undergraduate majors are considered for admission to the program. Applicants must take the Graduate Record Examination (GRE) and submit scores. The following are eligible for a GRE Waiver:

Students with a graduate degree from an accredited college or university.

Students with at least 5 years professional, full-time, progressively responsible mid-to-senior level management experience. The Statement of Interest and resume should provide clear evidence to for this waiver.

The LSAT may be substituted for the GRE only by JD/MPA applicants. Standardized GMAT score may be substituted at the discretion of the Program Director.

** IMPORTANT Applicants who are applying for a waiver or substitution of other test scores must contact the MPA Director for the official approval. The applicant should submit a formal request accompanied by a resume to the MPA Program Director via postal mail or email attachment.

Two letters of reference are also required. Application for admission should be made online by visiting the UAB Graduate School website (uab.edu/graduate) and clicking the 'Apply Now' button. Admissions will be made fall and spring semester. Deadlines for submitting application for admission are listed on the UAB Graduate School website.

Deadline for Entry Term(s):	Each semester
Deadline for All Application Materials to be in the Graduate School Office:	Fall: July 1 Spring: November 1
Number of Evaluation Forms Required:	Two
Entrance Tests:	GRE (TOEFL and TWE also required for international applicants whose native language is not English.). GRE waived for senior professional. See guidelines above.

Financial Aid

The Department of Government has a limited number of graduate assistantships awarded on a competitive basis, which can be awarded during any semester as vacancies occur. The Department has two scholarships which are awarded on a competitive basis each spring. Other financial resources are available through the Office of Student Financial Aid.

Internships and Placement

Students may apply for an internship placement at any time. A few paid opportunities do arise, although the majority of internships are non-paid. Typical placements are in city and county government, planning departments, public health agencies, social service agencies, state government agencies, and various nonprofit organizations. The Department has placed several students in the prestigious Presidential Management Internship Program, which provides an excellent opportunity for eventual employment in the federal government. Students are also encouraged to use the services of the UAB Student Development Office in the University Center for career planning and placement. The faculty in the program also assists students in job placement. Please [click here](#) to see what some of our graduates are doing now.

Joint Degree Programs

Coordinated MPA/MPH Program

The MPA/MPH is designed to train individuals for administrative positions in public health and related health organizations. The Master of Public Administration degree prepares students for careers as administrators in public and nonprofit agencies, and the Master of Public Health provides a background in public health principles and programs. Students must apply and be accepted into both programs, meeting each program's entry requirements. Students are required to complete a total of 60-64 semester hours for the coordinated degree. Core requirements of 21 hours from the MPA program and 39-43 hours from the MPH program

are required. Full-time students should be able to complete all degree requirements within three years.

Coordinated MPA/JD Program

The MPA program at UAB and the Cumberland School of Law at Samford University offer a coordinated MPA/JD program. The offering of this dual degree reflects recognition of the complex interrelationship between the legal system, public policy analysis, and public management. It will be particularly applicable to those pursuing careers in government and/or public interest law. Students must apply and be admitted to the MPA and JD programs separately. The requirements for each degree must be met. Close communication with both programs is required. Depending on prior experience, a field placement may be required.

Coordinated MPA/MSJ Program

The MPA/MSJ is targeted toward individuals who wish to gain competencies in public management and the theory/practice of criminal justice. Students must apply and be accepted into both programs, meeting each program's entry requirements. Students are required to complete a total of 60 semester hours for the coordinated degree. Core requirements of 24 hours from the MPA program and 18 hours from the MSJ program; an additional 12 hours of electives, 3 hours of internship and a 3 hour capstone course are required. Full-time students should be able to complete all degree requirements within three years.

MPA Alumni Association

An active alumni association welcomes graduates of the program into membership. The association makes both advisory and financial contributions to the program and seeks to elevate the level of professionalism in public administration through a variety of projects and services. One of the best qualities of our alumni is their willingness to remain in contact with the MPA program. Our students benefit from talks and events in which our alumni engage, shared their experiences, and mentor the next generation.

Contact Information

For additional information refer to the web site of the UAB MPA program: www.uab.edu/mpa. Inquiries concerning program admission or other questions about the program should be directed to the MPA Program Program Coordinator.

MPA Coordinator
 Graduate Studies in Public Administration
 Department of Government
 University of Alabama at Birmingham
 HHB 415, 1530 3rd Avenue South
 Birmingham, Alabama 35294-1152
 Telephone (205) 975-3413 or (205) 934-2339
 Email: mpa@uab.edu

Master of Public Administration

A total of 39 hours are required to complete the MPA program. For pre-career students an additional 3 credit hours of internship (20 hours/week) is also required. For a total of 42 hours, a full time student, taking 3 courses per semester, plus one additional course over the summer, should be able to complete the program within two years. All courses are offered in the evenings to accommodate working professionals.

Plan I: thesis

Requirements	Hours
Core	
MPA 600 Administrative Ethics	3
MPA 601 The Public Policymaking Process	3
MPA 602 Scope of Public Administration	3
MPA 603 Public & Nonprofit Budgeting	3
MPA 604 Human Resources Management	3
MPA 605 Information Management for Government	3
MPA 606 Foundations of PA Research	3
MPA 607 Quantitative Methods for PA	3
MPA 698 Internship in Public Administration ¹	3
Admission to Candidacy	
MPA 696 Independent Study in Public Administration ¹	3
MPA 699 Thesis Research	6
Electives	
MPA 662 State and Local Government Administration	6
MPA 664 Women in Public Administration	
MPA 665 Crisis Management	
MPA 666 City County Management	
MPA 667 Administrative Law	
MPA 668 Intergovernmental Relations	
MPA 671 Marketing and Fundraising	
MPA 672 Nonprofit Management	
MPA 674 GIS for Managers	
MPA 675 Equity and Diversity in Public Policy	
MPA 678 Strategic Planning	
MPA 681 Local Government Planning	
MPA 682 Economic Development	
MPA 684 Grants Management	
MPA 689 Program Evaluation	
MPA 683 Public Managerial Economics	
Total Hours	42

¹ Students taking the thesis option (Plan I) must take three hours of Independent Study under the guidance of the thesis chair prior to taking the six thesis hours (total 9 hours for thesis).

Plan II: non-thesis

Requirements	Hours
Core	
MPA 600 Administrative Ethics	3
MPA 601 The Public Policymaking Process	3
MPA 602 Scope of Public Administration	3
MPA 603 Public & Nonprofit Budgeting	3
MPA 604 Human Resources Management	3
MPA 605 Information Management for Government	3
MPA 606 Foundations of PA Research	3
MPA 607 Quantitative Methods for PA	3
MPA 698 Internship in Public Administration ¹	3
Portfolio	
MPA 697 Graduate Learning Portfolio ¹	3
Electives	
MPA 662 State and Local Government Administration	12
MPA 664 Women in Public Administration	
MPA 665 Crisis Management	

MPA 666	City County Management
MPA 667	Administrative Law
MPA 668	Intergovernmental Relations
MPA 671	Marketing and Fundraising
MPA 672	Nonprofit Management
MPA 674	GIS for Managers
MPA 675	Equity and Diversity in Public Policy
MPA 678	Strategic Planning
MPA 681	Local Government Planning
MPA 682	Economic Development
MPA 684	Grants Management
MPA 689	Program Evaluation
MPA 683	Public Managerial Economics

Total Hours 42

¹ During the last semester of study, students opting for the non-thesis (Plan II) must register for MPA 697, Graduate Learning Portfolio (GLP) and complete a comprehensive portfolio based on the course work, mission/vision, and career plans.

Psychology

Graduate Program

The Doctoral Program in the Department of Psychology offers three concentrations: [Behavioral Neuroscience](#) (p. 71), [Lifespan Developmental Psychology](#) (p. 72), and [Medical/Clinical Psychology](#) (p. 73). Upon completion of any of these concentrations the student receives a Ph.D. in Psychology. A terminal master's degree is not offered.

[Behavioral Neuroscience](#) (p. 71)

Training in Behavioral Neuroscience is designed to prepare students for independent research and teaching in the neurobiology of behavior. Research training is provided by faculty in the Department of Psychology and in the UAB Schools of Medicine and Optometry, who share an interest in the biological basis of behavior. The course of study includes a core curriculum in neuroscience and recognizes the interdisciplinary nature of this field. Students obtain strong backgrounds in behavioral science and in neuroscience and gain expertise in the content and techniques of selected areas of neuroscience as they apply to the study of behavior.

Faculty laboratories are equipped for research in behavior, neuroanatomy, neurochemistry, neuroimaging, neuropharmacology, neurophysiology, and molecular biology. The research interests of the faculty include neuroanatomy and neurophysiology of the visual system; interactions between the central nervous system and the periphery in the control of feeding and energy balance; neural underpinnings of obesity and plasticity in participants in a weight loss program; autism; emotional substrates of conditioned fear; neurophysiology and neuropharmacology of pain.

[Lifespan Developmental Psychology](#) (p. 72)

Training in Lifespan Developmental Psychology prepares students to discover and apply basic principles of development across the lifespan in an interdisciplinary research context. Our premise is that the application of psychological principles of development can contribute in important ways to solving problems encountered throughout the lifespan. Graduates are capable of taking positions in institutions of higher

learning, medical schools, research institutions, government agencies, nonprofit organizations, and other research and teaching positions.

Research training is provided by the faculty of the Department of Psychology and may occur in collaboration with faculty across campus including the Civitan International Research Center, the Center for Aging, the Center for Applied Gerontology, the Department of Pediatrics, The School of Public Health, and other centers and departments.

The research programs of faculty with interests in lifespan developmental psychology include a wide variety of topics from infancy to the elderly. Much of this research is funded by federal research grants. Research subareas include: injury prevention, developmental disabilities (with special interests in Autism Spectrum Disorders, prenatal development and exposure to toxic substances, early intervention, adolescent psychosocial development and mental health); adolescence (with special interest in longitudinal studies, interactions between health and development, alcohol and drug use, predictors of depression and suicide, family and peer relations, those with special health care or education needs); and aging (with special interest in visual-perceptual problems of older adults with low vision, memory skills training with elderly populations, the psychological aspects of chronic illness in the elderly, chronically ill individuals, care giving in families of elderly persons, human factor issues in vision and aging).

Lifespan Developmental Psychology students must complete a master's thesis. Admission to candidacy for the doctoral degree is based on satisfactory completion of coursework and completion of an area review in the form of a *Psychological Bulletin* or *Psychological Review* article. The doctoral degree is awarded upon successful defense of the dissertation.

Medical/Clinical Psychology (p. 73)

Training in Medical / Clinical Psychology prepares students to become leaders in health promotion, disease prevention, risk reduction, and symptom assessment and amelioration in interdisciplinary and medical settings. Research, course work and clinical training emphasize behavioral and psychological factors associated with medical illness and injury as well as neurobehavioral and psychological disorders across the lifespan. The Medical/Clinical Psychology concentration is accredited as a clinical psychology doctoral program by the American Psychological Association (<https://www.apa.org/ed/accreditation/programs/index.aspx>).

The Medical/Clinical Psychology concentration is co-sponsored by the Department of Psychology (College of Arts and Sciences) and the UAB School of Medicine. Faculty are distributed across multiple academic departments and divisions, including but not limited to Psychology, Psychiatry, Pediatrics, Neurology, Preventive Medicine, Clinical Immunology and Rheumatology, and Physical Medicine and Rehabilitation. Clinical psychologists and researchers in UAB-affiliated clinics and research centers, the Children's of Alabama Hospital, the Birmingham VA Medical Center and throughout the community also play active roles in teaching as well as research mentoring and clinical supervision.

Research programs in which faculty and students are currently involved include: accidental injury and child abuse risk prevention; adolescence, aging, autism spectrum and other neurodevelopmental disorders and developmental disabilities; chronic pain; coping with medical illness, dementia, eating disorders and obesity; epilepsy; minority health issues and health disparities; neural plasticity; neuroimaging; pediatric oncology; response to stress and psychological trauma; rehabilitation following

traumatic brain and spinal cord injury, stroke and neurobehavioral disease; sleep and feeding problems of childhood; and substance abuse.

With appropriate approvals it is possible to complete the Master of Science in Public Health program and the Medical/Clinical Psychology concentration concurrently.

Application

The deadline for receipt of complete applications for admission is **November 30**. Applications are invited both from students with bachelor's degrees and from those who may have already completed some graduate study. The GRE General Test is required. For the most up-to-date description of application requirements please see the websites for the individual concentrations, given below.

Admission

Admission to the Psychology graduate program is highly selective. Applications are evaluated as a whole without minimum criteria on single scores or other indicators. Transcripts are evaluated for the content and difficulty of courses completed as well as grades received. All programs follow an affirmative action/equal opportunity process to ensure that all applicants are evaluated fairly and on the basis of their individual merit. Further information regarding admission to the three Psychology concentrations appears below:

Behavioral Neuroscience

Because of the interdisciplinary nature of behavioral neuroscience, students with diverse backgrounds in psychology, biology, and physical science are encouraged to apply. All students are expected to have undergraduate training in psychology, biology, physics, chemistry, and mathematics. Students not trained in one or more of these areas may be required to make up deficits after enrollment.

Lifespan Developmental Psychology

Lifespan Developmental Psychology admission requires a solid background in psychology as well as some courses in the life sciences. Research experience is essential. Excellent grades in statistics and mathematics are also valued.

Medical/Clinical Psychology

Medical/Clinical Psychology requires a strong background in psychology (including statistics and research design; cognitive, biological, and affective bases of behavior; abnormal psychology and personality). Advanced course work in mathematics and natural science (especially anatomy and physiology) is also recommended. Relevant research experience is considered an important indication of the applicant's motivation and commitment to program goals, and prior experience with clinical populations is also advantageous. The relevance of the applicant's goals and interests to ongoing activities of our faculty is weighed heavily in admissions decisions. Please visit the Medical/Clinical Psychology website for further information on admissions (including characteristics of admitted students) and program outcomes.

Advisement

Behavioral Neuroscience students are advised by the Behavioral Neuroscience Director in consultation with a program steering committee and by their research preceptors until the dissertation committee is appointed, usually early in the third year of study.

Students accepted into the Lifespan Developmental Psychology specialization are matched with a faculty member who agrees to mentor that student. Therefore, applicants will need to identify faculty members with whom they share research interest and would like to study.

Medical/Clinical Psychology students are advised by their research mentor, an individually-tailored advisory committee, and the Director of Medical/Clinical Psychology.

Financial Aid

All students in the Psychology Doctoral Program receive financial aid, including a stipend, tuition and health insurance for at least 5 years. Sources of support include fellowships, traineeships, assistantships, and tuition scholarships.

Additional Information

For further information please visit the websites listed below. Questions may be directed to the appropriate Director or to the Psychology Graduate Program Manager, Ms. Terri Roberson, at 205-934-8723 or trobe@uab.edu.

Behavioral Neuroscience

Website: <http://www.uab.edu/cas/psychology/graduate/behavioral-neuroscience>

Dr. David C. Knight, Director
Email knightdc@uab.edu (amthorfr@uab.edu)

Lifespan Developmental Psychology

Website: <http://www.uab.edu/cas/psychology/graduate/lifespan-developmental>

Dr. Despina Stavrinou, Director
Email dstavrin@uab.edu (fbiasini@uab.edu)

Medical/Clinical Psychology

Website: <http://www.uab.edu/cas/psychology/graduate/medical-clinical-psychology>

Dr. Edwin W. Cook III, Director
Email: ecook@uab.edu

Behavioral Neuroscience

To obtain specific admissions requirements on how to apply to Graduate School, prospective students should visit this page: <https://www.uab.edu/cas/psychology/graduate-programs/behavioral-neuroscience>

The curriculum in Behavioral Neuroscience provides a student with advanced training that is broadly based in neuroscience. All students have a plan of coursework that includes Overview of Behavioral Neuroscience (PY 753), a two-semester statistics sequence (PY 716-PY 717), and an ongoing seminar in current research (PY 756). Advanced academic coursework is determined by the student and mentor. The student initially rotates among faculty and laboratories during the first year to obtain breadth in points of view and experimental techniques. Student then chooses a mentor with whom they normally complete the remainder of their research training. Before admission to candidacy, each student must complete a 2nd Year research requirement and pass the qualifying examination. Following acceptance of a proposal

for dissertation research, the student is admitted to candidacy. The Ph.D. degree is awarded upon successful defense of the dissertation.

If entering with a baccalaureate degree:

- Completion of 48 credit hours of course work prior to candidacy.
- Up to 16 credits of the 48 can be as non-dissertation research credits.
- Up to 10 credits of the 48 can be as lab rotation, seminar, or directed study credits.
- Must complete at least two semesters in candidacy and accumulate at least 24 credit hours in 799 research **OR**
 - must complete at least two semesters in candidacy and have accumulated at least 12 credit hours in 799 research **AND**, either during or before candidacy, 12 credit hours in other appropriate research-based coursework that has been approved by the graduate student's program.

If entering with a previous Masters degree appropriate to the PhD degree field:

- Completion of 27 credit hours of course work prior to candidacy.
- Up to 6 credits of the 27 can be as non-dissertation research credits.
- Up to 6 credits of the 27 can be as lab rotation, seminar, or directed study credits.
- Must complete at least two semesters in candidacy and accumulate at least 24 credits in 799 research **OR**
 - must complete at least two semesters in candidacy and have accumulated at least 12 credit hours in 799 research **AND**, either during or before candidacy, 12 credit hours in other appropriate research-based coursework, which has been approved by the graduate student's program.

Requirements		Hours
PY 792	Introduction to Neurobiology (Summer before Year 1) ¹	6
Year One		
PY 716	Introduction to Statistics and Measurement	3
PY 716L	Lab for Introduction to Statistics and Measurement	1
PY 717	Applied Statistical Methods	3
PY 717L	Lab for Applied Statistical Methods	1
PY 753	Foundations of Behavioral Neuroscience	4
PY 756	Research Seminar in Behavioral Neuroscience	2
PY 798	Predocutorial Degree Graduate Research	1
PY 798	Predocutorial Degree Graduate Research (Summer of Year 1)	3-5
Year Two		
PY 756	Research Seminar in Behavioral Neuroscience	2
PY 798	Predocutorial Degree Graduate Research	7
	Three Psychology Electives ²	9
PY 798	Predocutorial Degree Graduate Research (Summer of Year 2)	3-5
Year Three		
GRD 717	Principles of Scientific Integrity	3
PY 756	Research Seminar in Behavioral Neuroscience	2
PY 798	Predocutorial Degree Graduate Research	13
PY 798	Predocutorial Degree Graduate Research (Summer of Year 3)	3-5
Year Four		
PY 756	Research Seminar in Behavioral Neuroscience	2
PY 799	Doctoral Dissertation Research	16
PY 799	Doctoral Dissertation Research (Summer of Year 4)	3-5

Year Five

PY 756	Research Seminar in Behavioral Neuroscience	2
PY 799	Doctoral Dissertation Research	16
PY 799	Doctoral Dissertation Research (Summer of Year 5)	3-5
Total Hours		108-118

- ¹ PY 792 is completed during the summer, mid July to August, prior to the first semester in the Behavioral Neuroscience program.
- ² Elective Classes: PY 700, PY 706, PY 707, PY 718, PY 719, PY 720, PY 727, PY 735, PY 746, PY 751, PY 755, PY 763, PY 787, PY 791, PY 793, BY 511, BY 616, BY 648, BME 664, BME 764, BME 665, BME 765, CH 461, CH 561, CH 562, CS 665, NBL 712, NBL 729, NBL 730, NBL 751, NBL 755, NTR 718, PHR 701, VIS 550, VIS 728, VIS 748, VIS 751, VIS 753, VIS 754

Dauphin Island

Prior to starting the first semester of courses, students attend a three week course held at the Dauphin Island Research Facility (<https://www.disl.org>). This course introduces students to many of the basic techniques and issues in the field of neuroscience and is paid for by the department.

Lifespan Developmental Psychology

To obtain specific admissions requirements on how to apply to Graduate School, prospective students should visit this page:<https://www.uab.edu/cas/psychology/graduate-programs/lifespan-developmental>

Each student in the Lifespan Developmental Psychology specialization is encouraged to develop a systematic line of research that complements that of his or her advisor. With intense exposure to an important aspect of developmental research, the student acquires skills that can be generalized to a variety of problems. Students are required to complete a core curriculum which includes 21 hours of developmental psychology classes, 15 hours of research design and statistics, 9 hours of general psychology and related discipline classes; 6 hours of teaching practicum and teaching; and at least 48 credit hours of research.

Lifespan Developmental Psychology students must complete a master's thesis. Admission to candidacy for the doctoral degree is based on satisfactory completion of coursework and completion of an area review in the form of a *Psychological Bulletin* or *Psychological Review* article. The doctoral degree is awarded upon successful defense of the dissertation.

Master's Degree

Requirements	Hours
Graduate Coursework ^{1,2}	24
PY 708	Developmental Psychology
PY 710	Seminar in Lifespan Developmental Psychology (Required fall and spring semesters every year)
PY 716	Introduction to Statistics and Measurement
PY 716L	Lab for Introduction to Statistics and Measurement
PY 717	Applied Statistical Methods
PY 717L	Lab for Applied Statistical Methods
PY 729	Seminar in Adolescent Development
PY 785	Psychology of Aging

PY 698	Premaster's Degree Graduate Research (Select until admitted to candidacy for the Master's Degree)	6
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Thesis Research 6

PY 699	Master's Level Thesis Research	
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Elective Options in Developmental Psychology

Select three courses from: Other courses may be considered with Program Director approval.

PY 711	Seminar in Cognitive Development
PY 712	Seminar in Social Development
PY 734	Applied Developmental Psychology
PY 764	Cognitive Assessment: Child and Adult
PY 783	Developmental Disabilities

Total Hours	30 - Minimum Required for Master's Degree
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Doctoral Degree**Requirements****Graduate Coursework**¹

PY 707	Brain and Cognition
PY 710	Seminar in Lifespan Developmental Psychology (Required fall and spring semesters every year)
PY 719	Multivariate Statistical Methods
PY 719L	Lab for Multivariate Statistical Methods

Electives in Research Design & Statistics**Select one course from:** 3

PY 700 & PY 718	Foundations of Research Design and Advanced Research Design
PY 718	Advanced Research Design
PY 727	Longitudinal Data Analysis Laboratory

General Psychology & Related Disciplines: Other courses may be considered with Program Director approval. 6**Select two courses from:**

PY 703	Theories of Personality
PY 704	Social Psychology
PY 706	Sensory and Perceptual Processes
PY 720	Human Neuropsychology
PY 731	Health Psychology
PY 742	Sport Psychology
PY 743	Methods in Neuroimaging
PY 791	Special Topics in Psychology

Teaching 6

PY 796	Practicum in the Teaching of Psychology
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Research 24

PY 798	Predocloral Degree Graduate Research (Select until admitted to candidacy for the Doctoral Degree)
PY 799	Doctoral Dissertation Research

Total Hours	81 - Minimum Required Hours for Doctoral Degree
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Medical/Clinical Psychology

To obtain specific admissions requirements on how to apply to Graduate School, prospective students should visit this page: <https://www.uab.edu/cas/psychology/graduate-programs/medical-clinical-psychology>

The Medical/Clinical Psychology specialization places strong emphasis on integration of biological and behavioral sciences. Thus, the research and clinical training that the program provides assumes an undergraduate background in both psychology and life science. The program engages students in continued pursuit of knowledge and skill fundamental to research and clinical practice. In addition, students focus their research and a clinical training in one or more of the several areas of clinical and health psychology that the program emphasizes, and pursue advanced scientific and applied coursework, clinical practica, and directed research activities that culminate in the doctoral dissertation.

Course requirements for the Medical/Clinical Psychology specialization include:

1. General Psychology and Neuroscience – cognitive, biological, social, emotional and developmental bases of behavior, as well as the history of the discipline
2. Statistics and Research Design – statistical methods, research design, and the responsible conduct of research. The statistics courses have associated computer labs.
3. Foundations of Clinical and Health Psychology – personality, psychopathology, an overview of psychotherapeutic methods, health psychology and the ethics of professional practice
4. Psychological Assessment and Intervention – interviewing; behavioral, cognitive and personality assessment; and an introduction to cognitive-behavior therapy.

Additional courses and/or seminars may be taken as electives and may be required depending on the student’s area(s) of emphasis.

Students in Medical/Clinical Psychology are actively engaged in research throughout the time that they are enrolled in the program and typically complete a master’s thesis project during their second or third year. Clinical practicum experiences begin in the summer of the first year, and in their final year students complete an APA-accredited clinical psychology internship, typically in a medical facility. The doctoral degree is awarded upon successful defense of the dissertation and internship.

Master's Degree

Requirements	Hours
Graduate Coursework ^{1,2}	24
PY 700 Foundations of Research Design	
PY 701 Professional Issues and Ethics in Psychology	
PY 716 Introduction to Statistics and Measurement	
PY 716L Lab for Introduction to Statistics and Measurement	
PY 717 Applied Statistical Methods	
PY 717L Lab for Applied Statistical Methods	
PY 719 Multivariate Statistical Methods	
PY 719L Lab for Multivariate Statistical Methods	
PY 740 Adult Personality and Psychopathology	
PY 764 Cognitive Assessment: Child and Adult	
PY 765 Personality Assessment	
PY 770 Survey of Psychotherapeutic Methods	

Thesis Research 6

PY 699 Master's Level Thesis Research

- 1 The Master's Degree is not awarded outside of the Ph.D. program.
- 2 The following courses are required of all students. Individual course requirement may be waived based on evaluation of coursework completed prior to matriculation into the program. If a course requirement is waived, then the credit hours must be replaced by courses required by the program at the doctoral level or by other approved electives. No course may be used to satisfy a requirement for another degree and for the master’s degree in the Medical/Clinical Psychology Graduate Program
The program limits course waivers to half the program’s required credit hours of “regular” coursework, which would include, essentially, all 2- and 3-credit hour courses and their associated labs. It specifically excludes PY 699, 778, 779, 790, 797 and 799. This limitation applies across master’s and doctoral requirements. In theory it would be possible for a student to waive up to approximately eight classes. However, there are numerous classes that are rarely waived and so in practice it is rare for a student to be approved to waive more than three classes.

Doctoral Degree

Requirements	Hours
Required Coursework ^{1,2}	30
PY 704 Social Psychology	
PY 708 Developmental Psychology	
PY 718 Advanced Research Design	
PY 720 Human Neuropsychology or PY 731 Health Psychology	
PY 753 Foundations of Behavioral Neuroscience or PY 793 Cognitive Neuroscience or PY 707 Brain and Cognition	
PY 769 Cognitive Behavior Therapy	
PY 760 Interviewing and Behavioral Observation	
PY 778 Psychotherapy Practice Initial	
PY 797 Clinical Practicum in Medical Psychology	
Additional Requirements ³	
PY 702 History and Systems of Psychology ⁴	
PY 779 Foundations of Clinical Supervision and Consultation ⁵	
GRD 717 Principles of Scientific Integrity ⁶	
Wavier Deficit ⁷	
Doctoral Dissertation ⁸	12
PY 799 Doctoral Dissertation Research	
Internship	12
PY 790 Internship in Clinical Psychology	
Total Hours	54

- 1 The following courses are required of all students. Some courses may be waived based on evaluation of coursework completed elsewhere prior to matriculation into the program*. Course waivers do not reduce the Graduate School credit hour requirement in this category, and no course may be used to satisfy a requirement for both the doctorate in the Medical / Clinical Psychology Graduate Program and another degree, whether completed at UAB or elsewhere.

- ² Completion of 27 credit hours of course work prior to candidacy.
- Up to 6 credits of the 27 can be non-dissertation research credits.

Up to 6 credits can be lab rotation, seminar, or directed study credits

- ³ The following courses are required of some students, depending on their year of matriculation or their year of admission.
- ⁴ For Students graduating prior to 2019.
- ⁵ For students graduating in 2018 or later.
- ⁶ For students who entered the program in 2014 or later.
- ⁷ Students who do not meet the 27-hour minimum in this category due to course waivers can make up the deficit with any combination of the following:
1. Other elective courses approved by the program for this purpose.
 2. Up to 6 hours of PY 698, 699, and 798. Counts as non-dissertation research credits.
- None of these additional credits may have been applied toward another degree (including the master's in Clinical / Medical Psychology).
- ⁸ Either during or before candidacy, 12 semester hours in other appropriate research-based coursework which has been approved by the graduate student's program
- ⁹ Either during or before candidacy, 12 semester hours in other appropriate research-based coursework which has been approved by the graduate student's program

Social Work

Department of Social Work MSW Program

Training the finest professionals in the areas of clinical/medical social work requires settings that provide the best opportunities for students to develop the complex skills needed to provide services.

Students in the UAB Master of Social Work program will receive advanced training using an innovative model of evidence-based education in the resource-rich environment provided by UAB, including world-class Schools of Medicine and Public Health.

The MSW program will prepare students for clinical and community practice, including specific focus on interventions demonstrated to be effective for specific populations. Combining extensive internships in health and mental health settings with coordinated classroom learning, students will be uniquely trained in clinical and community practice.

The MSW is a terminal professional degree, focusing on developing advanced practice competencies. The majority of non-academic Social Work jobs are at this level, and an MSW degree is required to achieve licensure for independent clinical practice.

The program is accredited by the Council on Social Work Education.

Program Requirements

The MSW consists of 61 credit hours, divided into foundation level (13 hours) and concentration level (48) hours. Courses are sequenced so that students will graduate in four semesters.

Foundation courses are compressed into a single semester, allowing students three semesters to gain advanced clinical skills. The concentration sequence is three semesters of coursework with specific focus on courses aimed at developing specific practice competencies,

and courses on the specific populations who will be the recipients of behavioral health and health interventions.

Field Practicum

In the Field Practicum, students are prepared for post-graduate employment through a series of experiences in community agencies. Students are paired with Field Supervisors who are professionals with at least two years of post-graduate experience. Students have field experiences all four semesters, consisting of 1000 total contact hours. Activities in the field are sequenced to lead to independent practice, beginning in the initial setting with practice simulations and service learning in community agencies, continuing on with shadowing and supervised direct practice. The field experience is integrated across the curriculum, including conducting a research project as part of field practicum experience, and assignments paired to practice courses. The field experience uses closely monitored experiences in community settings to allow students more direct experience. This approach is designed to increase student readiness for the more specialized upper level practice associated the clinical social work.

Advanced Standing

Students holding a Bachelor of Social Work degree from a BSW program accredited by the Council on Social Work Education (CSWE) may be admitted to the MSW program with advanced-standing status. The required coursework is completed over three semesters (Fall/Spring/Fall). Student with advanced standing have field experiences over three semesters consisting of 900 total contact hours.

Admission Requirements

All applicants must meet admissions requirements established by the UAB Graduate School; including completion of a Bachelor's degree (or higher), and minimum **GPA of 3.0 (on a four-point scale) in junior and senior level course work.**

Please note: Only full-time students will be admitted into the program at this time.

An admissions packet will consist of the following items:

- Academic transcripts with GPAs
- Two recommendations, including one academic and one professional
- A resume
- A writing sample answering 2 specific questions around professionalism, ethics, diversity, and social justice
- International students will be required to submit scores from the TOEFL
- The GRE is not required

Applications will be read by members of the MSW Admissions Committee, which will include the MSW program director, two faculty members and an outside reviewer.

The deadlines to apply to the MSW program follow the UAB Graduate School (<http://www.uab.edu/graduate/graduate-school-quicklinks/deadline-dates/#degreeseekingstudent>) application deadlines.

Master of Social Work in Clinical/ Medical Social Work

Students who have a non-social work undergraduate degree from an accredited College or University may be admitted as a student to 2-year (4 semester/61 credit) curriculum (Regular admission). Students who hold a BSW from a social work program accredited by the Council on Social Work Education may apply for Advanced Standing admission. Students entering the program as Advanced Standing are not required to complete Foundation courses and begin with the advanced curriculum (3 semester/48 credit).

Requirements	Hours
SW 510 Social Work Practice with Individuals, Groups & Organizations	3
SW 520 Social Work Policy	3
SW 530 Research I	3
SW 590 Field Practicum I	3
SW 591 Field Practicum Seminar I	1
SW 610 Diagnosis and Assessment for Health and Behavioral Health	3
SW 640 Human Behavior in the Social Environment for Health and Behavioral Health	3
SW 630 Research with Health and Behavioral Health Populations I	3
SW 693 Field Practicum Seminar II	1
SW 690 Field Practicum II	6
SW 631 Research with Health and Behavioral Health Populations II	3
SW 615 Evidence-informed Interventions in Health and Behavioral Health I	3
SW 653 Social Work Practice along the HIV Continuum of Care	3
SW 599 Special Topics in Social Work	3
SW 691 Field Practicum III	6
SW 616 Evidence-informed Interventions in Health and Behavioral Health II (Groups, Organizations, Comm)	3
SW 650 Evidence-Based Practice in Mental Health or SW 651 Evidence-Based Practice in Addictions	3
SW 694 Field Practicum Seminar III	1
SW 620 Policy Analysis and Advocacy Practice for Health and Behavioral Health	3
SW 692 Field Practicum IV	6
SW 695 Field Practicum Seminar IV	1
Total Hours	64

Sociology

To obtain specific admissions requirements on how to apply to Graduate School, prospective students should visit this page:

<http://www.uab.edu/cas/sociology/graduate-programs>

Degree Offered:	M.A. in Sociology, Ph.D. in Medical Sociology
Director:	Patricia Drentea, Ph.D.
Phone:	(205) 934-2562
E-mail:	pdrentea@uab.edu

Website:

<http://www.uab.edu/sociology/graduate-programs>

Medical Sociology

Prospective students should use website below to obtain specific admissions requirements on how to apply to Graduate School:

<http://www.uab.edu/cas/sociology/graduate-programs>

Medical Sociology Ph.D. Program

This program is designed to provide students with the coursework and research experiences to become leading researchers, professors and practitioners in medical sociology. Doctoral training in medical sociology exposes students to the central issues of the field through a variety of methodological techniques encompassing both qualitative and quantitative approaches. Graduate students study the social and cultural bases of health beliefs and behaviors, organizational structures of health care delivery, and health disparities, to name just a few examples. Students acquire expertise in theory formulation and data analysis.

There are abundant opportunities for graduate students to work with faculty on research projects in medical settings across the campus.

Admission

Admission to the Ph.D. program in medical sociology generally requires a minimum overall score of 290. Scores should range from 150-162 verbal and 140-157 Quantitative. Minimum GPA of 3.0 (A = 4.0), or a 3.2 GPA for the last 60 semester hours in a B.A. or B.S. program; and minimum GPA of 3.5 in all previous graduate coursework. Students should have completed at least 18 hours in social science courses, including social theory, statistics, and research methods. Students entering the program with a master's degree can waive 16 hours of courses, of which 6 credits are thesis research credits. Please see the sociology website for more information coming in with an MA, MPH, or MS. Because of the interdisciplinary nature of the Medical Sociology Ph.D. program, students with diverse backgrounds in social science and health-related fields are encouraged to apply. Students lacking adequate backgrounds in theory, research methods, or statistics may be required to make up deficits after enrollment.

Advising

The Graduate Director and/or the student's faculty mentor will provide continuous advisement on academic progress during the student's graduate study, including assistance with course selection and recommendations for research experiences that are consistent with the student's developing interests and abilities. In addition, each year the student will be formally evaluated by the Graduate Committee and will be provided with performance feedback.

Research supervision is provided by faculty whom students select to chair the master's thesis and doctoral dissertation committees. Typically, the student will select persons with whom a close, supportive relationship develops.

The placement of Ph.D. students in research sites within the Department and/or in areas across campus is an important part of the Medical Sociology Program. Such placements usually involve assisting faculty on research grants. Such experiences provide students with invaluable real-life exposure to medical sociology "in action." As such, they are important accompaniments to the coursework of the Ph.D. program. Teaching and

research positions are offered to students based on department needs, funding available and student merit.

Financial Aid

All students admitted to the Ph.D. program will be considered for financial aid. Sources include graduate fellowships and assistantships.

Additional Information

Deadline for Entry Term(s):	Fall
Deadline for All Application Materials to be in the Graduate School Office:	August 1
Number of Evaluation/recommendation Forms Required:	Three
Entrance Tests:	GRE (TOEFL, IELTS and TWE also required for international applicants whose native language is not English.)

Ph.D. Program in Medical Sociology <http://www.uab.edu/sociology/>

For detailed information, contact UAB Department of Sociology, HHB 460A, 1401 University Boulevard, Birmingham, Alabama 35294-1152.

Telephone 205-934-2562

E-mail pdretea@uab.edu

Web <http://www.uab.edu/sociology/>

Curriculum

The components of the Ph.D. program are as follows:

1. Required Coursework

Medical Sociology Core (9 hr)

Required:

Requirements	Hours
SOC 780 Advanced Medical Sociology	3

2 of the following Required Electives:

Requirements	Hours
SOC 724 Body and Health	3
SOC 734 Global Health	3
SOC 735 Special Topics in Global Health	3
SOC 755 Race/Ethnicity and Health	3
SOC 756 Gender and Health	3
SOC 775 Place and Health	3
SOC 781 Sociology of Health and Illness	3
SOC 783 Health Care Delivery Systems	3
SOC 785 Family and Health	3
SOC 786 Health Disparities	3
SOC 787 Sociology of Mental Health	3

Theory Core (6 hr)

Required:

Requirements	Hours
SOC 720 Classical Theory	3
SOC 722 Contemporary Sociological Theory	3

Statistics and Research Core (15 hr)

Requirements	Hours
SOC 601 Data Management and Analysis	3
SOC 703 Regression Analysis	3
SOC 704 Categorical Data Analysis	3
SOC 705 Advanced Research Methods	3
SOC 711 Qualitative Methods	3

Research Hours

Master's Thesis Research Hours (6 hr)

Doctoral Dissertation Research Hours (24 hr)

Sociology/Health Electives/Transfer Credits (30 hr--up to 6 hours outside department)

GRD 717 **Responsible Conduct of Research** requirement by the university (3 hr)

Proseminars (3 hr)

Proseminar, SOC 702 - 1 hr Fall Research

Proseminar, SOC 702 - 1 hr Spring Professionalization

Proseminar, SOC 702 - 1 hr Summer Teaching

*students may take up to 3 790-793 classes for credit as electives.

*students may take 2 in-department link to MA courses towards their degree

2. Graduate Proseminar Functions

The graduate proseminar series (SOC 702) is required of all entering doctoral graduate students for their initial three terms in the graduate program. These classes familiarize new students with departmental policies and procedures, as well as various facets of the profession of sociology. This series should not only help students become situated within the graduate program, but also give them an opportunity to become better acquainted with the faculty and graduate student body. Students should also gain experience with basic professional skills such as identifying appropriate journals, creating a curriculum vitae, identifying one's own research interests, developing basic classroom skills, and addressing ethical issues associated with the profession of sociology.

3. The Master's Thesis

Students pursuing the doctoral degree must follow Plan I (Thesis Plan) of the existing master's degree program by producing a research-based thesis, but two types of documents will be acceptable. The first is a traditional thesis organized in the form of an extensive book monograph. This option is especially appropriate for qualitatively based research.

The second acceptable type of document is a manuscript in the standard form of a journal article with appended materials. Specifically, this journal article thesis will consist of:

1. A forward which places the research in context, specifying the journal to which the article is to be submitted, delineating the rationale for co-authorship (if appropriate), and making acknowledgments;

2. A journal article manuscript with a text no longer than the page limitations of a journal selected by the committee, plus footnotes, references, tables, and figures;
3. An appendix with an annotated bibliography of relevant literature;
4. An appendix that details, in full, the methodological procedures;
5. An appendix of measurement instrumentation (e.g., survey instruments, in-depth interview schedules, observational logs, etc.);
6. An appendix of additional tables and/or samples of observational notes;
7. An appendix of other research documentation such as survey cover letters, human subject review approval forms, and letters of support and approval from facilities at which the research was conducted.

The master's thesis process involves:

1. Formation of the thesis committee;
2. Oral defense of a written thesis research proposal;
3. Oral defense of the completed thesis;
4. Submission of the completed manuscript to the Graduate School;
5. Submission of the journal article for publication.

The thesis committee consists of a minimum of three full-time faculty members, including one from outside the Department of Sociology. This committee will be responsible for guiding the research process, evaluating the final draft of the thesis, presiding over the oral defenses of the thesis proposal and the completed manuscript, and approving the journal article for submission for publication. In addition to meeting general M.A. degree requirements, before being admitted to candidacy for the M.A. degree, a student in the Ph.D. program in Medical Sociology must have completed the master's level core course in theory (SOC 722) and the core methods courses (including SOC 601 or SOC 703 and SOC 704 and SOC 705 or SOC 711), completed two of the five courses in the medical sociology core, and made a successful oral defense of the thesis proposal.

For those students entering with a master's degree, the graduate director will review the student's transcript, evaluate course transfers (if any), and devise a course plan. This student's doctoral advisory committee also will handle the student's admission to candidacy and the requirement of submitting a journal article for review. The student with the master's degree will not be required to make oral defenses of his/her thesis work from another institution.

4. Comprehensive Examination Policy

Exam Description

The comprehensive exam is a take-home exam that requires you to answer 4 out of 5 questions related to major theoretical, methodological, and substantive issues in medical sociology and a chosen specialty area. Your specialty area must be a combination of health and one substantive area reflecting the specialties of our department (e.g., health disparities, aging and health, health behaviors, health and demography, etc.). There is no oral examination.

Developing a Readings List

The comprehensive exam committee will use your reading list to create exam questions related to your chosen specialty area and medical sociology more broadly. This means that successfully completing your comprehensive exams will require you to work with your faculty advisor and the exam committee to develop a readings list. You should aim to have your list approved by your committee and advisor (if not in the

committee) by the 2nd week of the semester preceding the one when you wish to take your exam.

Readings lists range between 100 to 125 published papers, including peer-reviewed articles, literature reviews, and books. Your list must draw from your coursework, major works in medical sociology, the department's required readings list, and key scholarship from your chosen specialty area. Ideally, your readings list should include one or more sections directly related to your dissertation. Reading lists are public and can be shared in the department.

The Comprehensive Exam Committee returns their first set of revisions for the list or their approval within 2 weeks of receiving the list. Faculty and student work together until the list is accepted. However, faculty can **NOT** approve student work during the summer.

Exam Preparation

Preparation is absolutely critical to passing your exams. We expect all students to take initiative and use the resources provided by the department to prepare for the exam. The main office has a file with old lists and test questions. Students are encouraged to use these lists and exam questions/answers to prepare. The best exams are written by students who have organized their notes and spent time writing answers to common exam questions.

Taking the Exam

The student will answer four of five questions as a take-home exam. The exam is distributed at 4:00 p.m. on Friday and is due the following Monday at 9:00 a.m. While taking your exam, you may not discuss it with anyone other than the comprehensive exam committee. You are encouraged to use any notes or practice answers you have prepared.

Comprehensive Exam Committee

The comprehensive exam committee will consist of three faculty members selected by the Graduate Committee. One faculty will head the committee and make sure the questions are distributed and answers received. They will also notify the Graduate Director of the outcome. The Graduate Director is not a member of the Comprehensive Exam Committee.

5. The Doctoral Dissertation

The dissertation process is as follows:

1. Formation of the dissertation committee;
2. Oral defense of a written dissertation research proposal;
3. Oral defense of the completed dissertation;
4. Submission of the completed manuscript to the Graduate School.

In consultation with faculty, and near the completion of all substantive coursework, a student forms a dissertation committee consisting of at least five members, with two from outside the Department of Sociology. This committee will be responsible for guiding the research process, evaluating the final draft of the dissertation, and presiding over the oral defenses of the dissertation proposal and the completed manuscript. A student is admitted to candidacy after successful oral defense of the dissertation proposal and no earlier than the term in which the required substantive coursework is completed.

Sociology

Sociology M.A. Program

Prospective students should use website below to obtain specific admissions requirements on how to apply to Graduate School:

<http://www.uab.edu/cas/sociology/graduate-programs/online-professional-ma/online-ma-admissions>

The Department of Sociology offers two plans (Plan I and Plan II) for the M.A. Degree

Master of Arts in Sociology

The online Applied Sociology M.A. degree (Plan II) provides strong disciplinary training, along with professional and research experience, to prepare students for careers in business, non-profits, government agencies and the continued professional development of teaching careers. This degree cannot be used as a step toward obtaining a PhD in Medical Sociology. To be admitted in good standing, candidates must meet all Graduate School admission requirements. Receipt of a grade of C or F in two or more required courses will result in termination from the online MA program in Applied Sociology.

Students deciding to move into the Medical Sociology Ph.D. Program will need to meet the core requirements from Plan I (refer to Medical Sociology PhD requirements.)

Requirements	Hours
SOC 713 Intro to Applied Sociology Research Methods or SOC 714 Survey Research Methods	3
SOC 723 Applied Sociological Theory	3
SOC 726 Applied Sociology	3
SOC 727 Applied Social Psychology	3
SOC 776 Capstone Project	6
Electives (12 hours):	12
SOC 620 Public Sociology	3
SOC 711 Qualitative Methods	3
SOC 714 Survey Research Methods	3
SOC 715 Program Evaluation	3
SOC 718 Social Capital and Social Networks	3
SOC 728 Teaching Sociology	3
SOC 729 Consumer Culture	3
SOC 730 Sociology of Education	3
SOC 737 Practicum in Innovation, Creativity, and Applied Sociology	3
SOC 740 Deviant Behavior	3
SOC 745 Sociological Practice	3
SOC 783 Health Care Delivery Systems	3
SOC 786 Health Disparities	3
SOC 789 Patient Care Relations/Ethics	3
SOC 792 Seminar in Substantive Sociological Areas	1-3
SOC 794 Special Topics	3
Total Hours	76-78

Joint Health Sciences

Joint Health Sciences offers interdisciplinary M.S. and Ph.D. programs including:

- M.S. in Anatomical Science (p. 78)
- Ph.D. programs in Graduate Biomedical Sciences (p. 78)
- M.S. in Multidisciplinary Biomedical Science (p. 86)

Anatomical Science

Anatomical Sciences M.S. provides specialized education courses to train students to teach at the college level and thereby help to meet a rapidly growing need for anatomists in multiple health-care focused programs. Students will be exposed to some of the latest innovations in anatomical sciences education, including 3D-anatomy via the use of ultrasound with standardized patients, radiologic anatomy, using CT scans of cadavers, plastinated specimens, and the use of virtual microscopy in histology education.

Master of Science in Anatomical Science

Requirements	Hours
Education Core	
GRD 716 Developing a Teaching Portfolio	2
GRD 750 CIRTL Seminar in Teaching and Learning	1
ANSC 695 Teaching Practicum	3
ANSC 696 Research Project	3
Select one from:	2-3
GRD 752 CIRTL Seminar on STEM Teaching	
GRD 754 CIRTL Effective STEM Teaching Approaches	
GRD 756 CIRTL The College Classroom	
GRD 705 Teaching at the College Level and Beyond	
Anatomy Core	
ANSC 601 Human Gross Anatomy & 601L and Human Gross Anatomy Lab	5
ANSC 602 Gross Anatomy Supplement	1
ANSC 618 Histology of Mammalian Organ Systems	3
ANSC 655 Neuroscience	6
ANSC 656 Human Embryology	2
ANSC 657 Medical Imaging	1
Total Hours	29-30

Graduate Biomedical Sciences

The University of Alabama at Birmingham offers a large and diverse community of scientists focused on innovation in modern biomedicine. The thrill of discovery is evident across campus—UAB routinely ranks among the top research-intensive universities for extramural funding and research productivity.

The Graduate Biomedical Sciences (GBS) Doctoral Training Program is designed to provide students with rigorous, interdisciplinary education and mentorship in a wide array of scientific disciplines. GBS trainees can perform doctoral research in more than 350 different labs across campus. Because of the program's scale and the number of affiliated faculty, it is subdivided into eight individual themes that provide discipline-specific training and opportunities for smaller-scale connections within the overall community.

Interdisciplinary Themes:

Biochemistry, Structural, & Stem Cell Biology (BSSB) Theme (<http://catalog.uab.edu/graduate/biomedicalsciencesinterdisciplinarythemes/biochemistryandstructuralbiology>)

Cancer Biology (CANB) Theme (<http://catalog.uab.edu/graduate/biomedicalsciencesinterdisciplinarythemes/cancerbiology>)

Cell, Molecular, and Developmental Biology (CMDB) Theme (<http://catalog.uab.edu/graduate/biomedicalsciencesinterdisciplinarythemes/cellmoleculardevelopmentalbiology>)

Genetics, Genomics, and Bioinformatics (GGB) Theme (<http://catalog.uab.edu/graduate/biomedicalsciencesinterdisciplinarythemes/geneticsgenomicsciences>)

Immunology (IMM) Theme (<http://catalog.uab.edu/graduate/biomedicalsciencesinterdisciplinarythemes/immunology>)

Microbiology (MIC) Theme (<http://catalog.uab.edu/graduate/biomedicalsciencesinterdisciplinarythemes/microbiology>)

Neuroscience (NESC) Theme (<http://catalog.uab.edu/graduate/biomedicalsciencesinterdisciplinarythemes/neuroscience>)

Pathobiology and Molecular Medicine (PBMM) Theme (<http://catalog.uab.edu/graduate/biomedicalsciencesinterdisciplinarythemes/pathobiologymolecularmedicine>)

For a full listing of GBS Faculty, visit here (<http://apps.medicine.uab.edu/facultydirectory/facultymain.asp>).

Completion of the training requirements in one of the above interdisciplinary themes provides eligibility for conferral of one of the following PhD degrees:

- Biochemistry and Molecular Genetics
- Cell Biology
- Cellular and Molecular Physiology
- Genetics
- Microbiology
- Neurobiology
- Pathology
- Pharmacology and Toxicology

If you have any further questions, please contact the following GBS Office Staff (<https://www.uab.edu/gbs/home/directories/staff>) **or visit the GBS website** (<https://www.uab.edu/gbs/home>).

Biochemistry, Structural, and Stem Cell Biology Theme

Theme Director:	Thomas Ryan, PhD
Email:	tryan@uab.edu
Theme Co-Director:	Chad Petit, PhD
Email:	cpetit@uab.edu

Theme Information

Biochemistry, Structural, and Stem Cell Biology (BSSB) is one of eight interdisciplinary PhD themes within Graduate Biomedical Sciences

(GBS). Students select a theme upon application but have access to faculty and courses from across GBS, allowing for flexibility in both research and academics.

BSSB provides training opportunities in a multitude of contemporary areas of basic and translational research. Our goal is to prepare our students for independent research careers in academic research institutions and industry. Our students have access to a large pool of mentors from across UAB with expertise in varied research areas, specializing in:

- Understanding the chemistry of life (biochemistry),
- A mechanistic understanding of life at the molecular level (structural biology), and
- The study of self-renewal, differentiation, and regeneration of cells (stem cell biology).

Admissions

Prospective students should visit the GBS Admissions page (<https://www.uab.edu/gbs/home/admissions>) for information on admissions requirements, application deadlines, and how to apply.

Financial Support

All students accepted into GBS programs receive a competitive annual stipend and fully paid tuition and fees. Single coverage health insurance is also provided at no cost to the student. Please reference the GBS Financial Support page (<https://www.uab.edu/gbs/home/admissions/financial-support>) for further information.

Curriculum

Requirements	Hours
Lab Rotations	3
GBS 795 Lab Rotation 1	
GBS 796 Lab Rotation 2	
GBS 797 Lab Rotation 3	
Core Courses	7
GBS 701 Core Concepts in Research: Critical Thinking & Error Analysis	
GBS 707 Basic Biochemistry and Metabolism	
GBS 708 Basic Genetics and Molecular Biology	
GBS 709 Basic Biological Organization	
Module Courses ¹	8
Theme Required Courses	8
GBSC 742 GBS Student Theme Meeting Course ²	
GBS Required Courses	49
GRD 717 Principles of Scientific Integrity	
Grant-Writing/Scientific-Writing ³	
Biostatistics ⁴	
Journal Clubs ⁵	
Three Advanced Courses ⁶	
Research ⁷	
Total Hours	75

- ¹ Four modular courses selected from the following: GBS 710, GBS 712, GBS 714, GBS 720, GBS 722, GBS 724, GBS 740A, GBS 740B, GBS 741, GBS 744, GBS 750, GBS 751, GBS 752, GBS 753, GBS 760, GBS 762, GBS 763, GBS 764, GBS 769, GBS 774, GBS 781, GBS 782, GBS 784, GBSC 718, GBSC 727, GBSC 729
- ² Required each fall and spring semester, 2nd year until graduation
- ³ Course selected from the following: GBS 716, GBS 725, GBS 768, GBSC 726, GRD 709
- ⁴ Course selected from the following: GRD 770, BST 611, BST 612, BY 755, PY 716
- ⁵ Required each fall and spring semester, 2nd year until graduation. Courses selected from the following: GBS 736, GBS 746J, GBS 747J, GBS 756, GBS 766, GBS 776, GBS 786J, GBS 793, GBSC 700, GBSC 713, GBSC 720
- ⁶ Three advanced courses selected from the following: GBS 700, GBS 702, GBS 715, GBS 718, GBS 726, GBS 727, GBS 729, GBS 739, GBS 742, GBS 749, GBS 754, GBS 757, GBS 765, GBS 775, GBS 778, GBS 779, GBS 783, GBSC 705, GBSC 706, GBSC 707, GBSC 709, GBSC 710, GBSC 712, GBSC 714, GBSC 715, GBSC 717, GBSC 721, GBSC 724, GBSC 725, GBSC 728, GBSC 730, GBSC 732, GBSC 734, GBSC 735, GBSC 736, GBSC 740, GBSC 741, GBSC 743, BME 770, BME 772, BME 780 or other approved course.
- ⁷ Student must complete 24 hours total of dissertation research, GBS 799.

Theme Faculty

The faculty listing for the Biochemistry and Structural Biology theme is located here (<http://apps.medicine.uab.edu/facultydirectory/FacultyListingType.asp?FacultyTypeID=BSB>).

For further information, please reference the GBS website (<https://www.uab.edu/gbs/home>).

Cancer Biology Theme

Theme Director:	Lalita Shevde-Samant, PhD
Email:	lsamant@uab.edu
Theme Co-Director:	Soory Varambally, PhD
Email:	soorya@uab.edu

Theme Information

Cancer Biology is one of eight interdisciplinary PhD themes within Graduate Biomedical Sciences (GBS). Students select a theme upon application but have access to faculty and courses from across GBS, allowing for flexibility in both research and academics.

The Cancer Biology Theme provides training opportunities in multiple and contemporary areas of cancer research. Outstanding basic and translational research faculty from various schools, departments, and centers participate in training the next generation of basic and translational cancer researchers.

Admissions

Prospective students should visit the GBS Admissions page (<https://www.uab.edu/gbs/home/admissions>) for information on admissions requirements, application deadlines, and how to apply.

Financial Support

All students accepted into GBS programs receive a competitive annual stipend and fully paid tuition and fees. Single coverage health insurance is also provided at no cost to the student. Please reference the GBS Financial Support page (<https://www.uab.edu/gbs/home/admissions/financial-support>) for further information.

Curriculum

Requirements	Hours
Lab Rotations	3
GBS 795 Lab Rotation 1	
GBS 796 Lab Rotation 2	
GBS 797 Lab Rotation 3	
Core Courses	7
GBS 701 Core Concepts in Research: Critical Thinking & Error Analysis	
GBS 707 Basic Biochemistry and Metabolism	
GBS 708 Basic Genetics and Molecular Biology	
GBS 709 Basic Biological Organization	
Module Courses	8
GBS 710 Cell Signaling	
GBS 720 Genomic Structure and Function	
GBS 769 Carcinogenesis	
GBS 774 Cancer Immunology	
Theme Required Courses	12
GBS 723 Model Systems for Genetic Analyses	
GBS 770 Pathobiology of Cancer	
GBS 777 Cancer Biology Seminar ¹	
GBS Required Courses	49
GRD 717 Principles of Scientific Integrity	
Grant-Writing/Scientific-Writing ²	
Biostatistics ³	
Journal Clubs ⁴	
Three Advanced Courses ⁵	
Research ⁶	
Total Hours	79

- ¹ Required each fall and spring semester, 2nd year until graduation
- ² Course selected from the following: GBS 716, GBS 725, GBS 768, GBSC 726, GRD 709
- ³ Course selected from the following: GRD 770, BST 611, BST 612, BY 755, PY 716
- ⁴ Required each fall and spring semester, 2nd year until graduation. Courses selected from the following: GBS 736, GBS 746J, GBS 747J, GBS 756, GBS 766, GBS 776, GBS 786J, GBS 793, GBSC 700, GBSC 713, GBSC 720

⁵ Three advanced courses select from the following: GBS 700, GBS 702, GBS 715, GBS 718, GBS 726, GBS 727, GBS 729, GBS 739, GBS 742, GBS 749, GBS 754, GBS 757, GBS 765, GBS 775, GBS 778, GBS 779, GBS 783, GBSC 705, GBSC 706, GBSC 707, GBSC 709, GBSC 710, GBSC 712, GBSC 714, GBSC 715, GBSC 717, GBSC 721, GBSC 724, GBSC 725, GBSC 728, GBSC 730, GBSC 732, GBSC 734, GBSC 735, GBSC 736, GBSC 740, GBSC 741, GBSC 743, BME 770, BME 772, BME 780, or other approved course.

⁶ Student must complete 24 hours total of dissertation research, GBS 799.

Theme Faculty

The faculty listing for the Cancer Biology theme is located here (<http://apps.medicine.uab.edu/facultydirectory/FacultyListingType.asp?FacultyTypeID=CB>).

For further information, please reference the GBS website (<https://www.uab.edu/gbs/home>).

Cell, Molecular, and Developmental Biology Theme

Theme Director: Alecia Gross, PhD

Email: agross@uab.edu

Theme Co-Director: John Parant, PhD

Email: jparant@uab.edu

Theme Information

Cell, Molecular, and Developmental Biology (CMDB) is one of eight interdisciplinary PhD themes within Graduate Biomedical Sciences (GBS). Students select a theme upon application but have access to faculty and courses from across GBS, allowing for flexibility in both research and academics.

CMDB is designed to provide maximum flexibility that prepares students to launch into a career in the dynamic field of biomedical science. Our graduates have exciting careers in scientific research in both academic and industrial settings, scientific-related writing, business, law, forensics, administration, and education. Explore the many possible opportunities offered by CMDB at UAB and apply today!

Admissions

Prospective students should visit the GBS Admissions page (<https://www.uab.edu/gbs/home/admissions>) for information on admissions requirements, application deadlines, and how to apply.

Financial Support

All students accepted into GBS programs receive a competitive annual stipend and fully paid tuition and fees. Single coverage health insurance is also provided at no cost to the student. Please reference the GBS Financial Support page (<https://www.uab.edu/gbs/home/admissions/financial-support>) for further information.

Curriculum

Requirements	Hours
Lab Rotations	3
GBS 795 Lab Rotation 1	
GBS 796 Lab Rotation 2	
GBS 797 Lab Rotation 3	
Core Courses	7
GBS 701 Core Concepts in Research: Critical Thinking & Error Analysis	
GBS 707 Basic Biochemistry and Metabolism	
GBS 708 Basic Genetics and Molecular Biology	
GBS 709 Basic Biological Organization	
Module Courses ¹	8
Theme Required Courses	12
GBS 717 Methods and Scientific Logic	
GBS 723 Model Systems for Genetic Analyses	
GBS 792 CMDB Seminar	
GBS Required Courses	49
GRD 717 Principles of Scientific Integrity	
Grant-Writing/Scientific-Writing ³	
Biostatistics ⁴	
Journal Clubs ⁵	
Three Advanced Courses ⁶	
Research ⁷	
Total Hours	79

¹ Four modular courses selected from the following: GBS 710, GBS 712, GBS 720, GBS 722, GBS 724, GBS 740A, GBS 740B, GBS 741, GBS 744, GBS 750, GBS 751, GBS 752, GBS 753, GBS 760, GBS 762, GBS 763, GBS 764, GBS 769, GBS 774, GBS 781, GBS 782, GBS 784, GBSC 718 GBSC 727, GBSC 729

² Required fall and spring semester, 2nd year until graduation.

³ Course selected from the following: GBS 716, GBS 725, GBS 768, GBSC 726, GRD 709

⁴ Course selected from the following: GRD 770, BST 611, BST 612, BY 755, PY 716

⁵ Required each fall and spring semester, 2nd year until graduation. Courses selected from the following: GBS 736, GBS 746J, GBS 747J, GBS 756, GBS 766, GBS 776, GBS 786J, GBS 793, GBSC 700, GBSC 713, GBSC 720

⁶ Three advanced courses selected from the following: GBS 700, GBS 702, GBS 715, GBS 718, GBS 726, GBS 727, GBS 729, GBS 739, GBS 742, GBS 749, GBS 754, GBS 757, GBS 765, GBS 775, GBS 778, GBS 779, GBS 783, GBSC 705, GBSC 706, GBSC 707, GBSC 709, GBSC 710, GBSC 712, GBSC 714, GBSC 715, GBSC 717, GBSC 721, GBSC 724, GBSC 725, GBSC 728, GBSC 730, GBSC 732, GBSC 734, GBSC 735, GBSC 736, GBSC 740, GBSC 741, GBSC 743, BME 770, BME 772, BME 780, or other approved course.

⁷ Student must complete 24 hours total of dissertation research, GBS 799.

Theme Faculty

The faculty listing for the Cell, Molecular, and Development Biology theme is located here (<http://apps.medicine.uab.edu/facultydirectory/FacultyListingType.asp?FacultyTypeID=CMDB>).

For further information, please reference the **GBS website**.

Genetics, Genomics and Bioinformatics Graduate Program (GGB)

Theme Director:	Kevin Dybvig, PhD
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Theme Co-Director:	Zsuzsa Bebok, MD
Email:	bebok@uab.edu

Theme Information

Genetics, Genomics, & Bioinformatics (GGB) is one of eight interdisciplinary PhD themes within Graduate Biomedical Sciences (GBS). Students select a theme upon application but have access to faculty and courses from across GBS, allowing for flexibility in both research and academics.

The GGB theme provides flexible, didactic, and integrated training opportunities across the broad disciplines of genetics, genomics, and bioinformatics. Our goal is to prepare students for independent research careers in experimental and computational disciplines, or the combination of those in academic research institutions and industry. To support this broad subject, the academic departments at UAB offer a large pool of mentors with expertise in varied research areas. The research interests of our mentors and students span the fields of genetics, genomics, bioinformatics, cancer biology, biochemistry, cell biology, developmental biology, immunology, and neuroscience. In addition, we teamed up with the UAB Informatics Institute (<http://www.uab.edu/medicine/informatics>) and HudsonAlpha Institute for Biotechnology (<http://hudsonalpha.org>) to accommodate training in their specific areas.

Admissions

Prospective students should visit the GBS Admissions page (<https://www.uab.edu/gbs/home/admissions>) for information on admissions requirements, application deadlines, and how to apply.

Financial Support

All students accepted into GBS programs receive a competitive annual stipend and fully paid tuition and fees. Single coverage health insurance is also provided at no cost to the student. Please reference the GBS Financial Support page (<https://www.uab.edu/gbs/home/admissions/financial-support>) for further information.

Curriculum

Requirements	Hours
Lab Rotations	3
GBS 795 Lab Rotation 1	
GBS 796 Lab Rotation 2	
GBS 797 Lab Rotation 3	
Core Courses	7
GBS 701 Core Concepts in Research: Critical Thinking & Error Analysis	
GBS 707 Basic Biochemistry and Metabolism	

GBS 708	Basic Genetics and Molecular Biology
GBS 709	Basic Biological Organization

Module Courses ¹	8
Theme Required Courses	12
GBS 717	Methods and Scientific Logic
GBS 723	Model Systems for Genetic Analyses
GBSC 742	GBS Student Theme Meeting Course ²
GBS Required Courses	49
GRD 717	Principles of Scientific Integrity
Grant-Writing/Scientific-Writing ³	
Biostatistics ⁴	
Journal Clubs ⁵	
Three Advanced Courses ⁶	
Research ⁷	
Total Hours	79

¹ Four modular courses selected from the following: GBS 710, GBS 712, GBS 720, GBS 722, GBS 724, GBS 740A, GBS 740B, GBS 741, GBS 744, GBS 750, GBS 751, GBS 752, GBS 753, GBS 760, GBS 762, GBS 763, GBS 764, GBS 769, GBS 774, GBS 781, GBS 782, GBS 784, GBSC 718, GBSC 727, GBSC 729

² Required each fall and spring semester, 2nd year until graduation.

³ Course selected from the following: GBS 716, GBS 725, GBS 768, GBSC 726, GRD 709

⁴ Course selected from the following: GRD 770, BST 611, BST 612, BY 755, PY 716

⁵ Required each fall and spring semester, 2nd year until graduation. Courses selected from the following: GBS 736, GBS 746J, GBS 747J, GBS 756, GBS 766, GBS 776, GBS 786J, GBS 793, GBSC 700, GBSC 713, GBSC 720

⁶ Courses selected from the following: GBS 700, GBS 702, GBS 715, GBS 718, GBS 726, GBS 727, GBS 729, GBS 739, GBS 742, GBS 749, GBS 754, GBS 757, GBS 765, GBS 775, GBS 778, GBS 779, GBS 783, GBSC 705, GBSC 706, GBSC 707, GBSC 709, GBSC 710, GBSC 712, GBSC 714, GBSC 715, GBSC 717, GBSC 721, GBSC 724, GBSC 725, GBSC 728, GBSC 730, GBSC 732, GBSC 734, GBSC 735, GBSC 736, GBSC 740, GBSC 741, GBSC 743, BME 770, BME 772 or approved course.

⁷ Student must complete 24 hours total of dissertation research, GBS 799.

Theme Faculty

The faculty listing for the Genetics, Genomics, and Bioinformatics theme is located here (<http://apps.medicine.uab.edu/facultydirectory/FacultyListingType.asp?FacultyTypeID=GGB>).

For further information, please reference the **GBS website** (<https://www.uab.edu/gbs/home>).

Immunology Theme

Theme Director:	Louis B. Justement, PhD
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Theme Co-Director:	Laurie Harrington, PhD
Email:	lharring@uab.edu

Theme Co-Director: Christopher Klug, PhD
 Email: chrisk@uab.edu

Theme Information

Immunology is one of eight interdisciplinary PhD themes within Graduate Biomedical Sciences (GBS). Students select a theme upon application but have access to faculty and courses from across GBS, allowing for flexibility in both research and academics.

From the outset, UAB has been recognized as a leading academic research institution in the country and one of the world's premier centers for immunology research. Over 90 UAB faculty are actively engaged in immunological research, including:

- Studies to understand the basic function of the immune system and the underlying pathophysiological processes that contribute to a range of immune-mediated diseases,
- Translational studies that are focused on the development of vaccines and immunotherapeutics, and
- Clinical studies that test novel therapies designed to mitigate immune-mediated diseases.

Immunology plays such an important role in the ongoing research endeavor at UAB that Inflammation, Infection, and Immunity (I3) was recently named as one of the five pillars of emphasis in the strategic plan for the UAB School of Medicine.

Admissions

Prospective students should visit the GBS Admissions page (<https://www.uab.edu/gbs/home/admissions>) for information on admissions requirements, application deadlines, and how to apply.

Financial Support

All students accepted into GBS programs receive a competitive annual stipend and fully paid tuition and fees. Single coverage health insurance is also provided at no cost to the student. Please reference the GBS Financial Support page (<https://www.uab.edu/gbs/home/admissions/financial-support>) for further information.

Curriculum

Requirements	Hours
Lab Rotations	3
GBS 795 Lab Rotation 1	
GBS 796 Lab Rotation 2	
GBS 797 Lab Rotation 3	
Core Courses	7
GBS 701 Core Concepts in Research: Critical Thinking & Error Analysis	
GBS 707 Basic Biochemistry and Metabolism	
GBS 708 Basic Genetics and Molecular Biology	
GBS 709 Basic Biological Organization	
Module Courses	8
GBS 740A Introduction to Immunology Part 1	
GBS 740B Introduction to Immunology Part 2	
GBS 741 Lymphocyte Biology	
GBS 744 Mucosal Immunology	

Theme Required Courses	8
GBSC 742 GBS Student Theme Meeting Course ¹	
GBS Required Courses	49
GRD 717 Principles of Scientific Integrity	
Grant-Writing/Scientific-Writing ²	
Biostatistics ³	
Journal Clubs ⁴	
Three Advanced Courses ⁵	
Research ⁶	
Total Hours	75

- ¹ Required fall and spring semester, 2nd year until graduation.
- ² Course selected from the following: GBS 716, GBS 725, GBS 768, GBSC 726, GRD 709
- ³ Course selected from the following: GRD 770, BST 611, BST 612, BY 755, PY 716
- ⁴ Required each fall and spring, 2nd year until graduation. Courses selected from the following: GBS 736, GBS 746J, GBS 747J, GBS 756, GBS 766, GBS 776, GBS 786J, GBS 793, GBSC 700, GBSC 713, GBSC 720
- ⁵ Three advanced courses selected from the following: GBS 700, GBS 702, GBS 715, GBS 718, GBS 726, GBS 727, GBS 729, GBS 739, GBS 742, GBS 749, GBS 754, GBS 757, GBS 765, GBS 775, GBS 778, GBS 779, GBS 783, GBSC 705, GBSC 706, GBSC 707, GBSC 709, GBSC 710, GBSC 712, GBSC 714, GBSC 715, GBSC 717, GBSC 721, GBSC 724, GBSC 725, GBSC 728, GBSC 730, GBSC 732, GBSC 734, GBSC 735, GBSC 736, GBSC 740, GBSC 741, GBSC 743, BME 770, BME 772, BME 780, or approved course.
- ⁶ Student must complete 24 hours total of dissertation research, GBS 799.

Theme Faculty

The faculty listing for the Immunology theme is located here (<http://apps.medicine.uab.edu/facultydirectory/FacultyListingType.asp?FacultyTypeID=IM>).

For further information, please reference the GBS website (<https://www.uab.edu/gbs/home>).

Microbiology

Theme Director: Janet Yother, PhD
 Email: jyother@uab.edu
 Theme Co-Director: Sunnie Thompson, PhD
 Email: sunnie@uab.edu

Theme Information

Microbiology is one of eight interdisciplinary PhD themes within Graduate Biomedical Sciences (GBS). Students select a theme upon application but have access to faculty and courses from across GBS, allowing for flexibility in both research and academics.

The Microbiology Theme emphasizes the study of bacteria, viruses, fungi, and parasites. Over 60 faculty members from the Departments of Microbiology, Cell Biology, Biochemistry and Molecular Genetics, Genetics, Pathology, Medicine, Pediatrics, and Dentistry are involved in

internationally renowned research and the training of PhD students. UAB has rapidly become a major center for biomedical research and ranks among the most prestigious research institutions in the world.

Admissions

Prospective students should visit the GBS Admissions page (<https://www.uab.edu/gbs/home/admissions>) for information on admissions requirements, application deadlines, and how to apply.

Financial Support

All students accepted into GBS programs receive a competitive annual stipend and fully paid tuition and fees. Single coverage health insurance is also provided at no cost to the student. Please reference the GBS Financial Support page (<https://www.uab.edu/gbs/home/admissions/financial-support>) for further information.

Curriculum

Requirements	Hours
Lab Rotations	3
GBS 795 Lab Rotation 1	
GBS 796 Lab Rotation 2	
GBS 797 Lab Rotation 3	
Core Courses	7
GBS 701 Core Concepts in Research: Critical Thinking & Error Analysis	
GBS 707 Basic Biochemistry and Metabolism	
GBS 708 Basic Genetics and Molecular Biology	
GBS 709 Basic Biological Organization	
Module Courses	8
GBS 760 Prokaryotic Genetics and Molecular Biology	
GBS 764 Structural Biology for Micro	
GBS 763 Microbial Pathogenesis	
GBS 762 Virology	
Theme Required Courses	8
GBSC 742 GBS Student Theme Meeting Course ¹	
GBS Required Courses	49
GRD 717 Principles of Scientific Integrity	
Grant-Writing/Scientific-Writing ²	
Biostatistics ³	
Three Advanced Courses ⁴	
Journal Clubs ⁵	
Research ⁶	
Total Hours	75

¹ Required fall and spring semester, 2nd year until graduation.

² Course selected from the following: GBS 716, GBS 725, GBS 768, GBSC 726, GRD 709

³ Course selected from the following: GRD 770, BST 611, BST 612, BY 755, PY 716

⁴ Required each fall and spring, 2nd year until graduation. Courses selected from the following: GBS 736, GBS 746J, GBS 747J, GBS 756, GBS 766, GBS 776, GBS 786J, GBS 793, GBSC 700, GBSC 713, GBSC 720

- ⁵ Three advanced courses selected from the following: GBS 700, GBS 702, GBS 715, GBS 718, GBS 726, GBS 729, GBS 739, GBS 742, GBS 749, GBS 754, GBS 757, GBS 765, GBS 775, GBS 778, GBS 779, GBS 783, GBSC 705, GBSC 706, GBSC 707, GBSC 709, GBSC 710, GBSC 710, GBSC 712, GBSC 714, GBSC 715, GBSC 717, GBSC 721, GBSC 724, GBSC 725, GBSC 728, GBSC 730, GBSC 732, GBSC 734, GBSC 735, GBSC 736, GBSC 740, GBSC 741, GBSC 743, BME 770, BME 773, BME 780, or other approved course.
- ⁶ Student must complete 24 hours total of dissertation research, GBS 799.

Theme Faculty

The faculty listing for the Microbiology theme is located here (<http://apps.medicine.uab.edu/facultydirectory/FacultyListingType.asp?FacultyTypeID=MB>).

For further information, please reference the GBS website (<https://www.uab.edu/gbs/home>).

Neuroscience Theme

Theme Director: Karen Gamble, PhD

Email: klgamble@uab.edu

Theme Co-Director: Lucas Pozzo-Miller, PhD

Email: lucaspm@uab.edu

Theme Information

Neuroscience is one of eight interdisciplinary PhD themes within Graduate Biomedical Sciences (GBS). Students select a theme upon application but have access to faculty and courses from across GBS, allowing for flexibility in both research and academics.

The Neuroscience Theme provides training opportunities in multiple and contemporary areas of neuroscience research — from fundamental discovery science at the molecular, cellular, systems, and behavioral levels, to translational studies in cellular and animal models of diseases of the nervous system. Outstanding research faculty from various schools, departments, and centers participate in training the next generation of neuroscientists. The Neuroscience Theme seeks to equip and train students to become tomorrow's innovative neuroscientists by:

- Teaching fundamental neuroscience concepts that are the stepping-stones needed for a deeper understanding of nervous system function.
 - Providing unique professional and scientific avenues through which they can develop their presentation skills and learn critical thinking and experimental design.
 - Offering the opportunity to choose neuroscience research from multiple options available through laboratories across the UAB campus — not limiting students to a department but, rather, a discipline.
 - Providing opportunities for informal interactions with other students to discuss research, scientific writing, and life outside and beyond graduate school.
-

Admissions

Prospective students should visit the GBS Admissions page (<https://www.uab.edu/gbs/home/admissions>) for information on admissions requirements, application deadlines, and how to apply.

Financial Support

All students accepted into GBS programs receive a competitive annual stipend and fully paid tuition and fees. Single coverage health insurance is also provided at no cost to the student. Please reference the GBS Financial Support page (<https://www.uab.edu/gbs/home/admissions/financial-support>) for further information.

Curriculum

Requirements	Hours
Lab Rotations	3
GBS 795 Lab Rotation 1	
GBS 796 Lab Rotation 2	
GBS 797 Lab Rotation 3	
Core Courses	7
GBS 701 Core Concepts in Research: Critical Thinking & Error Analysis	
GBS 707 Basic Biochemistry and Metabolism	
GBS 708 Basic Genetics and Molecular Biology	
GBS 709 Basic Biological Organization	
Module Courses	8
GBS 710 Cell Signaling	
GBSC 729 Cell Neurophysiology	
GBS 714 Developmental Neuroscience	
GBSC 727 Neuro Systems	
Theme Required Courses	18
GBS 730 Introduction to Neurobiology (Dauphin Island Course) ¹	
GBS 737 Neuro Student Summer Seminar Series ²	
NBL 703 Neurobiology Seminar Series ³	
GBS Required Courses	49
GRD 717 Principles of Scientific Integrity	
Grant-Writing/Scientific-Writing ⁴	
Biostatistics ⁵	
Journal Clubs ⁶	
Three Advanced Courses ⁷	
Research ⁸	
Total Hours	85

¹ Dauphin Island course- Required summer before the 1st year

² Required each summer semester

³ Required fall and spring semester, 2nd year until graduation.

⁴ Course selected from the following: GBS 716, GBS 725, GBS 768, GBSC 726, GRD 709

⁵ Course selected from the following:
GRD 770, BST 611, BST 612, BY 755, PY 716

⁶ Required each fall and spring semester, 2nd year until graduation. Courses selected from the following: GBS 736, GBS 746J, GBS 747J, GBS 756, GBS 766, GBS 776, GBS 786J, GBS 793, GBSC 700, GBSC 713, GBSC 720

⁷ Three advanced courses selected from the following: GBS 700, GBS 702, GBS 715, GBS 718, GBS 726, GBS 727, GBS 729, GBS 739, GBS 742, GBS 749, GBS 754, GBS 757, GBS 765, GBS 775, GBS 778, GBS 779, GBS 783, GBSC 705, GBSC 706, GBSC 707, GBSC 709, GBSC 710, GBSC 712, GBSC 714, GBSC 715, GBSC 717, GBSC 721, GBSC 724, GBSC 725, GBSC 728, GBSC 730, GBSC 732, GBSC 734, GBSC 735, GBSC 740, GBSC 741, GBSC 743, BME 770, BME 772, BME 780, or other approved course.

⁸ Student must complete 24 hours total of dissertation research, GBS 799.

Theme Faculty

The faculty listing for the Neuroscience theme is located here (<http://apps.medicine.uab.edu/facultydirectory/FacultyListingType.asp?FacultyTypeID=NGP>).

For further information, please reference the GBS website (<https://www.uab.edu/gbs/home>).

Pathobiology and Molecular Medicine Theme

Theme Director:	Yabing Chen, PhD
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Theme Associate Director:	Robert van Waardenburg, PhD
Email:	rvanwaar@uab.edu

Theme Information

Pathobiology & Molecular Medicine (PBMM) is one of eight interdisciplinary PhD themes within Graduate Biomedical Sciences (GBS). Students select a theme upon application but have access to faculty and courses from across GBS, allowing for flexibility in both research and academics.

PBMM provides our graduate students the broadest training within the emerging and exciting field of molecular medicine. We have a flexible, didactic, integrated educational program directed by faculty with diverse research interests ranging from molecules to whole organisms and disease processes to new therapies.

Admissions

Prospective students should visit the GBS Admissions page (<https://www.uab.edu/gbs/home/admissions>) for information on admissions requirements, application deadlines, and how to apply.

Financial Support

All students accepted into GBS programs receive a competitive annual stipend and fully paid tuition and fees. Single coverage health insurance is also provided at no cost to the student. Please reference the GBS Financial Support page (<https://www.uab.edu/gbs/home/admissions/financial-support>) for further information.

Curriculum

Requirements	Hours
Lab Rotations	3
GBS 795 Lab Rotation 1	
GBS 796 Lab Rotation 2	
GBS 797 Lab Rotation 3	
Core Courses	7
GBS 701 Core Concepts in Research: Critical Thinking & Error Analysis	
GBS 707 Basic Biochemistry and Metabolism	
GBS 708 Basic Genetics and Molecular Biology	
GBS 709 Basic Biological Organization	
Module Courses	8
GBS 750 Nerves, Muscles and Bones	
GBS 751 Heart, Lung, and Kidney	
GBS 752 GI, Endocrine, and Immune System	
GBS 753 Pharmacology, Toxicology, and Molecular Medicine	
Theme Required Courses	8
GBSC 742 GBS Student Theme Meeting Course ¹	
GBS Required Courses	49
GRD 717 Principles of Scientific Integrity	
Grant-Writing/Scientific-Writing ²	
Biostatistics ³	
Journal Clubs ⁴	
Three Advanced Courses ⁵	
Research ⁶	
Total Hours	75

¹ Required each fall and spring semester, 2nd year until graduation.

² Course selected from the following: GBS 716, GBS 725, GBS 768, GBSC 726, GRD 709

³ Course selected from the following: GRD 770, BST 611, BST 612, BY 755, PY 716

⁴ Required each fall and spring semester, 2nd year until graduation. Courses selected from the following: GBS 736, GBS 746J, GBS 747J, GBS 756, GBS 766, GBS 776, GBS 786J, GBS 793, GBSC 700, GBSC 713, GBSC 720

⁵ Courses selected from the following: GBS 700, GBS 702, GBS 715, GBS 718, GBS 726, GBS 727, GBS 729, GBS 739, GBS 742, GBS 749, GBS 754, GBS 757, GBS 765, GBS 775, GBS 778, GBS 779, GBS 783, GBSC 705, GBSC 706, GBSC 707, GBSC 709, GBSC 710, GBSC 712, GBSC 714, GBSC 715, GBSC 717, GBSC 721, GBSC 724, GBSC 725, GBSC 728, GBSC 730, GBSC 732, GBSC 734, GBSC 735, GBSC 736, GBSC 740, GBSC 741, GBSC 743, BME 770, BME 772, BME 780, or other approved course.

⁶ Student must complete 24 hours total of dissertation research, GBS 799.

Theme Faculty

The faculty listing for the Pathobiology & Molecular Medicine theme is located here (<http://apps.medicine.uab.edu/facultydirectory/FacultyListingType.asp?FacultyTypeID=PBMM>).

For further information, please reference the GBS website (<https://www.uab.edu/gbs/home>).

Multidisciplinary Biomedical Science

If you're interested in careers in research science, scientific policy, science communication, science education, biomedical sales, and more, the Masters of Science in Multidisciplinary Biomedical Sciences might be for you. This program is intended for domestic and international students that have some undergraduate STEM field training and wish to increase their knowledge of basic medical sciences.

Admissions Requirements

Direct-admittance to the MSMBS program requires a minimum 3.0 GPA overall, and a minimum 3.0 GPA in at least two of following courses at the 200 level or above: Biochemistry, Cell Biology, Genetics, Developmental Biology, Molecular Biology, Organic Chemistry, or Physiology. GRE is not required. The minimum TOEFL score is 80.

Students are required to submit their transcripts, a personal statement, and three letters of recommendation. Once these materials are received and the application fee is processed, applications will be reviewed.

Accelerated Learning Opportunities

Accelerated Bachelors/Masters (ABM)

Multidisciplinary Biomedical Sciences offers an Accelerated Bachelors/Masters (ABM) (p. 11) option for high-achieving undergraduate students. The following courses are approved for shared credit for students pursuing an ABM in MBS: PY 687, PY 693, BY 626, BY 629, BY 637, BY 655, BY 656, BY 668, BY 674, MBS 612, NBL 610, GGSC 610, GGSC 691, GRD 617, MBS 611, GGSC 620, GGSC 690, PY 653, NBL 625, NBL 633, EPI 600, BY 540, BY 511, BY 696, BY 501, BY 605, BY 618, BY 633, BY 634, BY 637, BY 640, BY 675, BY 611.

Early Acceptance

Early Acceptance Programs are designed for academically superior high-school students. Early Acceptance Programs allow high achieving students to be admitted to the MBS program at the same time they are admitted to an undergraduate program.

Eligible students are required to maintain a 3.5 undergraduate GPA and complete the following pre-requisite courses: BY 123, BY 124, CH 237 (with labs).

The following courses are recommended for Early Acceptance students, but not required: BY 116, BY 210, BY 311, BY 330, CH 460.

Deadlines

- **Fall:** August 1
- **Spring:** December 1
- **Summer:** May 1

Careers

The MSMBS is intended as a terminal degree for students desiring many disparate career paths, including but not limited to: research scientists,

scientific policy, science communication, science education, biomedical sales, and further graduate study.

M.S. in Multidisciplinary Biomedical Sciences

The MS in Multidisciplinary Biomedical Sciences (MBS) is intended as a terminal degree for students desiring many disparate career paths, including but not limited to: research scientists, scientific policy, science communication, science education, biomedical sales, professional school (e.g. medical or dental), or further graduate study.

Thesis (Plan I)

The Plan I MS in MBS thesis degree at UAB can be completed over the course of five semesters. Plan I students will complete a rigorous mentored research project in addition to a rigorous curriculum of required core and elective classes related to the biomedical sciences.

Successful completion of the Plan I MS in MBS degree requires passing 45 credit hours and maintaining a minimum 3.0 GPA. These credit hours are composed of 30 hours of coursework and 15 hours of supervised thesis research (BMS 699).

Coursework

Students will be required to complete the 3 core classes MBS 601, 602 & 603, GRD 617, and a 3 credit hour/500+ level statistics course (see "Courses" below for details). These required courses account for 15 credit hours and are designed to ensure each graduate has the necessary background training to pursue a wide-range of specialty topics in basic medical science. 15 additional credit hours will be taken as electives. Students have the option of earning a concentration by completing 9 of these 15 credit hours in a single subject area.

Thesis Research

MBS 699 (Thesis research, 3 credit hours/semester) must be taken for 5 semesters, for a total of 15 credit hours. This work must be done in an extramurally supported research laboratory of a UAB faculty who will serve as their thesis advisor. The thesis project must be approved by a three faculty member committee that is chaired by the thesis advisor. The project should be able to be completed within 5 semesters.

Requirements	Hours
MBS 601 Molecular and Cell Biology	3
MBS 602 Biochemistry and Cell Biology	3
MBS 603 General Human Physiology	3
GRD 617 Critical Thinking and Scientific Integrity for Masters Students	3
BST 603 Introductory Biostatistics for Graduate Biomedical Sciences	3
Thesis Research ¹	
MBS 699 Thesis Research	15
Electives ^{2,3}	15
Total Hours	45

¹ Students should enroll in BMS 699 a minimum of 5 times for 15 total credit hours.

- ² Students may select from the following electives: MBS 611, MBS 612, MBS 613, MBS 614, MBS 696, BY 501, BY 520, BY 540, BY 511, BY 531, BY 605, BY 618, BY 626, BY 629, BY 633, BY 634, BY 637, BY 640, BY 655, BY 656, BY 668, BY 674, BY 675, BY 696, CH 664, EPI 600, GGSC 610, GGSC 615, GGSC 620, GGSC 635, GGSC 665, GGSC 670, GGSC 690, GGSC 691, GRD 701, GRD 705, GRD 706, GRD 707, GRD 708, GRD 709, GRD 710, GRD 713, GRD 716, GRD 719, GRD 722, GRD 727, GRD 730, GRD 733, GRD 735, INFO 510, INFO 601, INFO 602, INFO 603, INFO 604, INFO 612, INFO 662, MIC 601, MIC 602, MIC 603, MIC 604, NBL 610, NBL 625, NBL 630, NBL 633, NBL 634, NBL 655, NBL 656, PY 653, PY 663, PY 687, PY 693. For other elective options please see your program director.
- ³ Students may use 9 of their 12 elective hours to pursue specialized concentrations:
- Pharmacology:** MBS 611, MBS 612, MBS 613, MBS 614
- Neuroscience:** NBL 610, NBL 625, NBL 633, NBL 634, PY 687, PY 693
- Immunology:** MIC 601, MIC 602, MIC 603, MIC 604
- Genetic and Genomic Sciences (GGSC):** GGSC 610, GGSC 615, GGSC 620, GGSC 635, GGSC 665, GGSC 670, GGSC 690, GGSC 691, BY 531, BY 629
- Bioinformatics:** INFO 601, INFO 602, INFO 603, INFO 604, INFO 662

Non-Thesis (Plan II)

The Plan II MSBMS non-thesis degree at UAB can be completed over the course of three semesters. Plan II students will complete a rigorous curriculum of required core and elective classes related to the biomedical sciences.

Successful completion of the Plan II MSBMS degree requires passing 30 credit hours and maintaining a minimum 3.0 GPA. Students will be required to complete the 3 core classes BMS 601, 602 & 604, GRD 617, a 3 credit hour/500+ level statistics course (see "Courses" below for details) and BT 650-652. These required courses account for 18 credit hours and are designed to ensure each graduate has the necessary background training to pursue a wide-range of specialty topics in basic medical science. The remaining 12 credit hours will be taken as electives. Students have the option of earning a concentration by completing 9 of these 12 credit hours in a single subject area.

Students may also take one semester of BMS 698 (Non-Thesis Research, 3 credit hours), in place of BT 650-652 (3 credit hours total); this is subject to faculty advisor approval.

Requirements	Hours
MBS 601 Molecular and Cell Biology	3
MBS 602 Biochemistry and Cell Biology	3
MBS 603 General Human Physiology	3
BT 650 Applications in Biotechnology I ¹	1
BT 651 Applications in Biotechnology II ¹	1
BT 652 Applications in Biotechnology III ¹	1
GRD 617 Critical Thinking and Scientific Integrity for Masters Students	3
BST 603 Introductory Biostatistics for Graduate Biomedical Sciences	3
Electives ^{2,3}	12
Total Hours	30

- 1 Students may substitute MBS 698 for the BT 650, BT 651, BT 652 with program director approval.
- 2 Students may select from the following electives: MBS 611, MBS 612, MBS 613, MBS 614, MBS 696, BY 501, BY 520, BY 531, BY 540, BY 511, BY 605, BY 618, BY 626, BY 629, BY 633, BY 634, BY 637, BY 640, BY 655, BY 656, BY 668, BY 674, BY 675, BY 696, CH 664, EPI 600, GGSC 610, GGSC 615, GGSC 620, GGSC 635, GGSC 665, GGSC 670, GGSC 690, GGSC 691, GRD 701, GRD 705, GRD 706, GRD 707, GRD 708, GRD 709, GRD 710, GRD 713, GRD 716, GRD 719, GRD 722, GRD 727, GRD 730, GRD 733, GRD 735, INFO 510, INFO 601, INFO 602, INFO 603, INFO 604, INFO 612, INFO 662, MIC 601, MIC 602, MIC 603, MIC 604, NBL 610, NBL 625, NBL 630, NBL 633, NBL 634, NBL 655, NBL 656, PY 653, PY 663, PY 687, PY 693. For other elective options please see your program director.
- 3 Students may use 9 of their 12 elective hours to pursue specialized concentrations. Students may use 9 of their 12 elective hours to pursue specialized concentrations:
 - Pharmacology:** MBS 611, MBS 612, MBS 613, MBS 614
 - Neuroscience:** NBL 610, NBL 625, NBL 633, NBL 634, PY 687, PY 693
 - Immunology:** MIC 601, MIC 602, MIC 603, MIC 604
 - Genetic and Genomic Sciences (GGSC):** GGSC 610, GGSC 615, GGSC 620, GGSC 635, GGSC 665, GGSC 670, GGSC 690, GGSC 691, BY 531, BY 629
 - Bioinformatics:** INFO 601, INFO 602, INFO 603, INFO 604, INFO 662

School of Dentistry

Dean: Russell Taichman, DMD, DMSc

The School of Dentistry offers degree programs leading to a Master of Science in Dentistry and the DMD/PhD in Dentistry. Advanced clinical specialty training and research, leading to the degree of Master of Science in Dentistry, is offered to meet two areas of need: the preparation of qualified teachers and investigators in the various branches of academic dentistry and the preparation of fully trained dental specialists.

The UAB School of Dentistry DMD/PhD program prepares students for an exciting career in dental academics through an innovative integrated clinician scientist training program. Students in the program are allowed to apply credits earned in both dental and graduate school towards a specialized program earning both a DMD degree and a PhD degree in a biomedical science.

Dentistry

Degree Offered:	M.S.
Director, Dentistry:	Dr. Amjad Javed
Phone:	(205) 996-5124
E-mail:	javeda@uab.edu
Website:	www.dental.uab.edu

Program Information

Advanced clinical specialty training and research, leading to the degree of Master of Science in Dentistry, is offered to meet two areas of need: the preparation of qualified teachers and investigators in the various branches of academic dentistry and the preparation of fully trained dental specialists. The program is a combination of the conventional work for the

M.S. degree plus the achievement of proficiency in some phase of clinical dentistry. The course of study requires a minimum of two academic years; most students will require three years to complete the work. The applicant must be a graduate of an accredited school of dentistry, or an undergraduate school and must have achieved, in both pre-dental and dental requirements, a superior scholastic record.

At the time of enrollment in the Graduate School, the student is assigned an appropriate faculty advisor, who works with the student in outlining a course of study consistent with objectives. This curriculum must cover the three areas of a selected phase of clinical dentistry, a related basic health science, and research.

Major and Minor

The major field of study must be selected from the following: dental biomaterials, endodontics, general dentistry, hospital dentistry, maxillofacial prosthetics, oral surgery, orthodontics, pediatric dentistry, periodontics, prosthodontics, public health dentistry, or oral biology. The program requires a minimum of 30 graduate credits. Not less than 18 semester hours of credit in the program must be in the major subject, with the minimum acceptable grade being B. A minor must involve at least six semester hours of study in one or two basic health science departments related to the student's major and research interests.

By the time the student has been in residence one year and has finished some of both major and minor courses, the student and the advisor should recommend to the Graduate School dean at least two additional graduate faculty members, one from outside the student's specialty area, for appointment to the graduate study committee. The student should discuss with his/her committee plans for the remaining course of study, including a proposed thesis title and outline of experimental design. Depending upon the nature of the research plan, it may be desirable for a different advisor to be appointed, serving either as co-chair or as new chair of the graduate study committee. At this time, demonstration of a reading knowledge related to literature review, competence in research and experimental design, understanding of biostatistics, experience with computer and other techniques may be required, as appropriate to the student's investigation.

Admission to Candidacy

When the graduate study committee is satisfied that the student is prepared to undertake the research, the student is admitted to candidacy for the master's degree. This step should be taken at least two semesters before the anticipated date of completion of the program.

Research and Thesis

Sufficient research work to train the candidate in the principles and methods of scientific investigation is required. The research project should involve the student's own intensive work in some area of dentistry, preferably related to the basic health sciences. The thesis is based on the research study and must show the candidate's ability to delineate a problem, logically plan its solution, and present the results of the work in an orderly fashion. Familiarity with the literature of the field is expected.

Final Examination

The final oral examination is administered by the student's graduate study committee before the deadline is set by the Graduate School. The examination begins with oral presentation and defense of the thesis and may include any work fundamental thereto. At the close of the

examination, the committee votes on the candidate, taking into account all of the work undertaken. Majority approval is required.

Additional Information

Deadline for Entry Term(s):	Consult Program Director for information
Deadline for All Application Materials to be in the Graduate School Office:	Variable
Number of Evaluation Forms Required:	Three
Entrance Tests	DDS (TOEFL and TWE also required for international applicants whose native language is not English.)

Contact Information

For detailed information, contact the graduate program director, Dr. Amjad Javed, University of Alabama School of Dentistry, School of Dentistry Building, SDB 714, 1919 Seventh Avenue South, Birmingham, AL 35294-0007.

Telephone 205-934-5407
 Fax 205-934-0208
 E-mail javeda@uab.edu
 Web www.dental.uab.edu

Master of Science with Emphasis in Oral Biology

The School of Dentistry in collaboration with the joint basic science Departments at The University of Alabama offers graduate studies leading to a Master of Science degree with emphasis in Oral Biology. The objective of the program is to relate basic biological sciences to health and disease of the oral cavity. This program is designed for individuals holding a D.D.S., D.M.D., or B.S. in Science (e.g. biology, chemistry etc) with little or no experience in basic research. This program will provide insight into dental academics and teaching in basic or applied research.

Students are required to pursue studies in oral biology and in the basic biological sciences. These studies include course work, seminars, journal club, and a laboratory component. Course work includes formal lectures from within the School of Dentistry and courses offered by the basic sciences departments, School of Public Health and the School of Medicine. The seminars and journal club include the "Dean's Seminar Series" and the Oral and Skeletal Biology Journal Club and other Research seminars within UAB. The Seminars cover a wide array of topics relevant to various research areas as well as other disciplines of dentistry or dental education. A significant portion of the program is devoted to the design and completion of a thesis research project in the form of one publishable paper in a reputable scientific journal which is a requirement of the program. Thesis research will be carried out under the supervision of a faculty member. Faculty involved in the Master of Science program with emphasis in Oral Biology are actively engaged in research that represents a variety of oral and basic biomedical disciplines within the UAB. The diversity of the research interests offers opportunities for students to pursue studies in a stimulating research environment.

The program requires a **minimum of 30 graduate credits**. Of these, at least 24 credits must be selected from graduate-level courses approved for the program and a minimum of 6 credits at the master's research level. Each student must orally defend a master's thesis based on their research. If the applicant holds a D.D.S. or D.M.D. degree, the Master in Science may be combined with a clinical dental specialty training only after acceptance into the clinical program.

Admission

Applicants must hold a B.S., D.D.S., or D.M.D., or an equivalent degree and should possess a cumulative grade-point average of at least 3.00 on a 4.00 scale. Standardized test such as GRE or DAT is required for all applicants. Students whose first language is not English must earn a score of 560 or better on the Test of English as a Foreign Language (TOEFL).

Applicants are asked to submit a statement describing past research experience and current research interests, and stating how completion of the Master in Science program fits into their career goals.

For International applicants; transcripts and all related material should be received no later than **February 28** to enroll in the fall semester of the same year.

For US applicants; transcripts and all related material should be received no later than **March 31** to enroll in the fall semester of the same year.

Financial assistance is not available. Students must show that they can support themselves.

Contact

For further information and application materials, contact:

Jannet Katz, DDS, PhD
 Professor
 Department of Pediatric Dentistry
 University of Alabama School of Dentistry
 BBRB 713
 1720 2nd Avenue South
 Birmingham, AL 35294-2170
 Telephone: (205) 934-2878
 FAX: (205) 934-1426
 e-mail: meow@uab.edu

M.S. in Dentistry

Requirements	Hours
OB 602 Pharmacology and Therapeutics for Dentistry or PG 502 Pharmacology and Therapeutics for Dentistry	3
CD 626 Surgical Implants in Dentistry or PG 527 Surgical Implants in Dentistry	3
CD 646 Multidisciplinary Seminars I or PG 753 Multidisciplinary Seminars I	3
CD 721 Oral & Skeletal Biology Jour or PG 763 Oral & Skeletal Bio Journal	2
CD 722 Advanced Craniofacial Growth or PG 608 Advanced Craniofacial Growth	3
CD 727 Craniofacial Syndrome Series or PG 709 Craniofacial Syndrome Series	3
OB 620 Oral Microbiology and Immunology or PG 569 Oral Microbiology & Immunology	3

PG 583	Graduate Cariology	3
CD 717	Multidisciplinary Seminars II	3
or PG 609	Multidisciplinary Seminars II	
CD 640	Physical Diagnosis	3
or PG 511	Physical Diagnosis	
CD 689	Conscious Sedation	3
or PG 589	Conscious Sedation	
CD 697	Advanced Restorative Technique	3
or PG 797	Adv Restorative Technique	
OB 622	Biochemistry of Connective Tissue and Bone	3
or PG 546	Biochemistry of Connective Tissue and Bone	
CD 728	Advanced Oral Pathology	3
or PG 710	Advanced Oral Pathology	
OB 604	Clinical Applied Dent Material	3
or PG 758	Clin Applied Den Materials	
PG 525	Design and Analysis of Clinical Dental Research	3
or PG 758	Clin Applied Den Materials	
CD 667	Selected Topics in Anatomy of the Head and Neck	3
or PG 501	Selected Topics in Anatomy of the Head and Neck	
CD 639	Dental Management of Medically Compromised Patient	2
or PG 528	Dental Management of the Medically Compromised Patient	
CD 698	Master s Level Non-Thesis Research	6
or OB 699	Thesis Research	
CD 699	Master s Level Thesis Research	6
or OB 699	Thesis Research	
Total Hours		64

DMD/PhD Program

Degree Offered:	DMD/PhD
Director:	Dr. Steve Filler
Phone:	(205) 934-3387
E-mail:	admissions@cs1.dental.uab.edu
Website:	http://dental.uab.edu/students/prospective-students/dmd-phd-program.html

DMD/PhD Program

The UAB School of Dentistry DMD/PhD program prepares students for an exciting career in dental academics through an innovative integrated clinician scientist training program. Applicants interested in the DMD/PhD program must have completed an undergraduate degree program (BA or BS) that fulfills all requirements for both dental school and graduate school admissions.

Interested students need to contact Dr. Steve Filler, Director of Admissions, UAB-School of Dentistry at 205.934.3387 or by email at admissions@cs1.dental.uab.edu.

Important Points:

1. DMD and PhD degrees will be awarded within the same year upon completion of all dental and graduate school requirements.
2. Duration of the program is 8 years; however students with strong prior research experience have completed the program in 7 years.

3. Students accepted into the DMD/PhD program that do not complete the PhD training program, are required to reapply to the School of Dentistry for admission as a traditional DMD candidate.

To apply to the program, applicants must:

1. Contact Dr. Steve Filler at UAB School of Dentistry indicating intent to apply for the DMD/PhD program.
2. Submit a formal application to the UAB School of Dentistry through AADSAS as early as possible.
3. Submit an online application to the UAB Graduate School (<http://www.uab.edu/graduate/online-forms>) through one of the Biomedical Sciences Interdisciplinary Themes, Engineering (Biomedical or Materials), Public Health, or other graduate program.
4. Have successfully taken the Dental Aptitude Test (DAT).
5. Have completed all the recommended courses for both dental and graduate school admissions.
6. Have prior hands-on-research experience.

Note: Students must submit separate applications to the UAB School of Dentistry and the UAB Graduate School. The Graduate School application can be found on the Graduate School's website (uab.edu/graduate) by clicking the 'Apply Now' button. The UAB School of Dentistry participates in the American Association of Dental Schools Application Service (AADSAS). Students should initiate AADSAS applications as early as possible.

Applicants under consideration will be requested to file a supplemental DMD/PhD application. Applicants qualified for admission will be invited for a personal interview with the Admissions Committee.

Candidates will be evaluated based on their academic record, DAT scores, research accomplishments, publications, commitment to a research dental academic career, character, and personality traits indicating potential for success in a DMD/PhD program.

Sequence of the DMD/PhD Program:

1. Students first enter the Graduate School and complete at least two years of coursework including graduate school qualification examinations and dissertation proposal defense maintaining at least a 3.0 GPA.
2. After research PhD candidacy with approval of the DMD/PhD Advisory Committee the student transitions into the DMD curriculum in lock step with a dental class from years 2-4.
3. DMD and PhD degrees are awarded within the same year upon completion of the degrees programs.

Financial Support Opportunities:

Students enrolled in the DMD/PhD training program are eligible for funding through the School of Dentistry's NIDCR supported T-90 Dental Academic Research Training (DART) Program or an individual NIDCR supported F-30 Training Award. See details about these programs at the following links: DART Program (<http://dental.uab.edu/research/training-programs/dart/dental-academic-research-training-program.html>) and the NIDCR F-30 grant application (<http://grants.nih.gov/grants/guide/pa-files/PA-08-119.html>.)

School of Education

General Information

UAB offers graduate programs that lead to teacher certification in a variety of K-12 teaching disciplines (Biology, Language Arts, Early Childhood Education, English as a Second Language, Kinesiology/Physical Education, etc.) School Counseling, and Instructional Leadership and non-certification programs such as Community Health, Clinical Mental Health Counseling, Marriage, Couples, and Family, and Kinesiology with an Exercise Physiology concentration. A complete listing and description of all graduate programs are described in the Department of Curriculum and Instruction and Department of Human Studies sections of the catalog. Most certification programs have both master's (MAEd) and a post-master's Education Specialist (Ed.S.) degree. Additionally, the School of Education offers doctoral programs in Early Childhood Education (PhD), Educational Leadership (EdD), Educational Studies in Diverse Populations (PhD), and Health Education/Health Promotion (PhD).

All certification programs in the School of Education are fully approved by the National Council for Accreditation of Teacher Education (NCATE). All teacher certification programs within the School of Education have been approved by the Alabama State Board of Education (ALSDE). The School Counseling and Clinical Mental Health concentrations have also been accredited by the Council for Accreditation of Counseling & Related Educational Programs (CACREP). The Music program is accredited by the National Association of Schools of Music. The Art program has been accredited by the National Association of Schools of Art and Design.

Degrees and Certificates

Degrees are awarded by UAB in recognition of scholastic achievement and may be pursued for their own sake. However, employment in the public schools is governed not by the degree but by the professional certificate issued by the Alabama State Department of Education (ALSDE). Since many students in these programs are preparing for work in the public schools, the pursuit of a degree is usually coupled with pursuit of ALSDE certification. There is a rough correspondence between degree level and certification class, as follows:

Bachelor's|B| Master's|A| Specialist (post-master's)|AA|Doctoral|No Equivalent|

We emphasize that the admission and completion requirements for the degree and for the certificate are often significantly different. Furthermore, not all education students are pursuing teacher certification. Students seeking certification should verify requirements with an advisor or program director. Alabama State regulations governing certification change often; therefore, it is incumbent upon the student to seek advisement each term. Students should not register for any coursework without having first met with an advisor.

Interdisciplinary Programs

Ph.D. in Educational Studies in Diverse Populations (ESDP)

The Ph.D. in Educational Studies in Diverse Populations (ESDP) (<https://www.uab.edu/education/home/ci/educational-studies-diverse-populations>) is to prepare professionals who can conduct research and lead innovation that enhances educational and life outcomes for

diverse populations. This would include those who represent cultural or linguistic minorities, those with exceptionalities (gifted and disabled), those from economically challenged (and especially high-poverty) backgrounds, those impacted by gender biases, and those with other relevant learning or behavioral differences. To accommodate the widest range of student research interest in diversity issues there are three concentrations. Metropolitan Education Studies, Pedagogical Studies for Diverse Populations, Health Disparities within Diverse Populations.

This doctoral program is especially suited to preparing graduates with the research acumen needed to move easily into higher educational/postsecondary settings, P-12 central administration at the local, state, and national level, and leadership roles within school based settings, or non-academic positions within nonprofit organizations, specifically those with a research component. The minimum admission requirements are those of the UAB Graduate School. However, admission is highly selective, and most successful applicants have qualifications much higher than the minimum. Application packets must be complete in the Graduate School office before the applicant can be considered for the program.

Contact Information

For detailed information please visit the program website (<https://www.uab.edu/education/home/ci/educational-studies-diverse-populations>), or contact Dr. Andrew McKnight (anmcknig@uab.edu) (Program Director), Dr. Tondra Loder-Jackson (tloderjackson@uab.edu) (Metropolitan Education Studies Concentration Advisor), Dr. Susan Spezzini (spezzini@uab.edu) (Pedagogical Studies for Diverse Populations Concentration Advisor), or Dr. Laura Forbes (Italbott@uab.edu) (Health Disparities within Diverse Populations Concentration Advisor).

The Ph.D. in Health Education / Health Promotion

The Ph.D. in Health Education / Health Promotion (p.) is a University of Alabama System degree jointly administered by three units: UAB School of Education, UAB School of Public Health, and UA College of Human Environmental Sciences. Students draw upon the expertise and resources of a diverse and highly qualified faculty. Graduates in the Ph.D. program develop advanced training to become leading researchers, clinicians and faculty in a variety of work settings such as universities, businesses, government agencies, and foundations. We strive to create a rigorous scholarly and supportive atmosphere for students to develop intellectually to acquire the knowledge, skills, and dispositions necessary to be highly competent and ethical health education professionals.

This program is designed to provide students with the coursework and practical experience to become leading researchers and practitioners in Health Education and Health Promotion. Course work includes a core of courses in advanced research and statistical methods, social and behavioral sciences, and the completion of a research internship and dissertation.

For more information regarding the Health Education/Health Promotion program, visit the Health Education/Health Promotion (p.) Graduate Catalog page.

Ph.D. Health Education/Health Promotion Program of Study

Students may enter the program with either a bachelor's or master's degree in health education, or a master's degree in a closely related

health field. Prerequisite coursework includes Foundations of Health Education, Health Education Planning and Evaluation, and Research Design and Statistics. These requirements may be corequisite components in the program.

Students entering the program with a master's degree may transfer appropriate coursework to this program; however, this will not reduce the number of courses required. Students will not be required to retake coursework already completed but may be required to complete prerequisites as part of their planned course of study.

A required review of student credentials prior to admission will identify strengths and needs. This review will provide students with a blueprint for their course of study and will be conducted by the program director and faculty advisor. The PhD program accepts applications in the fall for admission to the program during the subsequent fall term.

The PhD degree program will require students to complete a minimum of 75 credit hours: 45 hours of coursework, 12 hours of research internship, and 18 hours of dissertation research. Students will meet regularly with a faculty advisor to plan course enrollment. A minimum GPA of 3.50 is required.

Research and Statistics Prerequisites: Students are required to have completed the following courses (or equivalents) BEFORE enrolling in the Advanced Research and Statistical Methods Core. These are not included in the 75 hour degree total.

Requirements	Hours
EPR 594 Introduction to Educational Research Design	3
EPR 596 Introduction to Qualitative Methods in Educational Research	3
EPR 608 & EPR 607 Statistical Methods and Action Research and Microcomputer Applications to Statistical Analysis	4
EPR 609 Statistical Methods and Research in Education: Intermediate	3
Total Hours	13

The specific components of the PhD program in health Education and Health Promotion are outlined below.

Ph.D. through the School of Education

Requirements	Hours
I. Health Education and Promotion CORE Courses	
CHHS 731 Advanced Theoretic/Scientific Basis of Health Education/Promotion	3
CHHS 732 Advanced Planning and Implementation of Health Education/Promotion Programs	3
CHHS 733 Evaluation of Health Education/Promotion Programs or HB 740 Advanced Health Program Evaluation Seminar	3
CHHS 734 Health Education Seminar I	1
CHHS 735 Health Education Seminar II	1
CHHS 736 Health Education Seminar III	1
II. Advanced Research and Statistical Methods Core	
EPI 610 Principles of Epidemiologic Research	12
EPR 696 Qualitative Research: Inquiry and Analysis	
EPR 710 Computer Applications and Advanced Statistical Methods	
Graduate Research Design ¹	
EPR 695 Survey Methods in Educational Research or EPR 790 Mixed Methods Approaches in Action Research	

III. 600+ level Coursework in the Social and Behavioral Sciences ²	18
IV. Research Internship (Pre-requisite GRD 717) ³	12
V. Dissertation	18
CHHS 799 Dissertation Research	
Total Hours	72

- 1 Choose one course that fits the needs of your dissertation, with the approval of an advisor. Two examples are listed, but other courses could apply.
- 2 Selection of courses pre-approved by doctoral program advisor to build knowledge and skills in a cognate area, e.g. Health Disparities, Research, Global Health, Public Health Policy, Aging and Health, Disabilities and Health.
- 3 Choose 12 hours of any variation from the following: CHHS 640 and CHHS 641, CHHS 691 and CHHS 692, CHHS 798. Students must complete the GRD 717 pre-requisite before registering in Research Internship.

Comprehensive Examination

A written comprehensive examination is required of all candidates for the Ph.D. degree. Your preparation will include studying course content, core competencies for the profession, and related literature of the discipline. Prior to taking the exam, students must have completed their core course requirements. Students must register for a minimum of 3.0 hours of graduate work during the semester in which the comprehensive exam is taken.

The Comprehensive exam will be offered twice each year and is written and graded by the graduate faculty in the joint doctoral program. The examination will be a synthesis of the core coursework as well as core competencies in the field of Health Education and Health promotion. Grading of the comprehensive exam is done blinded, and by consensus. Students who fail to achieve passing scores will have one attempt to remediate within a calendar year. If a student fails a section for the second time, they will be dismissed from the program.

Doctor of Philosophy in Educational Studies in Diverse Populations

Requirements	Hours
EDC 750 Critical Pedagogy for Diverse Populations	3
EDF 755 Educational Studies in Diverse Populations: Theory of Inquiry	3
EDF 765 Metropolitan Education Studies Proseminar	3
CHHS 742 Health Disparities in Diverse Populations	3
Research Courses	
EPR 609 Statistical Methods and Research in Education: Intermediate	3
EPR 696 Qualitative Research: Inquiry and Analysis	3
EPR 710 Computer Applications and Advanced Statistical Methods	3
EPR 792 Mixed Methods Approaches to Educational Research	3
GRD 717 Principles of Scientific Integrity	3
Total Hours	27

Concentration Courses

12-36 Credits

Once the prerequisite coursework has been satisfied, you will follow an interdisciplinary program of study in one of the three concentrations:

- Pedagogical Studies
- Metropolitan Education Studies
- Health Disparities

Dissertation

24 Credits

- Dissertation Seminar: 3 credit hours
- Dissertation Research - (Prerequisite: Admission to candidacy).
Note: one semester with at least 6 credit hours is required
- 9 credits of directed dissertation research or additional research courses specific to intended dissertation

Curriculum and Instruction

Chair:	Dr. Jennifer Ponder
Phone:	(205) 975-6150
E-mail:	jponder@uab.edu
Website:	http://www.uab.edu/education/ci/

Degree offered:

Arts Education	M.A.Ed.
Arts Education with a Concentration in Music	M.A.Ed.
Education, Early Childhood	Ph.D., Ed.S., M.A.Ed.
Education, Elementary	Ed.S., M.A.Ed.
Education, High School and Middle School	Ed.S., M.A.Ed.
Educational Studies Non-Certification	M.A.Ed.
English as a Second Language	Ed.S., M.A.Ed.
Instructional Design and Development	M.S.
Reading	M.A.Ed.
School Psychometry	M.A.Ed.
Special Education	Ed.S., M.A.Ed.
Teacher Leader	Ed.S.
Teaching English to Speakers of Other Languages	Ed.S.

Program Contact Information

Program Coordinator Contact Information (Room and Phone Number)

UAB Teach, High School and Middle School Education (<http://www.uab.edu/education/ci/secondary-education>): Paulette Evans (spezzini@uab.edu) HHB 120 (205) 975-7519

Arts Education, Music, World Languages, and English as a Second Language (<http://www.uab.edu/education/esl>): Dr. Susan Spezzini (spezzini@uab.edu) EB 100 (205) 934-8357

Special Education (<http://www.uab.edu/education/home/teacher-education-program/special-education>): Dr. (emfinger@uab.edu)Robin

Ennis (<http://catalog.uab.edu/graduate/schoolofeducation/curriculumandinstruction/mail:rennis@uab.edu>) EB 114 (205) 975-6152

School Psychometry (<https://www.uab.edu/education/home/ci/school-psychometry>): Dr. Stephanie Corcoran (corcoran@uab.edu) EB114 (205) 934-5371

Elementary Education (<http://www.uab.edu/education/ci/elementary-and-early-childhood-education-program>): Dr. Jennifer Summerlin (summerl@uab.edu) EB 110B (205) 996-3540

Early Childhood Education (<http://www.uab.edu/education/ci/elementary-and-early-childhood-education-program>): Traditional Masters and Ed.S. Dr. Cora Causey (ccausey@uab.edu) EB 116-B (205) 975-6495

Reading Education (<http://www.uab.edu/education/ci/reading-education-program-description>): Dr. Jennifer Summerlin (summerl@uab.edu) EB 110B (205) 996-3540

Early Childhood Education Ph.D (<https://www.uab.edu/education/home/ci/early-childhood-and-elementary-education>): Dr. Kelly Hill (klth@uab.edu) EB 113 113A (205) 934-5371

Instructional Design and Development (<https://www.uab.edu/education/home/ci/instructional-design-development>): Dr. Jenelle Hodges (jmhodges@uab.edu) EB149 (205) 996-3869

All Other Programs: Dr. Jennifer Ponder (jponder@uab.edu) EB 100 (205) 975-6150

Graduate Programs

The M.A.Ed. and Ed.S. programs emphasize improving the teaching skills of the student and broadening the student's understanding of the field(s) of teaching specialization. Numerous teaching fields are available. All prospective students must apply for admission through the Graduate School.

The M.A.Ed. program requires a minimum of 30-32 semester hours of study, and the Ed.S. program requires at least an additional 30 semester hours. All programs require a written final examination or comprehensive electronic portfolio and a minimum GPA of 3.25 for master's degree and 3.50 for the Ed.S. An outline of the specific course requirements can be obtained from the following link: <http://www.uab.edu/education/student-services/general-information/checklists>. Admission requirements are located at the following link: <https://www.uab.edu/education/student-services/admission-requirements>.

The M.A.Ed. programs satisfy the academic requirements for the Alabama State Department of Education Class A Professional Certificate and an M.A.Ed. degree. The Ed.S. programs satisfy academic requirements for the Alabama State Department of Education Class AA Professional Certificate and an Ed.S. degree. See also the section "Education (General Information)" earlier in this catalog.

The program leading to the Doctor of Philosophy (Ph.D.) degree in early childhood education is sufficiently flexible to accommodate the interests and previous preparation of the student, but it must include an internship and a substantial research component culminating in the completion of a dissertation. The minimum admission requirements are those of the UAB Graduate School. However, admission is highly selective, and most successful applicants have qualifications much higher than the minimum. Admission is open with ongoing application considerations. Application

packets must be complete in the Graduate School office before the applicant can be considered for the program.

Arts Education

Our UAB Arts Education Program will prepare you for a career as a music or visual arts teacher in the P-12 schools. Our instructors are nationally and internationally renowned teacher educators, scholars, performers, and artists who are active in their respective fields. The UAB Department of Music (<http://www.uab.edu/cas/music>) has the distinction of being Alabama's first All Steinway School and offers courses such as music theory and basic and advanced conducting. The UAB Department of Art and Art History (<http://www.uab.edu/cas/art>) is accredited and nationally recognized by the National Association of Schools of Art and Design and has studio courses in ceramics, drawing, painting, new media, photography, graphic design, sculpture, and printmaking.

Music Education

UAB's Graduate Music program consists of a Master of Arts degree in Arts Education with a Concentration in Music (Choral and Instrumental) and also an Alternative Master's degree in Arts Education with a Concentration in Music (Choral and Instrumental). The Arts Education with a Concentration in Music Program is housed in the Department of Curriculum and Instruction. This program's first purpose is to train educators in meeting the evolving needs of learners in grades P-12 within today's rapidly changing society. Its second purpose is to deliver cutting-edge instruction through a standards-based, inquiry-focused approach that prepares educators to use state-of-the-art instructional strategies in their own classrooms. Its third purpose is to ensure that a quality program is available to pre-service and in-service teachers who may be unable to attend class during traditional class hours. UAB's teacher education program is unique in how it combines online support from Canvas with a variety of delivery formats:

- blended courses (online alternating with face-to-face evenings)
- flexible summer programming
- totally online platforms
- Saturday classes

Prospective students should contact the Program Director, Dr. Susan Spezzini, at spezini@uab.edu (205-934-8357).

UAB Department of Music (<http://www.uab.edu/cas/music>)

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/student-services/admission-requirements>.

Master of Arts in Education: Arts Education - Music Traditional Master's Program

The MA.Ed. requires a minimum of 34 hours for the Arts Education traditional master's program in Music Education with concentrations in Choral Music and Instrumental Music.

Requirements	Hours
Music Ensemble (student's field)	2
MUP 520 Concert Choir	
MUP 535 Wind Symphony	

MUP 536 Jazz Ensemble	
Music Theory	3
MU 545 Modal Counterpoint	
MU 548 Orchestration	
MU 555 Form and Analysis	
MU 558 Contemporary Techniques	
MU 629 Music Research	3
Applied Music (student's field)	2
MUP 540 Private Lessons: Voice	
MUP 550 Private Lessons: Piano	
MUP 561 Private Lessons: Flute	
MUP 562 Private Lessons: Oboe	
MUP 563 Private Lessons: Clarinet	
MUP 564 Private Lessons: Saxophone	
MUP 566 Private Lessons: Bassoon	
MUP 571 Private Lessons: Trumpet	
MUP 572 Private Lessons: French Horn	
MUP 573 Private Lessons: Trombone	
MUP 574 Private Lessons: Euphonium	
MUP 575 Private Lessons: Tuba	
MUP 580 Private Lessons: Percussion	
MUP 592 Private Lessons: Viola	
MUP 593 Private Lessons: Cello	
MUP 594 Private Lessons: Bass	
MUP 595 Private Lessons: Guitar	
MUP 591 Private Lessons: Violin	
Music History	3
MU 561 Music Literature Seminar	
MU 564 American Music	
MU 566 Music in World Cultures	
MU 521 Foundations of Graduate Study in Music	3
MU 531 Methods of Teaching Music	3
MU 615 Technology in Music Instruction	3
ALSDE-approved Diversity Course	3
EDF 600 Urban Education	
EDF 602 Critical Social Issues in American Education	
Advisor-approved Elective	3
EPR 688 Seminar on Current Issues: Measurement/Eval School	
500+ level Music Course	
600+ level Education Course	
ECY 600 Introduction to Exceptional Learner	3
Choral or Instrumental Music Methods Course	3
MU 562 Methods II: Choral Music	
MU 563 Methods II: Instrumental Music	
Total Hours	34

Master of Arts in Education: Arts Education - Music Fifth Year Alternative Master's Program

The M.A.Ed. requires a minimum of 46 hours for the Arts Education Fifth Year Alternative Master's program in Music Education with concentrations in Choral Music and Instrumental Music. A minimum GPA of 3.25 is required.

Requirements	Hours
MU 531 Methods of Teaching Music	3
EHS 597 Special Problems in Education	3
EDR 521 Reading in Context Areas	1
EDU 500 Education as a Profession	1
MU 521 Foundations of Graduate Study in Music	3
EPR 511 Measurement and Evaluation in Education Secondary Ed	3
ECY 600 Introduction to Exceptional Learner ¹	3
EHS 690 Intern Seminar in Sec Edu	1
EMU 690 Internship in Music Education	6
MU 629 Music Research	3
MU 615 Technology in Music Instruction	3
Music Theory (choose 3 hours)	3
MU 545 Modal Counterpoint	
MU 548 Orchestration	
MU 555 Form and Analysis	
MU 558 Contemporary Techniques	
Music History (choose 3 hours)	3
MU 561 Music Literature Seminar	
MU 564 American Music	
MU 566 Music in World Cultures	
Applied Music (student's field)	2
MUP 540 Private Lessons: Voice	
MUP 550 Private Lessons: Piano	
MUP 561 Private Lessons: Flute	
MUP 562 Private Lessons: Oboe	
MUP 563 Private Lessons: Clarinet	
MUP 564 Private Lessons: Saxophone	
MUP 566 Private Lessons: Bassoon	
MUP 571 Private Lessons: Trumpet	
MUP 572 Private Lessons: French Horn	
MUP 573 Private Lessons: Trombone	
MUP 574 Private Lessons: Euphonium	
MUP 575 Private Lessons: Tuba	
MUP 580 Private Lessons: Percussion	
MUP 591 Private Lessons: Violin	
MUP 592 Private Lessons: Viola	
MUP 593 Private Lessons: Cello	
MUP 594 Private Lessons: Bass	
Music Ensemble (student's field) choose 2 hours	2
MUP 520 Concert Choir	
MUP 535 Wind Symphony	
MUP 536 Jazz Ensemble	
Total Hours	40

A concentration is required

Requirements	Hours
Choral Concentration	
MU 532 Methods I: Choral Music	3
MU 562 Methods II: Choral Music	3
Total Hours	6
Instrumental	
MU 533 Methods I: Instrumental Music	3

MU 563	Methods II: Instrumental Music	3
Total Hours		6

¹ May not be required if previously completed

Arts Education - Visual Arts

UAB's Arts Education program is housed within the Department of Curriculum and Instruction. This program consists of a Master of Arts degree in Arts Education and also an alternative master's degree in Arts Education, both with a concentration on Visual Arts. The first purpose of this Arts Education program is to prepare educators in meeting the evolving needs of learners in grades P-12 within today's rapidly changing society. Its second purpose is to deliver cutting-edge instruction through a standards-based, inquiry-focused approach that prepares educators to use state-of-the-art instructional strategies in their own classrooms. Its third purpose is to ensure that a quality program is available to pre-service and in-service teachers who may be unable to attend class during traditional class hours. UAB's teacher education program is unique in how it combines online support from Canvas with a variety of delivery formats:

- blended courses (online alternating with face-to-face evenings)
- flexible summer programming
- totally online platforms
- Saturday classes

Prospective students should contact the Program Director, Dr. Susan Spezzini, at spezzini@uab.edu (205-934-8357).

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/studentservices/admission-requirements>.

Master of Arts in Education: Arts Education - Visual Arts Fifth Year Alternative Master's Program

The M.A.Ed. requires a minimum of 43 hours for the Arts Education Alternative Masters program with a concentration in Visual Arts.

Requirements	Hours
EDA 534 Methods I: Visual Arts	3
EDA 564 Methods II: Visual Arts	3
EHS 597 Special Problems in Education	3
EDR 551 Reading in Content Areas	3
EHS 556 Classroom Mgt in Sec Schools	3
EDU 500 Education as a Profession	1
EPR 511 Measurement and Evaluation in Education Secondary Ed	3
ECY 600 Introduction to Exceptional Learner	3
EDA 690 Internship in Art Education N-12	6
Advisor-approved 500+ level Courses in Art Studio or Art History	12
EHS 530 Practicum	1
EHS 570 Practicum II	1
EHS 690 Intern Seminar in Sec Edu	1
Total Hours	43

Master of Arts in Education: Arts Education - Visual Arts Traditional Master's Program

The M.A.Ed. requires a minimum of 33 hours for the Arts Education program with a concentration in Visual Arts. A GPA of 3.25 is required.

Requirements	Hours
Advisor-approved Art Courses (500+ level Studio Art or Art History)	12
EDA 680 Advanced Methods: Visual Arts	3
EHS 651 Innovative Practices in Teaching in Secondary School	3
EDC 655 Curriculum Principles and Practices	3
EDC 706 The Dynamics of Educational Change	3
ALSDE-approved Course in Diversity	3
EDF 600 Urban Education	
EDF 602 Critical Social Issues in American Education	
Advisor-approved Elective in Diversity	
Advisor-approved Elective	3
EPR 688 Seminar on Current Issues: Measurement/Eval School	
600+ level Education course	
500+ level Studio Art or Art History course	
ECY 600 Introduction to Exceptional Learner ¹	3
Total Hours	33

¹ Not required if previously completed

Early Childhood Education

UAB's Early Childhood Education program (M.A.Ed., Ed.S., Ph.D.) embodies a three-fold purpose. Its first purpose is to prepare educators in meeting the evolving needs of learners, primarily in grades P-6, within today's rapidly changing society. Its second purpose is to deliver cutting-edge instruction through a standards-based, inquiry-focused approach. Based on constructivism, this approach prepares prospective and experienced educators to use state-of-the-art instructional strategies in their own classrooms. Its third purpose is to ensure that a quality program is available to pre-service and in-service teachers who may be unable to attend class during traditional class hours. This program is unique in how it combines online support from the learning management system (i.e. Canvas) with a variety of delivery formats:

- blended courses (online alternating with face-to-face)
- professional learning communities
- flexible summer programming
- internships and practicums
- totally online platforms
- Saturday classes

These purposes are expanded through the Ed.S. program. This advanced degree program infuses an inquiry-focused approach that prepares teachers for assuming leadership roles in curriculum development and instructional delivery. It also provides experienced teachers with collaborative skills and mentoring techniques for serving as reflective practitioners to guide change and positively impact student achievement and school improvement. Teachers with Class A certification can pursue Ed.S. level certification in elementary education or early childhood education. By then pursuing the Ph.D. program in early childhood education, they can then explore relevant issues, theories, and practice at an even higher level.

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/studentservices/admission-requirements>.

Master of Arts in Education in Early Childhood Education

The Early Childhood Education Master of Arts in Education program requires a minimum of 33 hours. A minimum GPA of 3.25 is required.

Requirements	Hours
EDR 650 Teaching Reading P-12	3
EEC 660 Reading in Teaching and Learning	3
Select two (2) courses from the list below:	6
ECE 630 Cognitive Curriculum ECE	
EEC 540 Workshop in Education: Strategies for English Learners	
EEC 560 Current Issues in Education	
EEC 620 Teaching Mathematics N-6	
EEC 621 Teaching Language Arts P-12	
EEC 622 Teaching Social Studies N-6	
EEC 623 Teaching Science N-6	
EEC 678 Primary Mathematics: A Constructive Approach	
EDR 652 Pre and Early Reading Instruction	
EDR 653 Literature for Grades P-12	
EDR 655 Reading Assessment and Evaluation	
EDR 659 Research and Problems in Reading	
ECY 600 Introduction to Exceptional Learner ¹	3
EEC 610 Curriculum Development in ELEM and ECE	3
EEC 625 Critical Pedagogy Advocacy Collaboration	3
EEC 670 Studying the Child in School	3
Select one (1) course from the list below:	3
EEC 672 Piaget and Perspectives in Learning	
EPR 610 Child Psychology	
EPR 622 Learning Theories	
EEC 674 Language Development	
Select one (1) course from the list below:	3
ECT 625 Positive Behavioral Supports	
EEC 673 Teaching in Diverse Society	
EESL 620 Special Topics in ESL	
EDF 600 Urban Education	
EEC 691 Practicum in ECE/ELEM	3
Total Hours	33

¹ May not be required if previously completed

Master of Arts in Education in Early Childhood Alternative Master's (Fifth Year)

Requirements	Hours
Curriculum	
ECE 620 Introduction to Curriculum and Teaching in Cultural & Familial Contexts	3
Diverse Populations	
EESL 641 Teaching Emergent Bilingual Learners in the Early Childhood Setting	3
Literacy	

EDR 540	Developmental Reading I	1-4
Professionalism		
EDU 500	Education as a Profession	1-3
EEC 650	Systematic Reflections About Teaching	3
Using Assessment Data to Improve Student Learning		
EPR 510	Measurement and Evaluation in Education ECE	3
Survey of Special Education Coursework ¹		
ECY 600	Introduction to Exceptional Learner	3
Internship		
ECE 693	Internship in Early Childhood Education	3-9
Teaching Field Courses		
At least 1/3 of the program shall be in teaching field courses:		
ECE 633	Social and Emotional Development of the Young Child	3
ECE 670	Studying the Young Child in School	3
EEC 671	Creative and Affective Experiences	3
ECE 631	Programs for Young Children	3
EEC 502	Primary Math Methods	1-4
ECE 632	Young Children and Their Literature	3
ECE 546	Comm Arts/Reading Young Child	3-6
ECE 545	Curriculum for Young Children: Math Science and SS	3-6
EEC 594	Field Work in Elementary and Early Childhood Education	1-6

Master of Arts in Education in Early Childhood/Elementary Educational Alternative Master's (Fifth Year)

The M.A.ED. degree requires a minimum GPA of 3.25 for the Early Childhood/Elementary Education Alternative Master's (Fifth Year).

Requirements	Hours	
ECY 600	Introduction to Exceptional Learner ¹	3
EEC 502	Primary Math Methods	3
EEC 505	Children's Literature in Elem. and Early Childhood	3
EEC 506	Language Arts in Elementary and Early Childhood Ed.	3
EEC 512	Math in EC and Elementary Educ	3
EEC 513	Science in EC and Elem Edu	3
EEC 514	Soc Studies in EC and Elem Edu	3
EEC 515	Learning Environments through Positive Behavior Support	3
EEC 540	Workshop in Education: Strategies for English Learners	1
Field Work ²		2-8
EEC 594	Field Work in Elementary and Early Childhood Education ¹	
EEC 600	Transition into P-6 Teaching	3
EEC 612	Models of Teaching	3
EEC 650	Systematic Reflections About Teaching	3
EEC 690	Internship in P-3/3-6	6
EDR 540	Developmental Reading I	3
EDR 543	Developmental Reading II	3
EDU 500	Education as a Profession	1
EPR 510	Measurement and Evaluation in Education ECE	3
Total Hours		52-58

¹ May not be required if previously completed

² Each semester a student enrolls in a pedagogy course (i.e., EDR 540, EDR 543, EEC 502, EEC 506, EEC 512, EEC 513, or EEC 514, EEC 540), he or she must also enroll for one hour of EEC 594

Educational Specialist in Education with a concentration in Early Childhood Education

The Educational Specialist degree for the Early Childhood Education program requires a minimum of 33 hours.

Requirements	Hours	
EDC 707	Introduction to Teacher Leadership	3
EDC 711	Analysis and Evaluation of Teaching	3
EDC 720	Problems and Issues in Education	3
EEC 692	Curriculum Projects	3
EEC 694	Field Study ¹	1-6
EEC 695	Practicum Supervision in ECE/ELE	2
EEC 660	Reading in Teaching and Learning	3
Advisor-approved 600+ level Elective Courses		9
ECY 600	Introduction to Exceptional Learner	3
EPR 596	Introduction to Qualitative Methods in Educational Research	3
Total Hours		33-38

¹ Students who have previously completed EEC 660 will complete four (4) hours of EEC 694 Field Study. Students who have not previously completed EEC 660, will complete one (1) hour of EEC 694 Field Study.

Doctor of Philosophy in Early Childhood Education

As candidates may enter the Ph.D. program from a variety of early childhood related fields, there are a number of basic prerequisites required for all applicants. If a Ph.D. applicant has completed most / all of the following coursework, they may enter the program and start their Ph.D. coursework the first semester. If Ph.D. applicants have not taken courses similar to the ones listed below, then the applicant can be accepted into the program and is expected to complete the majority of the prerequisite coursework prior to taking doctoral level classes.

Requirements	Hours	
Prerequisites		
EPR 692	Introduction to Educational Research Design	3
EPR 596	Introduction to Qualitative Methods in Educational Research	3
EPR 608	Statistical Methods and Action Research	3
EPR 609	Statistical Methods and Research in Education: Intermediate	3
EEC 610	Curriculum Development in ELEM and ECE	3
EEC 300	Child Development/Family Relationships	3-4
EEC 672	Piaget and Perspectives in Learning	3
EEC 660	Reading in Teaching and Learning	3

PhD Coursework - Minimum of 54 hours

If all prerequisites are met, the Ph.D. is a minimum of 54 hours made up of core, specialty, research, and dissertation hours. Students may apply

for candidacy after 36 hours, with up to 6 hours being non-dissertation research credits.

Requirements	Hours
ECE 730 Doctoral Seminar I: Issues in Development Theory	3
ECE 731 Doctoral Seminar II: Children and Society	3
ECE 749 Advanced Early Childhood Curriculum	3
Select one course from the following:	3
ECE 732 Dr III: History of Early Childhood Education	
ECE 735 Meaning and Development of Play	
ECE 737 Parent Child and School Interface	
ECE 748 Research in Infancy	
ECE 792 Directed Readings in Research	
Specialty Area	
12+ credit hours at the doctoral level. All coursework must be approved by the ECE doctoral committee.	12
Research Methodology	12
EPR 696 Qualitative Research: Inquiry and Analysis	
EPR 710 Computer Applications and Advanced Statistical Methods	
Qualitative, Quantitative, Mixed Method Track	
Research Internship	6
ECE 798 Non-Dissertation Research	
Dissertation	12
Total Hours	54

Educational Studies (Non-Certification)

The Master of Arts in Education (MAEd) in Educational Studies is an MAEd without state-issued teacher certification for education-related employment that does not require certification. This MAEd promotes UAB's mission by providing support for the teaching and application of knowledge at the campus, state, regional, and global levels.

Through this MAEd, current and future educators who have a completed undergraduate degree, but no need for state-issued educator certification, can prepare for seeking meaningful employment within the field of education, mainly as teachers or coordinators in private schools or other types of educational entities. Overseas employment opportunities are available to international students who, as current or future educators, pursue this Educational Studies MAEd for career advancement in their own countries. This master's is not associated with state certification.

This Educational Studies MAEd consists of a 15-hour core with one course from each of these five areas: Curriculum Design and Implementation, Assessment and Measurement, Diverse Populations, Special Education, and Practicum/Capstone. This MAEd program also consists of a concentration (12 credit hours) and an elective (3 credit hours). For their concentration, students select from among the following five options: Early Childhood Education, Elementary Education, Secondary Education, Special Education, and Physical Education. This MAEd degree program facilitates the type of flexibility needed by graduate students to focus their coursework in a way that is most beneficial to them professionally and to their respective constituencies. These concentrations prepare educators for designing educational programs and delivering instruction in diverse settings that do not require state-issued educator certification.

Students in the Educational Studies MAEd are expected to demonstrate competencies in the following areas:

1. Knowledge in curriculum design and implementation, assessment and measurement, diverse populations, and special education,
2. Knowledge for designing and implementing instruction in the selected concentration.
3. Skills for delivering instruction.
4. Knowledge and skills to be competitive when seeking admission to advanced degree programs.

Master of Arts in Education in Educational Studies Non-Certification

Requirements	Hours
Curriculum Design & Implementation	3
Select one from the following:	
ECT 521 Program and Lesson Planning	
EDC 651 Innovative Practices in Curriculum	
EDR 551 Reading in Content Areas	
EEC 612 Models of Teaching	
KIN 511 Elementary School Physical Education	
Assessment & Measurement	3
Select one from the following:	
ECT 521 Program and Lesson Planning	
EPR 510 Measurement and Evaluation in Education ECE & EPR 511 and Measurement and Evaluation in Education Secondary Ed	
EPR 594 Introduction to Educational Research Design	
KIN 509 Assessment in Physical Education	
Diverse Populations	3
Select one of the following:	
ECT 522 Language and Communication Facilitation	
EDF 602 Critical Social Issues in American Education	
EDF 620 Culture and American Education: Race Class and Gender	
EEC 540 Workshop in Education: Strategies for English Learners	
EHS 597 Special Problems in Education	
KIN 649 Adapted Physical Education	
Survey of Special Education	
ECY 600 Introduction to Exceptional Learner	3
Practicum/Capstone	3
Select one from the following:	
ECT 530 Effective Teaching and Learning	
EDC 694 Curriculum Seminar	
EEC 594 Field Work in Elementary and Early Childhood Education	
EHS 530/570 Practicum	
KIN 520 Fitness and Motor Skill Acquisition	
Concentration	12
Early Childhood Education ¹	
Elementary Education ²	
Secondary Education ³	
Special Education ⁴	
Physical Education ⁵	
Major Elective ⁶	3
Total Hours	30

- ¹ **Early Childhood Courses:** Advisor approved selections from ECE 500:697, ECT 500:697, ECY 500:697, EDC 500:697, EDF 500:697, EDR 500:697, EDT 500:697, EDU 500:697, EEC 500:697, EESL 500:697, ELE 500:697, EPR 500:697.
- ² **Elementary Education Courses:** Advisor approved selected from ECE 500:697, ECT 500:697, ECY 500:697, EDC 500:697, EDF 500:697, EDR 500:697, EDT 500:697, EDU 500:697, EEC 500:697, EESL 500:697, ELE 500:697, EPR 500:697.
- ³ **Secondary Education Courses:** Advisor approved courses selected from **Education** ECT 500:697, ECY 500:697, EDA 500:697, EDC 500:697, EDF 500:697, EDR 500:697, EDT 500:697, EDU 500:697, EHS 500:697, EMS 500:697, EPR 500:697; **Arts & Sciences** ANTH 500:697, ARH 500:697, ARS 500:697, BY 500:697, CH 500:697, CJ 500:697, CM 500:697, EH 500:697, ES 500:697, FR 500:697, GEO 500:697, HY 500:697, MA 500:697, MPA 500:697, PH 500:697, PSC 500:697, PY 500:697, SOC 500:697, SPA 500:697, THR 500:697) and **Business** EC500:697.
- ⁴ **Special Education Courses:** Advisor approved courses selected from: ECT 500:697, ECY 500:697, EDF 500:697, EDR 500:697, EDU 500:697, EPR 500:697, ESP 500:697.
- ⁵ **Physical Education Courses:** Advisor approved courses selected from: EDF 500:697, EDR 500:697, EPR 500:697, KIN 500:697.
- ⁶ **Major Elective Courses:** Advisor approved course selected from ECE 500:697, ECT 500:697, ECY 500:697, EDC 500:697, EDF 500:697, EDR 500:697, EDT 500:697, EDU 500:697, EEC 500:697, EESL 500:697, ELE 500:697, EHS 500:697, EMS 500:697, EPR 500:697, KIN 500:697.

Elementary Education

UAB's Elementary Education program (M.A.Ed., Ed.S.) embodies a three-fold purpose. Its first purpose is to train educators in meeting the evolving needs of learners, primarily in grades K-6, within today's rapidly changing society. Its second purpose is to deliver cutting-edge instruction through a standards-based, inquiry-focused approach. Based on constructivism, this approach prepares prospective and experienced educators to use state-of-the-art instructional strategies in their own classrooms. Its third purpose is to ensure that a quality program is available to pre-service and in-service teachers who may be unable to attend class during traditional class hours. This program is unique in how it combines online support from the learning management system (i.e. Canvas) with a variety of delivery formats:

- blended courses (online alternating with face-to-face)
- professional learning communities
- flexible summer programming
- internships and practicums
- totally online platforms
- Saturday classes

These purposes are expanded through the Ed.S. program. This advanced degree program infuses an inquiry-focused approach that prepares teachers for assuming leadership roles in curriculum development and instructional delivery. It also provides experienced teachers with collaborative skills and mentoring techniques for serving as reflective practitioners to guide change and positively impact student achievement and school improvement. Teachers with Class A certification can pursue EdS-level certification in elementary education.

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/studentservices/admission-requirements>.

Master of Arts in Education in Elementary Education

The MAEd degree in Elementary Education requires a minimum of 33 hours.

Requirements	Hours
EDR 650 Teaching Reading P-12	3
EEC 660 Reading in Teaching and Learning	3
Select two courses from the list below	6
EEC 678 Primary Mathematics: A Constructive Approach	
ECE 630 Cognitive Curriculum ECE	
EEC 620 Teaching Mathematics N-6	
EEC 622 Teaching Social Studies N-6	
EEC 623 Teaching Science N-6	
EEC 621 Teaching Language Arts P-12	
EDR 652 Pre and Early Reading Instruction	
EDR 653 Literature for Grades P-12	
EDR 655 Reading Assessment and Evaluation	
EDR 659 Research and Problems in Reading	
EEC 560 Current Issues in Education or EEC 54 Workshop in Education: Strategies for English Learners	
ECY 600 Introduction to Exceptional Learner ¹	3
EEC 610 Curriculum Development in ELEM and ECE	3
EEC 625 Critical Pedagogy Advocacy Collaboration	3
EEC 670 Studying the Child in School	3
Select one course from the list below	3
EEC 672 Piaget and Perspectives in Learning	
EPR 610 Child Psychology	
EPR 622 Learning Theories	
EEC 674 Language Development	
Select one course from the list below	3
EESL 620 Special Topics in ESL	
EEC 673 Teaching in Diverse Society	
EDF 600 Urban Education	
ECT 625 Positive Behavioral Supports	
EEC 691 Practicum in ECE/ELEM	
Total Hours	30

Educational Specialist in Education with a Concentration in Elementary Education

The Ed.S. in Education with a concentration in Elementary Education requires a minimum of 30 hours.

Requirements	Hours
EDC 707 Introduction to Teacher Leadership	3
EDC 711 Analysis and Evaluation of Teaching	3
EDC 720 Problems and Issues in Education	3
EEC 660 Reading in Teaching and Learning ¹	3
EEC 692 Curriculum Projects	3
EEC 694 Field Study ¹	1-6
EEC 695 Practicum Supervision in ECE/ELE	2
Advisor-approved 600+ level Elective Courses	9

ECY 600	Introduction to Exceptional Learner	3
EPR 596	Introduction to Qualitative Methods in Educational Research	3
Total Hours		33-38

¹ Students who have previously completed EEC 660 will complete four (4) hours of EEC 694 Field Study. Students who have not previously completed EEC 660, will complete one (1) hour of EEC 694 Field Study.

English as a Second Language

UAB's graduate degree program in ESL is comprised of a master of arts (M.A.Ed.) degree in ESL and an Educational Specialist (Ed.S.) degree in Education. Both degrees prepare candidates to earn teacher certification in ESL from pre-school (P) through 12th grade. The M.A.Ed. also includes a non-certification track for teaching English as a Second or Foreign Language to adult learners.

UAB's MAEd/ESL embodies a three-fold purpose. Its first purpose is to train educators in meeting the needs of the growing population of English learners (ELs), both children and adults, in Alabama and abroad. Its second purpose is to deliver cutting-edge instruction through a standards-based, inquiry-focused approach. Its third purpose is to ensure that a quality MAEd/ESL program is available to teachers throughout the state. Accessible to educators all over Alabama, this MAEd/ESL program is unique in how it combines online support from Canvas with a variety of delivery formats:

- blended courses (online alternating with face-to-face)
- professional learning communities
- one-week summer teacher institutes
- flexible summer programming
- internships and practicums
- totally online platforms
- Saturday classes

These purposes are expanded and enhanced by the EdS program. It infuses an inquiry-focused approach that prepares teachers for assuming leadership roles in curriculum development and instructional delivery. It also provides experienced teachers with collaborative skills to serve as reflective practitioners in guiding school change as well as with mentoring techniques to positively impact student achievement and school improvement.

Prospective students should contact the Program Director, Dr. Susan Spezzini, at spezini@uab.edu (205-934-8357).

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/studentservices/admission-requirements>.

Master of Arts in Education in English as a Second Language Fifth Year Alternative Master's Program

The M.A.Ed in English as a Second Language degree for the fifth year alternative program requires a minimum of 44 hours for the concentration in ESL and 56 hours for the concentrations in ESL/Spanish and ESL/French. The minimum required GPA is 3.25.

Requirements		Hours
EESL 510	Second Language Acquisition	3
EESL 512	Curriculum, Program, Policies	3
EESL 513	Teaching ESL in a Multicultural Society	3
EESL 515	Grammar and Linguistics for ESL Teachers	3
EESL 525	Phonology for Second Language Teachers	3
EESL 530	Methods and Materials of Teaching ESL	3
EESL 540	Teaching New Languages Through Reading and Writing	3
EESL 560	Effective Teaching and Learning	3
EESL 589	Internship Seminar in ESL	1
EESL 590	Internship in Second and Foreign Languages, N-12	6
EDU 500	Education as a Profession	1
EHS 556	Classroom Mgt in Sec Schools	3
	or EPR 511 Measurement and Evaluation in Education Secondary Ed	
EPR 510	Measurement and Evaluation in Education ECE	3
ECY 600	Introduction to Exceptional Learner	3
Total Hours		41

ESL Concentration

Requirements		Hours
EEC 674	Language Development	3
Total Hours		3

French and ESL Concentration

Requirements		Hours
EHS 539	Methods I: World Languages	3
Advisor-approved 500+ level courses in French		12
Total Hours		15

Spanish and ESL Concentration

Requirements		Hours
EHS 539	Methods I: World Languages	3
Advisor-approved 500+ level courses in Spanish		12
Total Hours		15

Master of Arts in Education in English as a Second Language Traditional Master's Program

The M.A.Ed in English as a Second Language degree for the traditional program requires a minimum of 36 hours for the concentration in ESL and 45 hours for the concentrations in ESL/Spanish and ESL/French. The minimum required GPA is 3.25.

Requirements		Hours
EESL 610	Second Language Acquisition	3
EESL 612	Curriculum, Programs and Policies	3
EESL 613	Teaching ESL in a Multicultural Society	3
EESL 615	Grammar and Linguistics for ESL Teachers	3
EESL 625	Phonology for Second Language Teachers	3
EESL 630	Methods and Materials of Teaching ESL	3
EESL 640	Teaching New Languages Through Reading and Writing	3
EESL 660	Effective Teaching and Learning	3
EESL 690	Internship in Second and Foreign Languages, P-12	3
ECY 600	Introduction to Exceptional Learner ¹	3
Total Hours		30

ESL Concentration

Requirements	Hours
EEC 674 Language Development	3
Total Hours	3

French and ESL Concentration

Requirements	Hours
EHS 539 Methods I: World Languages	3
Advisor-approved 500+ level courses in French	12
Total Hours	15

Spanish and ESL Concentration

Requirements	Hours
EHS 539 Methods I: World Languages	3
Advisor-approved 500+ level courses in Spanish	12
Total Hours	15

Master of Arts in Education in English as a Second Language Non-Certification International/Adult Track

The M.A.Ed in English as a Second Language degree for the traditional program requires a minimum of 33 hours for the non-certification concentration in ESL and 45 hours for the concentrations in ESL/Spanish and ESL/French. The minimum required GPA is 3.25.

Requirements	Hours
EESL 007 Community English Teaching	0
EESL 607 Second Language Learning or EESL 610 Second Language Acquisition	3
EESL 615 Grammar and Linguistics for ESL Teachers	3
EESL 617 Teaching English in a Global Context or EESL 613 Teaching ESL in a Multicultural Society	3
EESL 625 Phonology for Second Language Teachers	3
EESL 627 Teaching Adult Language Learners	3
EESL 637 Methods Teaching English as an International Language or EESL 630 Methods and Materials of Teaching ESL	3
EESL 647 Instruction and Assessment: Reading and Writing or EESL 640 Teaching New Languages Through Reading and Writing	3
EESL 657 Instruction and Assessment: Listening and Speaking	3
EESL 677 Field Studies ¹	3
EESL 687 Practicum Seminar: English Language Teaching	3
EESL 697 ESL Practium: Adult Learners	3
Total Hours	33

¹ Only one hour for students who are Peace Corps Coverdell Fellows

Educational Specialist in Education with a Concentration in English as a Second Language

The Ed.S. requires a minimum of 30 credit hours for the Education program with a concentration in English as a Second Language.

Requirements	Hours
EESL 647 Instruction and Assessment: Reading and Writing	3
EESL 657 Instruction and Assessment: Listening and Speaking	3

ALSDE-approved Diversity Course		3
EDC 732	Culturally and Linguistically Responsive Instruction	
EPR 700	Data Based Decision Making	3
EPR 700L	Field Experience/Data Based Decision Making	1
EPR 700R	School Based Problem Research Project/Data Based Decision	1
ECT 720	Universal Design for Lrn	3
ECT 720L	Field Experience	1
ECT 720R	Action Research	1
EDC 731	Curricular Design & Implementation	3
EDC 731L	Field Experience	1
EDC 731R	School-Based Problem Research: Curriculum Design Implementation	1
EESL Electives		6
EESL 617	Teaching English in a Global Context	
EESL 627	Teaching Adult Language Learners	
EESL 637	Methods Teaching English as an International Language	
EESL 677	Field Studies or EHS 687 Field Studies (Selected Educational Settings)	
EESL 687	Practicum Seminar: English Language Teaching	
EHS 681	Special Topics in Education	
Advisor-approved 500+ level EESL or related Courses		
Total Hours		30

High School Education

UAB's High School Education program prepares pre-service and in-service teachers for teaching in both Middle School and High School. This secondary education program offers the following graduate degrees: Master of Arts in Education (MAEd) and Educational Specialist (Ed.S.).

UAB's High School Education program embodies a three-fold purpose. Its first purpose is to prepare educators in meeting the evolving needs of learners, primarily in grades 6-12, within today's rapidly changing society. Based on constructivism, its second purpose is to deliver cutting-edge instruction through a standards-based, inquiry-focused approach that prepares educators to use state-of-the-art instructional strategies in their own classrooms. Its third purpose is to ensure that a quality program is available to pre-service and in-service teachers who may be unable to attend class during traditional class hours. This program is unique in how it combines online support from Canvas with a variety of delivery formats:

- blended courses (online & face-to-face evenings)
- professional learning communities
- flexible summer programming
- totally online platforms
- Saturday classes

These purposes are expanded and enhanced by the Ed.S. program. This advanced degree offers standards-based concentrations within discipline areas. It infuses an inquiry-focused teacher leader approach that prepares teachers for assuming leadership roles in curriculum development and instructional delivery. It also provides experienced teachers with collaborative skills to serve as reflective practitioners in guiding school change as well as with mentoring techniques to positively impact student achievement and school improvement.

Prospective students should contact the Program Director, Paulette Evans at pgevans@uab.edu (205-975-7519).

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/studentservices/admission-requirements>.

Master of Arts in Education in High School Education Traditional Master's Program

The M.A.Ed. degree requires a minimum of 33 credit hours for the High School Education program (i.e., Secondary Education) with concentrations in Biology, Chemistry, General Science, Mathematics, Physics, English Language Arts, General Social Science, and History. A minimum GPA of 3.25 is required.

Requirements	Hours
All Concentrations	
EHS 651 Innovative Practices in Teaching in Secondary School	3
EDC 655 Curriculum Principles and Practices	3
EDC 706 The Dynamics of Educational Change	3
ECY 600 Introduction to Exceptional Learner ¹	3
ALSDE-approved Diversity course	3
EDF 600 Urban Education	
EDF 602 Critical Social Issues in American Education	
Advisor-approved Elective in Diversity	
Advisor-approved Elective	3
EPR 688 Seminar on Current Issues: Measurement/Eval School	
600+ level Education course	
500+ level course in Teaching Field	
Total Hours	18

¹ May not be required if previously completed

Concentration in Biology, 6-12

Requirements	Hours
Advisor-approved Biology courses at 500+ level	12
EHS 615 Advanced Methods: Science, 6-14	3
Total Hours	15

Concentration in Chemistry, 6-12

Requirements	Hours
Advisor-approved Chemistry courses at 500+ level	12
EHS 615 Advanced Methods: Science, 6-14	3
Total Hours	15

Concentration in General Science, 6-12

Requirements	Hours
Advisor-approved Science courses at 500+ level	12
EHS 615 Advanced Methods: Science, 6-14	3
Total Hours	15

Concentration in Mathematics, 6-12

Requirements	Hours
Advisor-approved Mathematics courses at 500+ level	12
EHS 616 Advanced Methods: Mathematics, 6-14	3
Total Hours	15

Concentration in Physics, 6-12

Requirements	Hours
Advisor-approved Physics courses at 500+ level	12
EHS 615 Advanced Methods: Science, 6-14	3
Total Hours	15

Concentration in English Language Arts, 6-12

Requirements	Hours
Advisor-approved courses at the 500+ level in English and another ELA field	12
EHS 612 Advanced Methods: English Language Arts, 6-14	3
Total Hours	15

Concentration in General Social Science, 6-12

Requirements	Hours
Advisor-approved courses at the 500+ level in 2 or more Social Science disciplines	12
EHS 614 Advanced Methods: Social Sciences, 6-14	3
Total Hours	15

Concentration in History, 6-12

Requirements	Hours
Advisor-approved History courses at the 500+ level	12
EHS 614 Advanced Methods: Social Sciences, 6-14	3
Total Hours	15

Master of Art in Education in High School Education Fifth Year Alternative Master's Program

The M.A.Ed. degree requires a minimum of 43 credit hours for the Fifth Year Alternative Master's program in High School Education (i.e., Secondary Education) with concentrations in Biology, Chemistry, General Science, Mathematics, Physics, English Language Arts, General Social Science, and History. A minimum GPA of 3.25 is required.

Requirements	Hours
All Concentrations	
ECY 600 Introduction to Exceptional Learner ¹	3
EDR 551 Reading in Content Areas	3
EDU 500 Education as a Profession	1
EHS 530 Practicum	1
EHS 556 Classroom Mgt in Sec Schools	3
EHS 570 Practicum II	1
EHS 597 Special Problems in Education	3
EHS 690 Intern Seminar in Sec Edu	1
EHS 691 Secondary School Internship	6
EPR 511 Measurement and Evaluation in Education Secondary Ed	3
Total Hours	25

¹ May not be required if previously completed

Concentration in Biology, 6-12

Requirements	Hours
Advisor-approved Biology courses at the 500+ level	12
EHS 537 Methods I: Science, 6-12	3
EHS 567 Methods II: Science, 6-12	3
Total Hours	18

Concentration in Chemistry, 6-12

Requirements	Hours
Advisor-approved Chemistry courses at the 500+ level	12
EHS 537 Methods I: Science, 6-12	3
EHS 567 Methods II: Science, 6-12	3
Total Hours	18

Concentration in General Science, 6-12

Requirements	Hours
Advisor-approved 500+ level courses in two (2) Science Disciplines	12
EHS 537 Methods I: Science, 6-12	3
EHS 567 Methods II: Science, 6-12	3
Total Hours	18

Concentration in Mathematics, 6-12

Requirements	Hours
Advisor-approved Mathematics courses at 500+ level	12
EHS 535 Methods I Mathematics 6-12	3
EHS 565 Methods II: Mathematics, 6-12	3
Total Hours	18

Concentration in Physics, 6-12

Requirements	Hours
Advisor-approved Physics at 500+ level	12
EHS 537 Methods I: Science, 6-12	3
EHS 567 Methods II: Science, 6-12	3
Total Hours	18

Concentration in English Language Arts, 6-12

Requirements	Hours
Advisor-approved at the 500+ level in English and another ELA field	12
EHS 536 Methods I: English Language Arts, 6-12	3
EHS 566 Methods II: English Language Arts, 6-12	3
Total Hours	18

Concentration in General Social Science, 6-12

Requirements	Hours
Advisor-approved Courses in 2 or more 500+ level Social Science Disciplines	12
EHS 538 Methods I: Social Science, 6-12	3
EHS 568 Methods II: Social Science, 6-12	3
Total Hours	18

Concentration in History, 6-12

Requirements	Hours
Advisor-approved History courses at the 500+ level	12
EHS 538 Methods I: Social Science, 6-12	3
EHS 568 Methods II: Social Science, 6-12	3
Total Hours	18

Master of Arts in Education High School Education Concentrations in French and Spanish Traditional Master's Program

The M.A.Ed. degree requires a minimum of 33 credit hours for the Traditional Master's program in High School Education (i.e., Secondary Education) with concentrations in French and Spanish. A minimum GPA of 3.25 is required.

Requirements	Hours
EESL 610 Second Language Acquisition	3
ECY 600 Introduction to Exceptional Learner ¹	3
EHS 611 Advanced Methods: World Languages	3
EESL 625 Phonology for Second Language Teachers	3
EESL 640 Teaching New Languages Through Reading and Writing	3
Advisor-approved 500+ level French/Spanish or 600+ level Education course	3

¹ May not be required if previously completed

Concentration in French

Requirements	Hours
Advisor-approved 500+level French courses	12
Practicum or Field Experience	3
FR 590 Study Abroad	
FR 599 Individual Studies	
EEC 694 Field Study	
EHS 692 Field Studies (Selected Educational Settings)	
Total Hours	15

Concentration in Spanish

Requirements	Hours
Advisor-approved 500+level Spanish courses	12
Practicum or Field Experience	3
SPA 590 Study Abroad	
SPA 599 Independent Studies	
EEC 694 Field Study	
EHS 692 Field Studies (Selected Educational Settings)	
Total Hours	15

Master of Arts in Education High School Education with Concentrations in French and Spanish Fifth Year Alternative Master's Program

The M.A.Ed. degree requires a minimum of 44 credit hours for the Fifth Year Alternative Master's program in High School Education (i.e., Secondary Education) with concentrations in French and Spanish. A minimum GPA of 3.25 is required.

Requirements	Hours
EHS 539 Methods I: World Languages	3
EHS 569 Methods II: World Languages	3
EHS 597 Special Problems in Education	3
or EESL 513 Teaching ESL in a Multicultural Society	
EESL 540 Teaching New Languages Through Reading and Writing	3
EDU 500 Education as a Profession	1
EHS 556 Classroom Mgt in Sec Schools	3
EPR 510 Measurement and Evaluation in Education ECE	3
or EPR 511 Measurement and Evaluation in Education Secondary Ed	
ECY 600 Introduction to Exceptional Learner ¹	3
EHS 690 Intern Seminar in Sec Edu	1
EESL 510 Second Language Acquisition	3
Total Hours	26

¹ May not be required if previously completed

Concentration in French

Requirements	Hours
French courses at the 500+ level	12
EFL 691 N-12 Foreign Language Internship	6
Total Hours	18

Concentration in Spanish

Requirements	Hours
Spanish courses at the 500+ level	12
EFL 691 N-12 Foreign Language Internship	6
Total Hours	18

Educational Specialist in High School Education - Traditional Master's Program

The Ed.S. degree requires a minimum of 33 credit hours for the High School Education program (i.e., Secondary Education) with concentrations in Biology, Chemistry, General Science, Mathematics, Physics, English Language Arts, General Social Science, and History. A minimum GPA of 3.25 is required.

Requirements	Hours
All Concentrations	
EDC 707 Introduction to Teacher Leadership	3
EDC 711 Analysis and Evaluation of Teaching	3
EDC 720 Problems and Issues in Education	3
ECY 600 Introduction to Exceptional Learner ¹	3
EPR 596 Introduction to Qualitative Methods in Educational Research	3
EHS 720 Individual Research in Education	3
or EHS 680 National Board Seminar for Secondary Education	
Advisor-approved Elective	3
EHS 681 Special Topics in Education	
600+ level Education course	
500+ level course in Teaching Field	
Total Hours	21

¹ May not be required if previously completed

Concentration in Biology, 6-12

Requirements	Hours
Advisor-approved Biology courses at 500+ level	12
Total Hours	12

Concentration in Chemistry, 6-12

Requirements	Hours
Advisor-approved Chemistry courses at 500+ level	12
Total Hours	12

Concentration in General Science, 6-12

Requirements	Hours
Advisor-approved Science courses at 500+ level	12
Total Hours	12

Concentration in Mathematics, 6-12

Requirements	Hours
Advisor-approved Mathematics courses at 500+ level	12
Total Hours	12

Concentration in Physics, 6-12

Requirements	Hours
Advisor-approved Physics courses at 500+ level	12
Total Hours	12

Concentration in English Language Arts, 6-12

Requirements	Hours
Advisor-approved courses at the 500+ level in English and another ELA field	12
Total Hours	12

Concentration in General Social Science, 6-12

Requirements	Hours
Advisor-approved courses at the 500+ level in 2 or more Social Science disciplines	12
Total Hours	12

Concentration in History, 6-12

Requirements	Hours
Advisor-approved History courses at the 500+ level	12
Total Hours	12

Instructional Design & Development

The purpose of the UAB Instructional Design and Development (IDD) program is to train qualified instructional designers who effectively analyze, design, develop, evaluate, and implement quality online, blended, and on-ground instruction. This fully-online program follows and achieves the International Board of Standards for Training, Performance and Instruction (IBSTPI (<http://ibstpi.org/instructional-design-competencies>)) competencies and performance standards for instructional designers.

Instructional design and development is the practice of systematically creating instructional experiences that make the acquisition of knowledge and skill more efficient and effective. The process consists broadly of determining the current state and needs of the learner, defining the end goal of instruction, and creating some "intervention" to assist in the transition. The process is guided by pedagogically-tested theories of learning and may take place in many different learning environments. As a field, instructional design and development is historically and traditionally rooted in cognitive and behavioral psychology, though recently, constructivism has influenced thinking in the field.

The study of instructional design and development includes the study of learning theory and trends in educational technology, instructional design principles, universal design and usability for effective design, development, and delivery of learning materials across a wide range of learning environments.

M.S. Instructional Design & Development

Requirements	Hours
IDD 600 Trends and Issues in Instructional Design	3
IDD 610 Instructional Design	3
IDD 620 Universal Differential Instructional Design and Development	3
IDD 630 Performance System Technology	3
IDD 640 Learning, Cognition, and Instructional Design and Development	3
IDD 650 Alternate Instructional Design and Development Models	3
IDD 660 Assessment and Evaluation in Instructional Design & Development	3
IDD 670 Multimedia Design and Development for Instruction / Training	
IDD 680 Instructional Design and Development Elective	3
IDD 690 Research Practicum	1-3
Total Hours	25-27

Reading

The Reading Education master's program (M.A.Ed.) prepares teachers to serve as reading specialists and to improve their classroom skills in teaching and coaching for reading. Reading candidates will receive in-depth knowledge of reading pedagogy and implementation during their program. The reading candidates participate in extensive work with children/students in diverse groupings and settings. A portfolio of professional development in reading is completed by the end of the program.

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/studentservices/admission-requirements>.

Reading Specialist Certification

The Graduate Non-Degree Reading Specialist Program requires a minimum of 36 credit hours.

Requirements	Hours
EEC 621 Teaching Language Arts P-12	3
EEC 660 Reading in Teaching and Learning	3
ECY 600 Introduction to Exceptional Learner	3
EDC 695 Coaching for Effective Instruction	3
EDR 551 Reading in Content Areas	3
EDR 650 Teaching Reading P-12	3
EDR 653 Literature for Grades P-12	3
EDR 654 Dyslexia Research, Education & Advocacy	3
EDR 655 Reading Assessment and Evaluation	3
EDR 659 Research and Problems in Reading	3
EDR 690 Internship in Reading	3
EESL 640 Teaching New Languages Through Reading and Writing	3
Total Hours	36

Master of Arts in Education in Reading Education

The M.A.Ed. in Reading Education degree for the Reading Specialist program requires a minimum of 36 hours. A minimum GPA of 3.25 is required.

Requirements	Hours
EDC 695 Coaching for Effective Instruction	3
EEC 621 Teaching Language Arts P-12	3
ECY 600 Introduction to Exceptional Learner ¹	3
EDR 551 Reading in Content Areas	3
EDR 650 Teaching Reading P-12	3
EDR 653 Literature for Grades P-12	3
EDR 654 Dyslexia Research, Education & Advocacy	3
EDR 655 Reading Assessment and Evaluation	3
EDR 659 Research and Problems in Reading	3
EEC 660 Reading in Teaching and Learning	3
EDR 690 Internship in Reading	3
EESL 640 Teaching New Languages Through Reading and Writing	3
Total Hours	36

¹ Not required if previously completed

Educational Specialist in Education with a Concentration in K-12 Collaborative Teacher in Reading

The Ed.S. in Education with a concentration in K-12 Collaborative Teacher in Reading program requires a minimum of 36 hours. A minimum GPA of 3.50 is required.

Requirements	Hours
EDR 650 Teaching Reading P-12	3
EDC 695 Coaching for Effective Instruction	3
EDR 655 Reading Assessment and Evaluation	3
EDR 659 Research and Problems in Reading	3
EDR 654 Dyslexia Research, Education & Advocacy	3
ECY 600 Introduction to Exceptional Learner ¹	3
EDR 690 Internship in Reading	3
Total Hours	21

Track 1

Requirements	Hours
ECT 620 Formative and Summative Assessment	3
ECT 621 Program and Lesson Planning	3
ECT 623 Instructional Methods	3
ECT 625 Positive Behavioral Supports	3
ECT 631 Practicum in Collaborative Teaching K-12	3
Total Hours	15

Track 2

Requirements	Hours
Collaborative Problem Solving with Field Experience and Research Project	
EDL 711 Collaborative Problem Solving	3
EDL 711L Collab Probl Solv: Fld Exper	1
EDL 711R School-Based Problem Research	1
Data Based Decision Making with Field Experience and Research Project	
EPR 700 Data Based Decision Making	3
EPR 700L Field Experience/Data Based Decision Making	1
EPR 700R School Based Problem Research Project/Data Based Decision	1
Cultural and Linguistically Responsive Instruction with Field Experience and Research Project	
EDC 732 Culturally and Linguistically Responsive Instruction	3
EDC 732L Field Experience for Culturally and Linguistically Responsive Instruction	1
EDC 732R School-Based Problem Research for CLD Responsive Instruction	1
Total Hours	15

¹ May not be required if previously completed

School Psychometry

UAB's School Psychometry program (Class A certification or M.A.Ed.) embodies a three-fold purpose. Its first purpose is to prepare candidates to serve as a school psychometrist to assist in meeting the evolving needs of learners, in grades K-12, within today's rapidly changing society. Its second purpose is to deliver cutting-edge instruction through a standards-based, inquiry-focused approach. Based on constructivism, this approach prepares candidates to administer psychological services in the schools. These services include the conduction of psychoeducational assessment on students referred for special services. Its third purpose is to ensure that a quality program is available to candidates who may be unable to attend class during traditional class hours. This program is delivered through a totally online platform.

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at www.uab.edu/education/studentservices/admission-requirements.

Requirements	Hours
ECT 620 Formative and Summative Assessment	3
ECT 623 Instructional Methods	3
ECT 625 Positive Behavioral Supports	3
ECY 600 Introduction to Exceptional Learner	3
EDU 600 Education as a Profession	1

EPR 614 Lifespan Human Development	3
ESP 600 Seminar in School Psychometry	3
ESP 627 Practicum in Schl Psychometry	1
ESP 628 Indiv Assess Child/Youth I	3
ESP 629 Indiv Assess Child/Youth II	3
ESP 689 Internship-School Psychometry	6
Required Elective ¹	3

¹ Advisor approved electives at the 500 or 600 level.

School Psychometry Certification

The Graduate Non-Degree School Psychometry Certification Program requires a minimum of 34 credit hours.

Requirements	Hours
ECT 620 Formative and Summative Assessment	3
ECT 623 Instructional Methods	3
ECT 625 Positive Behavioral Supports	3
ECY 600 Introduction to Exceptional Learner	3
EPR 614 Lifespan Human Development	3
ESP 600 Seminar in School Psychometry	3
ESP 627 Practicum in Schl Psychometry	1
ESP 628 Indiv Assess Child/Youth I	3
ESP 629 Indiv Assess Child/Youth II	3
ESP 689 Internship-School Psychometry	3-9
Advisor-approved Elective at the 500+ level	3
Total Hours	31-37

Program Requirements here

Master of Arts in Education in School Psychometry

The M.A.Ed. School Psychometry Program requires a minimum of 31 credit hours.

Requirements	Hours
ECY 600 Introduction to Exceptional Learner ¹	3
ESP 600 Seminar in School Psychometry	3
ECT 620 Formative and Summative Assessment	3
ECT 623 Instructional Methods	3
EPR 614 Lifespan Human Development	3
ECT 625 Positive Behavioral Supports	3
ESP 627 Practicum in Schl Psychometry	1
ESP 628 Indiv Assess Child/Youth I	3
ESP 629 Indiv Assess Child/Youth II	3
ESP 689 Internship-School Psychometry	3-9
Advisor-approved Elective at the 500+ level	3
Total Hours	31-37

¹ May not be required if previously completed

Special Education

Welcome to UAB where students become skilled, reflective educators through Special Education graduate degree programs in Collaborative Teacher (CT) K-12, and Early Childhood Special Education (ECSE).

These innovative program offer degrees and/or certification at three levels—alternative masters, traditional masters and specialist.

The alternative masters program (AMP) is for graduate students who do not already hold teacher certification in elementary or early childhood education. To be eligible for seeking initial teacher certification at a masters level, applicants must have an undergraduate degree with a 2.75 GPA on their transcript from a regionally accredited college. They must have passed the Basic Skills test and the Praxis II exam in the targeted teaching field and also met other criteria stipulated by the ALSDE. Upon completing the AMP, candidates earn alternative Class A certification in this teaching field.

The traditional masters program (MAE) is for teachers who already hold Class B initial certification in any area of education. Upon completing the MAE, they earn Class A certification in the special education teaching field.

The Collaborative Teacher: Concentration in Reading Educational Specialist (EDS) degree program is for teachers who already hold either an Alabama Class B or Class A certificate in any field of special education OR general education who have at least 2 years of verified, full-time teaching experience with special populations or general populations and hold a valid Class A Professional Educator Certificate.

Individuals pursuing this certificate/degree must complete one of two tracks in this program. The track selected depends upon the type of valid, prerequisite Alabama professional educator certificate held PRIOR to unconditional admission to the Class AA Program in Collaborative Teacher. Track 1 is for candidates who DO NOT currently hold a valid Alabama Class A Certificate in Collaborative Teacher. Candidates who must take this track of courses are those with a valid, prerequisite Alabama Class A Professional Educator Certificate in any teaching field (other than Collaborative Teacher). To be eligible to pursue Track 2 courses, candidates MUST hold a valid, prerequisite Alabama Class A Professional Educator Certificate in Collaborative Teacher.

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/studentservices/admission-requirements>.

Master of Arts in Special Education Collaborative Teacher K-12

The MA.Ed. in Special Education degree for the Collaborative Teacher K-12 program requires a minimum of 33 hours. A minimum GPA of 3.25 is required.

Requirements	Hours	
ECT 620	Formative and Summative Assessment	3
ECT 621	Program and Lesson Planning	3
ECT 622	Language and Communication Facilitation	3
ECT 623	Instructional Methods	3
ECT 624	Sensory, Health and Physical Methods	3
ECT 625	Positive Behavioral Supports	3
ECT 626	Assistive and Instructional Technology	3
ECT 627	Collaborative Processes	3
ECT 628	Legal Issues and Trends	3
ECY 600	Introduction to Exceptional Learner ¹	3
ECT 631	Practicum in Collaborative Teaching K-12	3
Total Hours		33

¹ May not be required if previously completed

Master of Arts in Special Education Collaborative Teacher K-12 Fifth Year Alternative Masters

The MA.Ed. in Special Education degree for the Collaborative Teacher K-12 Fifth Year Alternative Masters program requires a minimum of 44 hours. A minimum GPA of 3.25 is required.

Requirements	Hours	
ECT 521	Program and Lesson Planning	3
ECT 523	Instructional Methods	3
ECT 529	Teaching Literacy and Reading in Inclusive Settings	3
ECT 528	Legal Issues and Trends	3
ECT 520	Formative and Summative Assessment	3
ECY 600	Introduction to Exceptional Learner	3
ECT 531	Internship in Collaborative Teaching K-12	6
ECT 532	Student Teaching Seminar	1
EDU 500	Education as a Profession	1
ECT 522	Language and Communication Facilitation	3
ECT 524	Sensory, Health and Physical Methods	3
ECT 525	Positive Behavioral Supports	3
ECT 526	Assistive and Instructional Technology	3
ECT 527	Collaborative Processes	3
ECT 530	Effective Teaching and Learning	3
Total Hours		44

¹ May not be required if previously completed

Master of Arts in Early Childhood Special Education

The MA.Ed. degree in Early Childhood Special Education program requires a minimum of 39hours. A minimum GPA of 3.25 is required.

Requirements	Hours	
ECY 635	Foundations of Early Childhood Special Education	3
ECY 637	Assessment in Early Childhood Special Education	3
ECT 621	Program and Lesson Planning	3
ECY 636	Early Intervention and Preschool Curriculum and Methods	3
ECT 655	Early Primary Curriculum and Methods	3
ECT 625	Positive Behavioral Supports	3
ECT 654	Communication and Technology Applications In Early Childhood Special Education	3
ECT 627	Collaborative Processes	3
ECY 639	Transdisciplinary Collaboration and Consultation in Early Childhood	3
ECY 689	Advanced Topics in Special Education	1-6
EDR 652	Pre and Early Reading Instruction	3
ECY 600	Introduction to Exceptional Learner ¹	3
ECY 670	Practicum in Early Childhood Special Education	6
Total Hours		40-45

¹ May not be required if previously completed

Teaching English to Speakers of Other Languages

UAB offers an Educational Specialist degree in Teaching English to Speakers of Other Languages (TESOL). As a post-MA degree, this EdS-TESOL provides advanced training in the teaching and learning of English as a Second Language (ESL) and English as a Foreign Language (EFL). Targeted for educators who already hold a master's degree in TESOL or a related area, this program equips TESOL educators with state-of-the-art instructional strategies for meeting the evolving needs of linguistically and culturally diverse learners, with collaborative skills for serving as reflective practitioners to guide change, and with mentoring techniques for positively influencing student achievement and institutional improvement. This EdS-TESOL prepares educators to assume mentorship and leadership roles to guide other educators in meeting the English-learning needs of their students in P-12 and adult settings. To that end, it prepares educators to become dynamic leaders and effective change agents by developing their capacity to serve as lead teachers, division heads, instructional coaches, professional development facilitators, and program specialists.

At UAB, this EdS-TESOL degree is classified by the National Center for Education Statistics (NCES) with code 13.1401 *Teaching English as a Second or Foreign Language*. In the NCES Classification of Instructional Programs (CIP), this code defines programs that "focus on the principles and practice of teaching English to students who are not proficient in English or who do not speak, read or write English, and that may prepare individuals to function as teachers and administrators in such programs." Within this code, UAB's EdS-TESOL program is unique in how it offers two distinct tracks - the certification track and the non-certification track.

Educational Specialist (EdS) in TESOL (Certification)

This track leads to Class AA certification in ESOL issued by ALSDE. 30-34 Credit hours.

Requirements	Hours
ECY 600 Introduction to Exceptional Learner ¹	
EESL 647 Instruction and Assessment: Reading and Writing	3
EESL 657 Instruction and Assessment: Listening and Speaking	3
Advisor-Approved ESL Electives	6
EESL 617 Teaching English in a Global Context	
EESL 627 Teaching Adult Language Learners	
EESL 637 Methods Teaching English as an International Language	
EESL 677 Field Studies	
EESL 687 Practicum Seminar: English Language Teaching	
EHS 681 Special Topics in Education	
Any Approved 600-level EESL course	
EDC 732 Culturally and Linguistically Responsive Instruction	3
EPR 594 Introduction to Educational Research Design	3
Qualitative or Statistical Research Methods	3-4
EPR 596 Introduction to Qualitative Methods in Educational Research	
EPR 607 Microcomputer Applications to Statistical Analysis	
EPR 608 Statistical Methods and Action Research	
EDC 707 Introduction to Teacher Leadership	3
EDC 711 Analysis and Evaluation of Teaching	3
Advisor-Approved Education Course	3

EDC 695 Coaching for Effective Instruction	
EESL 680 Research in ESL	
Any Approved 600-level EESL course	
Total Hours	30-31

¹ Required if not previously completed.

Educational Specialist (EdS) in TESOL (Non-Certification)

This track does not lead to Class AA certification in ESOL issued by ALSDE. 30-37 Credit hours.

Requirements	Hours
EESL 610 Second Language Acquisition ¹	
Advisor-Approved Teaching Field Course	12
EESL 612 Curriculum, Programs and Policies	
EESL 615 Grammar and Linguistics for ESL Teachers	
EESL 620 Special Topics in ESL	
EESL 625 Phonology for Second Language Teachers	
EESL 627 Teaching Adult Language Learners	
EESL 630 Methods and Materials of Teaching ESL	
EESL 637 Methods Teaching English as an International Language	
EESL 640 Teaching New Languages Through Reading and Writing	
EESL 641 Teaching Emergent Bilingual Learners in the Early Childhood Setting	
EESL 643 Promoting Global Peace through TESOL	
EESL 647 Instruction and Assessment: Reading and Writing	
EESL 657 Instruction and Assessment: Listening and Speaking	
EESL 660 Effective Teaching and Learning	
EESL 670 Engaging Families and Communities	
EESL 687 Practicum Seminar: English Language Teaching	
EHS 681 Special Topics in Education	
Any Approved 600-level EESL course	
Diversity Course	3
EESL 613 Teaching ESL in a Multicultural Society	
EESL 617 Teaching English in a Global Context	
EDC 732 Culturally and Linguistically Responsive Instruction	
EPR 594 Introduction to Educational Research Design	3
Qualitative or Statistical Research Methods	3-4
EESL 680 Research in ESL	
EPR 596 Introduction to Qualitative Methods in Educational Research	
EPR 607 Microcomputer Applications to Statistical Analysis	
EPR 608 Statistical Methods and Action Research	
Advisor-Approved Education Courses	9
EDC 695 Coaching for Effective Instruction	
EDC 707 Introduction to Teacher Leadership	
EDC 711 Analysis and Evaluation of Teaching	
EESL 677 Field Studies	
Any Approved 600-level EESL course	
EESL 690 Internship in Second and Foreign Languages, P-12 ¹ or EESL 6ESL Practicum: Adult Learners	
EESL 600 TESOL Residency (at UAB)	
Total Hours	30-31

¹ Required if not previously taken.

Human Studies

Program Contact Information

Program	Coordinator	Room	Phone Number
Counseling	Dr. Dayna Watson	152	(205) 934-2005
Educational Leadership	Dr. Keith Gurley	206	(205) 975-1983
Community Health and Human Services	Dr. Laura Forbes	210	(205) 975-5368
Kinesiology - Teacher Certification	Dr. Sandra Sims	224	(205) 996-2721
Kinesiology - Exercise Physiology	Dr. Eric Plaisance	201	(205) 996-7909
Research	Dr. Jenna LaChenaye	215	(205) 934-2357
Foundations	Dr. Tondra Loder-Jackson	219	(205) 934-8304

Educational Foundations

The Educational Foundations (EDF) Program examines how educational institutions shape and are shaped by the social and cultural structures within our society. Our mission is to offer a program that examines current teaching contexts and practice, research, and theory with the aim of increasing our professional candidates' knowledge and understanding of the socio-cultural, historical, political, and economic factors, as well as the philosophical underpinnings, that influence education and shape the societies and world in which we live. Within a diverse world, we also believe that professional educators should recognize a profound need to intentionally learn about and incorporate their students' personal experiences, cultures, and community resources into their instruction and programs. It is through our courses that students come to encounter, interrogate, better understand, and embrace the increasingly diverse landscape of our society and P-12 students.

Educational Psychology and Research

At the undergraduate level, the Educational, Psychology and Research Program (EPR) provides courses in psychological foundations and measurement and evaluation that are necessary for all prospective teachers to complete who are pursuing an undergraduate teaching degree. We also house the undergraduate Introduction to Statistics that serves the Community Health and Human Services and Kinesiology programs and concentrations.

At the graduate level, we provide educational psychology courses that meet the program requirements for graduate teacher certification programs as well as courses taken for recertification and other Masters, Educational Specialists, and doctoral programs within and outside of the School of Education. These courses also attract graduate students from programs outside the School of Education such as Nursing, Public Health, and the School of Health Professions.

Counseling

Overview

The program in Counseling at the University of Alabama at Birmingham offers concentrations in Clinical Mental Health; Marriage, Couples, and Family; and School Counseling at the Master's level. At the master's level students acquire core knowledge and clinical skills, which enable them to enter the profession of counseling.

All counseling concentrations (Clinical Mental Health; Marriage, Couples, and Family; and School Counseling) are designed to meet the coursework and field experiences requirements for professional licensure in the State of Alabama. A 15-credit Marriage, Couples, and Family certificate is offered to provide additional coursework for mental health and school counselors who would like to broaden their clinical expertise and knowledge in Marriage, Couples, and Family counseling. The School Counseling Concentration meets the course work and field experiences required by the Alabama State Department of Education for certification.

The Counseling program at the University of Alabama at Birmingham is accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP). The school counseling concentration and clinical mental health counseling concentrations have full CACREP accreditation through 2020. The counseling program has begun the process to seek CACREP accreditation for the Marriage, Couples, and Family program.

Admission Process

Consideration for admission to graduate study in Counseling will occur in the fall and spring semesters.

For more information about admission to the Counseling program, please see the following link: <https://www.uab.edu/education/home/hs/counseling/admission-process-counseling>

Non-Degree Seeking Students

Potential students may take classes prior to admission to the Counseling Program as "non-degree seeking" students. However, non-degree seeking students are limited to 12 hours of coursework that may be transferred into the Counseling Program. Non-degree seeking students may enroll in elective courses with the permission of the instructor. It would be important for non-degree seeking students to make an advising appointment with a Counseling faculty member prior to enrolling in courses. Non-degree seeking students are not permitted to take courses not designated as open to non-degree seeking students. It is also important to note that students taking coursework as a non-degree seeking student do so at their own risk. Enrolling and passing non-degree seeking coursework does not guarantee admission into the program as admission criteria (e.g., test scores, undergraduate GPA, and interview) are the primary factors considered when reviewing student suitability for the program.

Evaluation of Candidates

Counseling candidates are evaluated throughout the course of their program via a series of Key Performance Indicators (KPIs). These KPIs are found throughout the course of study, including indicators such as specific course assignments in Area I coursework, CPCE exam, and midterm/final evaluations in internship. Evaluation of the counselor-in-

training is an on-going process. The faculty reserves the right to assess the candidate's appropriateness to be a professional counselor.

Dispositions

Counseling faculty individually review the professional dispositions (behaviors and attitudes) of students within each course in accordance with the Counseling Student Handbook. Additionally, faculty will collectively review student dispositions and overall progress in the program at the end of each semester. Dispositional areas identified as deficient could result in termination from the program.

Clinical Experience: Master's Level

Before admission to the program, students in the school counseling concentration must submit to fingerprinting and a Background Review conducted by the Alabama State Department of Education at the student's cost. For information on the cost and how to complete this requirement, go to <http://background.alabama.gov/>. No school counseling student shall begin a clinical placement (Practicum or Internship in an education environment) in Alabama without a suitability letter from the Alabama State Department of Education demonstrating that the student's criminal background has been reviewed and cleared by the Department of Education. Clinical Mental Health counseling students are not required to submit to fingerprinting or a background review upon admission to the Counseling Program. However, Clinical Mental Health counseling students are required to complete clinical placements in order to obtain the master's degree in counseling and many of the outside agencies/entities require fingerprinting and background reviews prior to accepting a student for clinical placement.

For all counseling students, the appearance of one or more felonies and/or several misdemeanors on a student's background review may negatively impact placement potential and/or credential obtainment.

Per CACREP standards, before beginning the first semester of their clinical experience, students must obtain and submit proof of individual liability insurance. This is to be procured by the student at the student's expense and must be maintained throughout the student's clinical experience. Student must submit proof of current individual liability coverage at the beginning of each semester that student is enrolled in a clinical experience. This is a requirement for all counseling students, regardless of concentration. If proof of insurance is not provided, student will be administratively removed from the clinical course.

Prerequisites for the clinical experience include successful completion of required coursework, meeting the required outcomes and competencies in Area I, and successful completion of comprehensive exams. The practicum experience requires a minimum of 100 hours (including **40 hours of direct client contact**) on-site at an appropriate setting to be determined by the Clinical Coordinator. The internship is 600 hours (including **240 hours of direct client contact**) on-site over two semesters (Each semester, students must have a minimum of 300 hours on -site and 120 hours of direct client contact.) Grading for the clinical experiences is on a Pass/Fail basis. To receive a Pass grade the counselor-in-training must be able to demonstrate basic counseling skills, behave in an appropriate professional manner consistent with the American Counseling Association's Code of Ethics, and satisfactorily complete the academic, dispositional and outcome requirements set forth in both the practicum and internship classes.

Certificate in Marriage, Couples, and Family Counseling

The certificate in Marriage, Couples, and Family counseling prepares school counselors and clinical mental health counselors to position themselves to more effectively work with clients, to better align with evidence-based practice, and to increase their range of services and versatility through additional coursework in this subject area. The certificate is open to current UAB counseling students as well as graduates of Master's level school counseling and mental health programs. The certificate consists of 15 credits of coursework, and takes students about one year to complete on average.

Admission Process

Candidates seeking admission to the Marriage, Couples, and Family counseling certificate who are graduates of a Master's level counseling program, must complete an application found on the UAB Graduate School website, as well as submit a statement of purpose, and their graduate-level transcript. Equivalent completed coursework from a CACREP counseling program may be substituted for a required course for the certificate. Admission is accepted for summer and fall terms. The admissions deadline for the certificate is April 1. The prerequisite course (ECG 691) for all other coursework for the certificate is offered in the summer term only.

Current UAB clinical mental health or school counseling students who wish to pursue the MCF certificate should speak with their advisor to arrange to complete the required coursework.

Note: 1) All students must complete ECG 691, ECG 685, ECG 689, ECG 680, and ECG 660 for a total of 15 hours. 2) A student who has graduated from the Clinical Mental Health Counseling program may need to complete ECG 661 in lieu of ECG 691 and ECG 660 if these were already completed. 3) A student who has graduated from the School Counseling program or another university has the option of completing ECG 661 as an elective.

Requirements		Hours
ECG 660	Relationships and Human Sexuality	3
ECG 661	Play Therapy I	3
ECG 680	The Intersections of Family and Community Systems	3
ECG 685	Marriage and Couples Counseling	3
ECG 689	Advanced Family Counseling Techniques	3
ECG 691	Introduction to Couples and Family Counseling	3
Total Hours		18

Certificate in Clinical Mental Health Counseling

Admission Process

Candidates seeking admission to the Clinical Mental Health counseling certificate who are graduates of a Master's level counseling program, must complete an application found on the UAB Graduate School website, as well as submit a statement of purpose, and their graduate-level transcript. Equivalent completed coursework from a CACREP counseling program may be substituted for a required course for the certificate. Admission is accepted for summer and fall terms. The admissions deadline for the certificate is April 1.

Current UAB counseling students who wish to pursue the CMHC certificate should speak with their advisor to arrange to complete the required coursework.

Requirements	Hours
ECG 600 Intro to Integrated Care Counseling	3
ECG 613 Foundations of Substance Abuse	3
ECG 631 Suicide Prevention	3
ECG 650 Diagnosis and Treatment of Psychological Disorders	3
ECG 652 Advanced Counseling Techniques	3
Total Hours	15

Master of Arts in Counseling with a Concentration in Clinical Mental Health

The Master of Arts in Counseling with a concentration in Clinical Mental Health counseling is designed to prepare students to demonstrate knowledge and skills with several counseling modalities appropriate for a broad range of clients in a multicultural society; interact effectively with other helping professionals and referral resources; make appropriate counselor-client related decisions in the context of professional, ethical, and legal guidelines; and fill effectively entry-level positions of professional responsibility within the specialization of agency counseling. The coursework is approved by the Alabama Board of Examiners in Counseling, which allows graduates of the program to pursue licensure as professional counselors in the state of Alabama. This program takes no less than 3 years to complete. For most students, it takes approximately 3 years or 9 terms (including summers) to complete the program.

Requirements	Hours
Area I	
EPR 590 Research & Prgm Eval in Coun	4
ECG 612 Professional Orientation	3
ECG 621 Theories of Individual Counseling	3
ECG 624 Assessment	3
ECG 626 Group Counseling: Process and Procedures	3
ECG 628 Social and Cultural Diversity	3
ECG 630 Career Development: Vocational and Life Planning	3
ECG 638 Practicum I: Clinical Skills and Techniques	3
EPR 614 Lifespan Human Development	3
Comprehensive Exam ¹	
Area II	
ECG 600 Intro to Integrated Care Counseling	3
ECG 613 Foundations of Substance Abuse	3
ECG 631 Suicide Prevention	3
ECG 650 Diagnosis and Treatment of Psychological Disorders	3
ECG 652 Advanced Counseling Techniques	3
ECG 653 Counseling Children and Adolescents	3
ECG 660 Relationships and Human Sexuality	3
ECG 691 Introduction to Couples and Family Counseling	3
Area III: Clinical Requirements	
ECG 695 Practicum II: Supervised Field Experience	3
Counseling Internship	
ECG 696 Counseling Internship A	3
ECG 697 Counseling Internship B	3
Total Hours	61

¹ The Counselor Preparation Comprehensive Exam will be given the semester of successful completion or upon successful completion of Area I. This is a "high stakes" assessment. Students who do not successfully pass this examination will be given the opportunity to re-take the exam a maximum of two times. There are no exceptions. Students unsuccessful in passing the comprehensive exam after 3 attempts will be dismissed from the program.

Master of Arts in Counseling with a Concentration in Marriage, Couples and Family Counseling

The Master of Arts in Counseling with a concentration in Marriage, Couples, and Family counseling is designed to prepare students to work with individuals, couples, or groups where interpersonal relationships are examined for the purpose of achieving more adequate, satisfying, and productive marriage and family adjustments; make appropriate ethical decisions as counseling professionals; comprehend systems theory and use it to conceptualize problems and solutions for couples and families; and fill effectively, entry-level positions of professional responsibility within the specialization of marriage and family counseling. The coursework allows graduates of the program to pursue licensure as marriage and family therapists in the state of Alabama. This program takes about 3 years to complete.

Requirements	Hours
Area I	
EPR 590 Research & Prgm Eval in Coun	4
ECG 612 Professional Orientation	3
ECG 621 Theories of Individual Counseling	3
ECG 624 Assessment	3
ECG 626 Group Counseling: Process and Procedures	3
ECG 628 Social and Cultural Diversity	3
ECG 630 Career Development: Vocational and Life Planning	3
ECG 638 Practicum I: Clinical Skills and Techniques	3
EPR 614 Lifespan Human Development	3
ECG 691 Introduction to Couples and Family Counseling	3
Comprehensive Exam ¹	
Area II	
ECG 613 Foundations of Substance Abuse	3
ECG 650 Diagnosis and Treatment of Psychological Disorders	3
ECG 653 Counseling Children and Adolescents	3
ECG 660 Relationships and Human Sexuality	3
ECG 680 The Intersections of Family and Community Systems	3
ECG 685 Marriage and Couples Counseling	3
ECG 689 Advanced Family Counseling Techniques	3
Area III: Clinical Requirements	
ECG 695 Practicum II: Supervised Field Experience	3
Counseling Internship	
ECG 696 Counseling Internship A	3
ECG 697 Counseling Internship B	3
Total Hours	61

¹ The Counselor Preparation Comprehensive Exam will be given the semester of successful completion or upon successful completion of Area I. This is a "high stakes" assessment. Students who do not successfully pass this examination will be given the opportunity to re-take the exam a maximum of two times. There are no exceptions. Students unsuccessful in passing the comprehensive exam after 3 attempts will be dismissed from the program.

Master of Arts in Counseling with a Concentration in School Counseling

According to the American School Counseling Association, "the purpose of a counseling program in a school setting is to promote and enhance the learning process." The goal is to enable all students to achieve success in school and to develop into contributing member of our society.

The concentration in School counseling is designed to prepare individuals as counselors in grades K-12. The program leading to the Master of Arts in Counseling degree requires a minimum of 61 semester hours of prescribed coursework to meet the academic and field experience requirements for the SDE Class A Professional Certificate in school counseling.

Certification Requirements: In order to receive certification as a school counselor, school counseling students who do not hold a teacher certificate in Alabama must satisfactorily obtain a passing score on the following assessments: Praxis Core Academic Skills for Educators, the Praxis II Test in School Counseling, and the National Counselor Exam.

School counseling students who already hold teaching certificates in Alabama must obtain a passing score on the Praxis II Test in School Counseling to receive certification.

The school counseling concentration meets the course work and field experiences required by the Alabama State Department of Education for certification. The concentrations meet the academic and field experience requirements for licensure as professional counselors in Alabama.

Requirements	Hours
Area I	
EPR 590 Research & Prgm Eval in Coun	4
ECG 612 Professional Orientation	3
ECG 621 Theories of Individual Counseling	3
ECG 624 Assessment	3
ECG 626 Group Counseling: Process and Procedures	3
ECG 628 Social and Cultural Diversity	3
ECG 630 Career Development: Vocational and Life Planning	3
ECG 638 Practicum I: Clinical Skills and Techniques	3
EPR 614 Lifespan Human Development	3
Comprehensive Exam ¹	
Area II	
ECG 619 Special Issues for School Counselors	3
ECG 620 Foundations of School Counseling	3
ECG 623 Comprehensive Counseling and Guidance: M/H School	3
ECG 627 Comprehensive Counseling and Guidance: Elementary School	3
ECG 653 Counseling Children and Adolescents	3
ECG 661 Play Therapy I	3
ECG 680 The Intersections of Family and Community Systems	3
ECY 600 (If not completed previously)	0-3
ECY 600 Introduction to Exceptional Learner ²	

EEC 515	Learning Environments through Positive Behavior Support	3
Area III: Clinical Requirements		
ECG 695	Practicum II: Supervised Field Experience	3
Counseling Internship		
ECG 696	Counseling Internship A	3
ECG 697	Counseling Internship B	3
Total Hours		61-64

¹ A National Comprehensive Examination will be given the semester of successful completion or upon successful completion of Area I. This is a "high stakes" assessment. Students who do not successfully pass this examination will be given the opportunity to re-take the exam a maximum of two times. There are no exceptions. Students unsuccessful in passing the comprehensive exam after 3 attempts will be dismissed from the program.

² Must be taken if not taken as part of previous studies. This usually applies to students who did not go through teacher certification programs previously.

Educational Leadership

Because admission to these programs is selective, prospective students should contact a departmental advisor to determine specific admission requirements for the degree or certificate in which they are interested. For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/student-services/admissions>.

The following degrees are offered: Master of Arts in Education (MAE) in Educational Leadership, leading to Alabama Class A Certification in Instructional Leadership; the Educational Specialist Degree (EdS), leading to Alabama Class AA Certification in Instructional Leadership (must have Class A in Instructional Leadership to apply); the Doctorate of Education degree (Ed.D.) in Educational Leadership (must have Ed.S. in Educational or Educational Support area and a leadership background). The programs leading to the Doctorate of Education (Ed.D.) degree in educational leadership are offered at UAB by the joint faculties of UAB and the University of Alabama (Tuscaloosa). Admission is highly selective and is open every other year. In addition to the Graduate School requirements, a portfolio and writing sample are required by the program.

The Educational Leadership program also offers a Post Master's Certification (PMC) program as a reduced-hour option leading to Alabama Class A certification in Instructional Leadership for individuals who already hold a master's degree and Class A certification in an instructional or instructional support area, and who have at least three years' certified classroom teaching experience.

Additional Information

For detailed information, contact Dr. Keith Gurley, Program Director, Educational Leadership, Department of Human Studies, UAB School of Education, 1720 2nd Avenue South, EB 210B, Birmingham, AL 35294-1250.

Telephone: 205-975-1983

E-mail: kgurley@uab.edu (lcollins@uab.edu)

Web: <http://www.uab.edu/education/humanstudies/educational-leadership>

Dispositions

Educational Leadership faculty individually review the professional dispositions (behaviors and attitudes) of students within each course in accordance with the School of Education's policy and procedure.

Additionally, faculty will collectively review student dispositions and overall progress in the program at the end of each semester. Dispositional areas identified as deficient could result in termination from the program.

Master of Arts in Education in Educational Leadership

The M.A.Ed. degree requires a minimum of 33 credit hours for the Educational Leadership program. A GPA of 3.25 is required.

Requirements	Hours
ECY 600 Introduction to Exceptional Learner ¹	3
EDL 601 Foundations of Instr. Ldrshp	3
EDL 602 Fld Exp: Found of Inst Ldrshp	1
EDL 603 Data Driven Decision Making	3
EDL 604 Fld. Exp. in Data Driven Dec.	1
EDL 605 Residency in Inst. Leadership	6
EDL 606 Supervision/ Ment. Inst. Staff	3
EDL 607 Fld Exp. in Super / Mentoring	1
EDL 608 Org. & Financial Mgt	3
EDL 609 Fld. Exp. in Org & Finc Mgmt	1
EDL 610 Legal & Ethical Foundations	3
EDL 611 Fld. Exp. in Legal/Eth Found	1
EDL 612 Best Prac. Inst. Ldrshp	3
EDL 613 Fld Exp in Best Practices for Inst Ldrshp for Diverse Populations	1
Total Hours	33

¹ Not required if previously completed

Post-Master's Certificate in Educational Leadership

Requirements	Hours
ECY 600 Introduction to Exceptional Learner ¹	3
EDL 601 Foundations of Instr. Ldrshp	3
EDL 605 Residency in Inst. Leadership	6
EDL 606 Supervision/ Ment. Inst. Staff	3
EDL 608 Org. & Financial Mgt	3
EDL 610 Legal & Ethical Foundations	3
Total Hours	21

¹ Not required if previously completed

Educational Specialist in Educational Leadership

The Ed.S. degree requires a minimum of 35 credit hours for the Educational Leadership program. A GPA of 3.50 is required.

Requirements	Hours
EDL 717 Leading Change Through Action Research	3
EDL 717L Field Experience for Leading Change Through Action Research	1

EDL 727 Leading the Adult Learning Community	3
EDL 727L Field Experience for Leading the Adult Learning Community	1
EDL 718 Essential Skills for Organizational Leadership	3
EDL 718L Field Experience for Essential Skills for Organizational Leadership	1
EDL 728 Management of the Learning Organization	3
EDL 728L Field Experience for Management of the Learning Organization	1
EDL 731 Law, Ethics, and Policy for Educational Leaders	3
EDL 731L Field Experience for Law, Ethics, and Policy for Educational Leaders	1
EDL 732 Leadership of Special Programs	3
EDL 732L Field Experience for Leadership of Special Programs	1
EDL 719 Mentoring & Coaching Skills for School Leaders	3
EDL 719L Field Experience for Mentoring & Coaching Skills for School Leaders	1
EDF 700 Urban Education	3
or EDF 702 Critical Social Issues in American Education	
EDL 746 Practicum in Instructional Leadership ¹	1
ECY 600 Introduction to Exceptional Learner ¹	3
Total Hours	35

¹ Not required if previously completed

Educational Doctorate in Educational Leadership

The Educational Doctorate in Educational Leadership program requires a minimum of 55 hours. The minimum required GPA is 3.50.

Requirements	Hours
AEL 602 Advanced Educational Leadership	3
AEL 650 Organizational Theory	3
AEL 671 Survey of the Research on Instructional Supervision	3
EDL 720 Field Project in Educational Leadership	3
EDL 725 Current Issues and Problems in School Administration	3
EDL 755 Advanced School System Administration	3
EDF 708 Ethical Dilemmas in Educational Administration	3
EDF 720 Cult and Amer Educ: Race Class and Gender	3
EDL 756 Current Legal Problems in Alabama Education	3
EPR 596 Introduction to Qualitative Methods in Educational Research	3
EPR 607 Microcomputer Applications to Statistical Analysis	1
EPR 608 Statistical Methods and Action Research	3
EPR 692 Introduction to Educational Research Design	3
EPR 696 Qualitative Research: Inquiry and Analysis	3
or EPR 609 Statistical Methods and Research in Education: Intermediate	
EDL 799 Dissertation Research	12
GRD 717 Principles of Scientific Integrity ¹	3
Total Hours	55

¹ May be replaced with approved substitute

Community Health

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions

Requirements website at <https://www.uab.edu/education/studentservices/admissions>.

Overview of Our Programs

The Community Health and Human Services program at UAB is designed to prepare students to work in professional health settings including national/state health organizations, clinical-based programs, and community-based non-profit agencies. In addition to studying contemporary health content, students are guided in the process of assessing, planning, implementing, and evaluating health-related programs and interventions which correspond to the National Commission for Health Education Credentialing professional standards. Students are provided numerous opportunities to practice advanced health education specialist tasks via Instructor lead community-based projects and purposefully designed service learning experiences.

Graduate Certificate in Health Education

The Graduate Certificate in Health Education is designed for students who desire to work in the community or enhance their skills in academia and seek preparation at the graduate level in community health, but not a full master's degree. The Graduate Certificate in Health Education is also designed for students wishing to obtain eligibility for the Certified Health Education Specialist Examination that have a degree in a complimentary field but do not currently have the corresponding coursework. This certificate will formally recognize UAB students and community professionals who have sought out necessary skills and training in community health education. All courses are offered online.

Master of Arts in Education (M.A.Ed.): Community Health (Online)

The Community Health and Human Services program at UAB prepares students for advanced employment opportunities beyond the bachelor's degree level (MAEd in Community Health). Work settings include public, volunteer, and private health agencies, clinics, and worksites. Students gain skills in health education program planning, implementation, evaluation, and administration. Students are provided numerous opportunities to practice advanced health education specialist tasks via Instructor lead community-based projects and purposefully designed service learning experiences. Students learn research-based protocol and may choose to complete either a thesis or an internship upon degree completion. Required courses include research design, the advanced health education/promotion specialist, program planning, evaluation, and administration, along with behavioral theory. Course work is aligned with responsibilities and competencies of advanced level health education specialists developed by the National Commission for Health Education Credentialing (www.nchec.org). This program of study has been developed to include the knowledge and competencies needed to prepare students for either the Certified or Master Certified Health Education Specialist (CHES/MCHES) examination.

Masters of Arts in Education (M.A.Ed.): Community Health with a Graduate Certificate in Nonprofit Management (Online)

Through this joint venture between the Community Health and Human Services program and the Department of Government, students learn advanced health education programming planning, implementation, and evaluation competencies as well as nonprofit management skills such as grant writing and fund raising. The program exposes students to volunteer, private health agencies, clinics, and worksites.

M.A.Ed. Admission Process (Online)

Consideration for admission to the master's degree program will occur each Fall and Spring term. The completed application packet must be received by the Community Health and Human Services Program from the Graduate School by the dates shown:

Entry Term	Deadline
Fall	April 30
Spring	October 30

Admission to graduate study in Community Health and Human Services is initiated through the Graduate School and all required materials are to be submitted per specified instructions delineated by the Graduate School. M.A.Ed. applicants should have a cumulative GPA of 2.50. The M.A.Ed program does not require that student complete the MAT/GRE examination. In rare cases, applicants who do not meet aforementioned standards may be considered for admission.

In addition, applicants must address several questions in writing that reflect the applicant's background, development, pertinent work-related experience, and professional career objectives relating to careers in Community Health. Applicants will also be required to submit a professional resume. All applications for graduate admission are reviewed by the community health and human services faculty may be given one of two decisions: a) admit or b) not admit.

Graduate Traineeship in Pediatric Pulmonary Care (with School of Health Professions)

A Graduate Traineeship in partnership with the UAB Pediatric Pulmonary Center (PPC) is offered to a student currently trained as a respiratory therapist. Prospective students are those desiring a graduate degree in Community Health and Human Services, is interested in pediatric pulmonary care, and aspires to positions of leadership. One trainee per year is selected. The traineeship features a combination of planned coursework, hospital rounds, pulmonary clinics, patient and family education, and research experience. This interdisciplinary training program is offered to graduate students in Respiratory Therapy - Community Health and Human Services, nursing, nutrition, social work and medicine. Training is provided in each of the Maternal and Child Health Leadership Competencies. The Traineeship includes a monthly stipend (for up to 12 months) and tuition assistance (limited to U.S. citizens or to individuals with a permanent visa).

For more information go to uab.edu/medicine/peds/ppc or contact: LaShonna Stodghill, MAE, RRT, AE-C, lashonna.stodghill@childrensal.org or Dr. Laura Forbes at ltalbott@uab.edu

Student Professional Dispositions

Community Health and Human Services faculty individually review the professional dispositions (behaviors and attitudes) of students within each course in accordance with the School of Education's policy and procedure. Additionally, faculty will collectively review student dispositions and overall progress in the program at the end of each semester. Dispositional areas identified as deficient could result in termination from the program.

Graduate Program Policies

No individual course grade below "C" will be accepted. Each course with an earned grade below "C" must be repeated. Repeating a required

health education course more than twice is not permitted. If a student receives a grade lower than a "C" after their second attempt, he or she will be dismissed from the Community Health and Human Services program and not allowed readmission.

Non-Degree Seeking Graduate Students

Following admission to the UAB Graduate School, students may enroll in elective Community Health and Human Services courses as "non-degree seeking" students with the permission of the instructor. Non-degree seeking students are limited to 12 hours of coursework. It is essential for non-degree seeking students to make an advising appointment with a faculty member prior to enrolling in elective courses as some elective courses have pre-/co-requisites. Non-degree seeking students are not permitted to take "core" health education courses prior to admission. Enrolling and passing non-degree seeking coursework does not guarantee admission into a masters or doctoral degree program. Admission criteria (cumulative GPA, recommendations, and written statement) are the primary factors considered when reviewing student suitability for admission to a program.

Graduate Certificate in Health Education

The last decade has seen significant emphasis being placed on the ability of professionals in non-profit, governmental and agency settings to have the skills and training needed to effectively plan, implement and evaluate health related policies and programs. Skills such as grant writing, budgeting, assessing needs of the service population, and using an ecological lens to develop meaningful interventions are only a few of the needed competencies in today's job market. This certificate is for students who have a desire to work in the community or enhance their skills in academia and want some preparation at the graduate level in health education, but not a full master's degree. This certificate is also appropriate for those already working in community agencies who want advanced skills and knowledge of how to conduct successful health-related interventions using a community based participatory research approach.

The Graduate Certificate in Health Education is designed for students who have a desire to work in the community or enhance their skills in academia and want some preparation at the graduate level in community health, but not a full master's degree. This certificate will formally recognize UAB students and community professionals who receive the necessary skills and training in community health education. All courses are offered online.

Requirements	Hours
CHHS 631 Applied Planning and Implementation of Health Education/Promotion Programs	3
CHHS 632 Advanced Administration of Health Education/Promotion Programs	3
CHHS 642 Applied Behavioral Theory and Health Education/Promotion	3
CHHS 697 Community-Based Approaches to Evaluation and Grantsmanship of Health Education/Promotion Programs	3
Choose One of the Following Options	3
CHHS 606 Advanced Issues of Disease Prevention in Health Education/Promotion	
CHHS 610 The Advanced Health Education/Promotion Specialist	
CHHS 621 Health Communications & Health Coaching	

CHHS 689 Intervention Strategies for Health Education/Promotion

Total Hours

15

M.A.Ed. in Community Health

Designed to prepare individuals for advanced health education and promotion careers in agencies, schools, worksites, and allied health care settings. All courses are offered online. This program is aligned with the National Commission for Health Education Credentialing standards and prepares students to sit for the Certified Health Education Specialist or the Master Certified Health Education Specialist examination. CHES/MCHES provides evidence of competency of the knowledge, skills and application of the Areas of Responsibilities defining the role of an entry or masters-level health educator. Program options allow students to select a thesis, internship, or course work completion option based on approval of the Graduate Program Director and prior professional work experience of the individual student.

Master of Arts in Education in Community Health (Online)

Admission Requirement and Prerequisites

In addition to the general admission requirements of the Graduate School, it is preferred that applicants have passed an undergraduate or graduate level BY or CH course. Undergraduate level Chemistry, Anatomy, and Physiology courses are preferred program prerequisites.

Plan I - 39 hours and Thesis

This is an online program.

Requirements	Hours
Major Courses	
EPR 594 Introduction to Educational Research Design	3
CHHS 606 Advanced Issues of Disease Prevention in Health Education/Promotion	3
EPR 609 Statistical Methods and Research in Education: Intermediate	3
CHHS 610 The Advanced Health Education/Promotion Specialist	3
CHHS 621 Health Communications & Health Coaching	3
CHHS 631 Applied Planning and Implementation of Health Education/Promotion Programs	3
CHHS 632 Advanced Administration of Health Education/Promotion Programs	3
CHHS 642 Applied Behavioral Theory and Health Education/Promotion	3
CHHS 689 Intervention Strategies for Health Education/Promotion	3
EPR 696 Qualitative Research: Inquiry and Analysis	3
CHHS 697 Community-Based Approaches to Evaluation and Grantsmanship of Health Education/Promotion Programs	3
Thesis (6 hours of CHHS 699)	6
CHHS 699 Thesis Research (Responsible Conduct of Research Training Must Be Completed Prior to Advancement to Candidacy)	
Total Hours	39

Plan II - 39 hours and Internship

This is an online program.

Requirements		Hours
Major Courses		
EPR 594	Introduction to Educational Research Design	3
EPR 596	Introduction to Qualitative Methods in Educational Research	3
CHHS 606	Advanced Issues of Disease Prevention in Health Education/Promotion	3
CHHS 610	The Advanced Health Education/Promotion Specialist	3
EPR 608	Statistical Methods and Action Research	3
CHHS 621	Health Communications & Health Coaching	3
CHHS 631	Applied Planning and Implementation of Health Education/Promotion Programs	3
CHHS 632	Advanced Administration of Health Education/Promotion Programs	3
CHHS 642	Applied Behavioral Theory and Health Education/Promotion	3
CHHS 689	Intervention Strategies for Health Education/Promotion	3
CHHS 697	Community-Based Approaches to Evaluation and Grantsmanship of Health Education/Promotion Programs	3
CHHS 693	Advanced Field Experience in Community Health Education	6
Total Hours		39

Comprehensive Examination (Non-Thesis and Course Work Options Only)

Student with at least one year of full time work (Non-Thesis Option Only) Students in the health education/promotion field approaching degree completion may opt to complete six additional hours of advisor approved CHHS coursework rather than an internship. Non-Thesis M.A.Ed. Examples of course work may include but are not limited to: CHHS 598, 601, 602, 608, 611, 621, 623, 640, 692, or 742.

Students with less than one year of full time work in the health education/promotion field approaching degree completion will be required to complete an internship experience. The level of work experience will be determined by the CHHS Graduate Program Director.

program must complete a supervised internship at a pre-approved community health education/promotion site. Student must also complete the comprehensive examinations during their last semester of coursework. Those The examination is an opportunity for students completing to demonstrate the program with additional course work or the internship option must also complete the comprehensive examination during their last semester of coursework. The examination is an opportunity for students to demonstrate the appropriate aptitude for advanced level health education competencies. The comprehensive exam is a culminating task that encompasses the content knowledge and critical thinking skills that a Health Education/Promotion Specialist should possess. A student cannot attempt the internship and comprehensive examination more than twice. Those who cannot complete the internship and examination with a passing score during the second attempt will be dismissed from the program and not allowed readmission. Please contact the CHHS Graduate Program Director for additional information about examination scheduling. information.

Master of Arts in Education in Community Health (Online) with a Non-Profit Management Graduate Certificate

The M.A.Ed. degree requires a minimum of 45 credit hours for the Community Health with a Non-Profit Management Graduate certificate.

Plan I - 45 hours with Thesis

Requirements		Hours
EPR 594	Introduction to Educational Research Design	3
CHHS 606	Advanced Issues of Disease Prevention in Health Education/Promotion	3
EPR 609	Statistical Methods and Research in Education: Intermediate	3
CHHS 610	The Advanced Health Education/Promotion Specialist	3
CHHS 631	Applied Planning and Implementation of Health Education/Promotion Programs	3
CHHS 642	Applied Behavioral Theory and Health Education/Promotion	3
MPA 671	Marketing and Fundraising	3
MPA 672	Nonprofit Management	3
CHHS 689	Intervention Strategies for Health Education/Promotion	3
EPR 696	Qualitative Research: Inquiry and Analysis	3
CHHS 697	Community-Based Approaches to Evaluation and Grantsmanship of Health Education/Promotion Programs	3
Graduate Level Elective (choose two)		6
MPA 674	GIS for Managers	
MPA 678	Strategic Planning	
MPA 684	Grants Management	
Thesis (6 hours of CHHS 699)		6
CHHS 699	Thesis Research (Pre-requisite GRD 717)	
Total Hours		45

Plan II - 45 hours with Comprehensive Exam

Requirements		Hours
EPR 594	Introduction to Educational Research Design	3
EPR 596	Introduction to Qualitative Methods in Educational Research	3
CHHS 606	Advanced Issues of Disease Prevention in Health Education/Promotion	3
EPR 608	Statistical Methods and Action Research	3
CHHS 610	The Advanced Health Education/Promotion Specialist	3
CHHS 631	Applied Planning and Implementation of Health Education/Promotion Programs	3
CHHS 642	Applied Behavioral Theory and Health Education/Promotion	3
MPA 671	Marketing and Fundraising	3
MPA 672	Nonprofit Management	3
CHHS 689	Intervention Strategies for Health Education/Promotion	3
CHHS 697	Community-Based Approaches to Evaluation and Grantsmanship of Health Education/Promotion Programs	3
Graduate Level Elective (choose two)		6
MPA 684	Grants Management	
MPA 674	GIS for Managers	

MPA 678	Strategic Planning	
CHHS 693	Advanced Field Experience in Community Health Education (OR 6 Hours of Additional CHHS Advisor Approved Course Work)	6
Total Hours		45

Comprehensive Examination

Student with at least one year of full time work in the health education/promotion field approaching degree completion may opt to complete six additional hours of advisor approved CHHS coursework rather than an internship. Examples of course work may include but are not limited to: CHHS 598, 601, 602, 608, 611, 621, 623, 640, 692, or 742.

Students with less than one year of full time work in the health education/promotion field approaching degree completion will be required to complete an internship experience. The level of work experience will be determined by the CHHS Graduate Program Director.

Those students completing the program with additional course work or the internship option must also complete the comprehensive examination during their last semester of coursework. The examination is an opportunity for students to demonstrate the appropriate aptitude for advanced level health education competencies. The comprehensive exam is a culminating task that encompasses the content knowledge and critical thinking skills that a Health Education/Promotion Specialist should possess. A student cannot attempt the internship and comprehensive examination more than twice. Those who cannot complete the examination with a passing score during the second attempt will be dismissed from the program and not allowed readmission. Please contact the CHHS Graduate Program Director for additional information about examination scheduling.

Health Education/Health Promotion

For detailed information regarding admission requirements for the School of Education graduate programs, please visit the Admissions Requirements website at <https://www.uab.edu/education/studentservices/admission-requirements>.

Health Education/Health Promotion (PhD)

Graduate Program Director: Dr. Retta Evans, revans@uab.edu

Ph.D. Health Education/Health Promotion

The PhD in Health Education/Health Promotion is a UA System degree jointly administered by three units: UAB School of Education and College of Arts & Sciences, UAB School of Public Health, and UA College of Human Environmental Sciences. Students draw upon the expertise and resources of a diverse and highly qualified faculty. Faculty members strive to create a rigorous scholarly and supportive atmosphere for students to develop intellectually with the knowledge, skills and attitudes necessary to be ethical and responsible health education professionals.

Ph.D. Admission Process

Consideration for admission to graduate study in health education will occur each Fall for acceptance to start the following Fall term. The completed application packet must be received by the [Community Health and Human Services Program](#) from the Graduate School by the dates shown:

Entry Term	Deadline
Fall	October 30

Candidates for admission must have completed a bachelor's or master's degree from an accredited institution in health education or a health-related field. Admission to doctoral study is initiated through the Graduate School. Applicants will: (a) request official transcripts of all college coursework to send to UAB Graduate School; (b) submit (3) letters of recommendation from professors or others who are qualified to judge your ability to complete doctoral coursework; (c) complete the GRE indicating UAB as the recipient of your scores; and (d) submit writing sample(s), such as an essay describing your academic training, professional experiences and career goals. Admission to the program is competitive.

Ph.D. applicants should have a cumulative GPA of 3.00/4.00 or greater for prior college coursework and preferred GRE scores of 312 or greater. Faculty consider GRE scores as one indicator of an applicant's potential success in the doctoral program.

Ph.D. Health Education/Health Promotion Program of Study

Students may enter the program with either a bachelor's or master's degree in health education, or a master's degree in a closely related health field. Prerequisite coursework includes Foundations of Health Education, Health Education Planning and Evaluation, and Research Design and Statistics. These requirements may be corequisite components in the program.

Students entering the program with a master's degree may transfer appropriate coursework to this program; however, this will not reduce the number of courses required. Students will not be required to retake coursework already completed but may be required to complete prerequisites as part of their planned course of study.

A required review of student credentials prior to admission will identify strengths and needs. This review will provide students with a blueprint for their course of study and will be conducted by the program director and faculty advisor.

The PhD degree program will require students to complete a minimum of 72 credit hours: 42 hours of coursework, 12 hours of research internship, and 18 hours of dissertation research. Students will meet regularly with a faculty advisor to plan course enrollment.

Research and Statistics Prerequisites: Students are required to have completed the following courses (or equivalents) BEFORE enrolling in the Advanced Research and Statistical Methods Core.

Requirements	Hours
EPR 594 Introduction to Educational Research Design	3
EPR 596 Introduction to Qualitative Methods in Educational Research	3
EPR 608 & EPR 607 Statistical Methods and Action Research and Microcomputer Applications to Statistical Analysis	4
EPR 609 Statistical Methods and Research in Education: Intermediate	3
Total Hours	13

The specific components of the PhD program in health Education and Health Promotion are outlined below.

Ph.D. through the School of Education

Requirements	Hours
I. Health Education and Promotion CORE Courses	12
CHHS 731 Advanced Theoretic/Scientific Basis of Health Education/Promotion	
CHHS 732 Advanced Planning and Implementation of Health Education/Promotion Programs	
CHHS 733 Evaluation of Health Education/Promotion Programs	
CHHS 734 Health Education Seminar I	
CHHS 735 Health Education Seminar II	
CHHS 736 Health Education Seminar III	
II. Advanced Research and Statistical Methods Core	12
EPI 610 Principles of Epidemiologic Research	
EPR 696 Qualitative Research: Inquiry and Analysis	
EPR 710 Computer Applications and Advanced Statistical Methods	
Graduate Research Design ¹	
EPR 695 Survey Methods in Educational Research	
EPR 790 Mixed Methods Approaches in Action Research	
III. Coursework in the Social and Behavioral Sciences ²	18
IV. Research Internship (Pre-requisite GRD 717)	12
V. Dissertation	18
Total Hours	72

¹ Choose one course that fits the needs of your dissertation, with the approval of an advisor. Two examples are listed, but other courses could apply.

² Selection of courses pre-approved by doctoral program advisor to build knowledge and skills in a cognate area, e.g. Health Disparities, Research, Global Health, Public Health Policy, Aging and Health, Disabilities and Health.

Comprehensive Examination

A written comprehensive examination is required of all candidates for the Ph.D. degree. Your preparation will include studying course content, core competencies for the profession, and related literature of the discipline. Prior to taking the exam, students must have completed their core course requirements. Students must register for a minimum of 3.0 hours of graduate work during the semester in which the comprehensive exam is taken.

The Comprehensive exam will be offered twice each year and is written and graded by the graduate faculty in the joint doctoral program. The examination will be a synthesis of the core coursework as well as core competencies in the field of Health Education and Health promotion. Grading of the comprehensive exam is done blinded, and by consensus. Students who fail to achieve passing scores will have one attempt to remediate within a calendar year. If a student fails a section for the second time, they will be dismissed from the program.

Kinesiology

Degrees offered include the Master of Science and the Educational Specialist. At the master's degree level, students may specialize in Exercise Physiology (see listing below for more information about this program) or complete a teacher certification program (traditional master's program for those holding a valid B level certificate in physical education or the alternative master's program for those NOT completing an undergraduate physical education teacher education program).

The traditional master's and the educational specialist link teacher certification with the graduate program in physical education. For example, the M.S. awards the level A certificate and the Ed.S. is linked to the AA certificate. Each program requires a teaching certificate in physical education at the previous level (e.g., B certificate for admission to the A level, except the Alternative A program, and the A certificate for admission to the AA certificate).

Dispositions

Faculty individually review the professional dispositions (behaviors and attitudes) of students within each course in accordance with the School of Education's policy and procedure. Additionally, faculty will collectively review student dispositions and overall progress in the program at the end of each semester. Dispositional areas identified as deficient could result in termination from the program.

Master of Science and "A" level teaching certificate; Non-Thesis

(31-34 hours)

Teaching Field: At least 1/3 of the program shall be teaching field courses. (18 hours)

Requirements	Hours
KIN 643 Curriculum Development in Physical Education	3
KIN 647 Teaching Strategies and Issues in K-12 PE	3
KIN 649 Adapted Physical Education	3
KIN 693 Advanced Field Experience in Physical Education	3
Additional Courses (12-15 hours) ¹	
Survey of Special Education Coursework: Required if not previously completed (0-3 hours)	0-3
ECY 600 Introduction to Exceptional Learner ¹	
EPR 608 Statistical Methods and Action Research	3
EDF or EPR 600 level course	3
Electives (as approved by advisor) ²	12
Total Hours	30-33

¹ Survey of Special Education Coursework: Required if not previously completed (0-3 hours)

² Potential courses that may be used for the Electives in the Physical Education Teacher Certification Master's Degree Program: KIN 601, KIN 607, KIN 636, KIN 645, KIN 650, KIN 651, KIN 672, KIN 693, KIN 694,. Other graduate level courses may be used with the consent of your Advisor.

Master of Science and "A" level teaching certificate; Thesis

(30-33 hours)

Teaching Field: At least 1/3 of the program shall be teaching field courses. (18 hours)

Requirements	Hours
Survey of Special Education Coursework: Required if not previously completed (0-3 hours)	0-3
ECY 600 Introduction to Exceptional Learner	
KIN 643 Curriculum Development in Physical Education	3
KIN 647 Teaching Strategies and Issues in K-12 PE	3
KIN 693 Advanced Field Experience in Physical Education	3

KIN 649	Adapted Physical Education	3
KIN 699	Thesis Research	6
Additional Courses (12 hours)		
EDF or EPR 600 level course		3
EPR 692	Introduction to Educational Research Design	3
EPR 608	Statistical Methods and Action Research	3
Electives (as approved by advisor) ²		3
Total Hours		30-33

¹ Survey of Special Education Coursework: Required if not previously completed (0-3 hours)

² Potential courses that may be used for the Elective in the Physical Education Teacher Certification Master's Degree Program: KIN 601, KIN 607, KIN 636, KIN 645, KIN 650, KIN 651, KIN 672, KIN 693, KIN 694,. Other graduate level courses may be used with the consent of your Advisor.

Exercise Physiology

The Exercise Physiology specialization offers a master's degree option for students interested in either clinical exercise physiology or physiology research. The curriculum is multidisciplinary and can comprise of courses in the Schools of Education, Medicine, Health Related Professions, and Public Health. Two program plans are offered (detailed below). Plan I culminates with a thesis research project, and Plan II culminates with a written comprehensive exam. Resources for student participation in research include an Exercise Physiology Laboratory and Exercise & Nutritional Physiology Laboratory. Wide arrays of field experiences are also available at UAB and in local agencies and clinics. In addition to Graduate School admission requirements, prospective students must have completed undergraduate coursework in Biology or Chemistry. Listed below are the courses required in the program and a sample of elective courses.

Master of Science in Kinesiology with Exercise Physiology Concentration

Admission Requirement and Prerequisites

In addition to the general admission requirements of the Graduate School, potential applicants must have passed an undergraduate or graduate level BY or CH course. Undergraduate level Chemistry, Anatomy, and Physiology courses are program prerequisites. A minimum undergraduate GPA of 3.25 is required.

Plan I - 33 hours with Thesis

Requirements	Hours	
EPR 594	Introduction to Educational Research Design	3
EPR 609	Statistical Methods and Research in Education: Intermediate ¹	3
KIN 637	Physiology of Exercise I	3
KIN 638	Physiology of Exercise II	3
KIN 642	Practicum in Physiology	3
KIN 699	Thesis Research	6
Electives in Major ²		12
Total Hours		33

¹ EPR 609 has a prerequisite of EPR 608 or equivalent (the equivalent must have been completed within two years of enrolling in EPR 609 and the student must have earned a grade of C or better); OR, a student may take a by-pass exam and earn a score of 70 or above.

Please contact Dr. Jenna LaChenaye, (EPR Program Director), jmlach@uab.edu if you have questions regarding this EPR Policy.

² Potential courses that may be used for the Electives in the Exercise Physiology Master's Physiology Master's Degree Program: CHHS 602, BY 511, BY 540, BY 611, BY 616, BHS 550, BHS 555, CH 560, EPR 607, EPR 608, KIN 585, KIN 639, KIN 640, KIN 645, KIN 653, KIN 656, KIN 672, KIN 674, KIN 694, KIN 697, NTR 521, NTR 609, NTR 779, NTR 618, NTR 750, RHB 780, RHB 781. Other graduate level courses may be used with the consent of your Advisor.

Plan II - 36 hours with Comprehensive Exam

Requirements	Hours	
EPR 594	Introduction to Educational Research Design	3
EPR 609	Statistical Methods and Research in Education: Intermediate ¹	3
KIN 637	Physiology of Exercise I	3
KIN 638	Physiology of Exercise II	3
Electives in Major ²		24
Total Hours		36

¹ EPR 609 has a prerequisite of EPR 608 or equivalent (the equivalent must have been completed within two years of enrolling in EPR 609 and the student must have earned a grade of C or better); OR, a student may take a by-pass exam and earn a score of 70 or above.

Please contact Dr. Jenna LaChenaye, (EPR Program Director), jmlach@uab.edu if you have questions regarding this EPR Policy.

² Potential courses that may be used for the Electives in the Exercise Physiology Master's Physiology Master's Degree Program: CHHS 602, BY 511, BY 540, BY 611, BY 616, BHS 550, BHS 555, CH 560, EPR 607, EPR 608, KIN 585, KIN 639, KIN 640, KIN 645, KIN 653, KIN 656, KIN 672, KIN 674, KIN 694, KIN 697, NTR 521, NTR 609, NTR 779, NTR 618, NTR 750, RHB 780, RHB 781. Other graduate level courses may be used with the consent of your Advisor.

Master of Science in Kinesiology: Physical Education Alternative Master's Non-Thesis Program

The M.S. requires a minimum of 51 hours for the Physical Education Alternative Master's Non-Thesis program. A GPA of 3.25 is required.

Requirements	Hours	
Required if not previously completed:		0-3
ECY 600	Introduction to Exceptional Learner ¹	
EDF or EPR 500-600 level course (Advisor Approval Required)		3
EDR 551	Reading in Content Areas	3
EDU 500	Education as a Profession	1-3
EPR 608	Statistical Methods and Action Research	3
KIN 509	Assessment in Physical Education	3
KIN 511	Elementary School Physical Education	3
KIN 520	Fitness and Motor Skill Acquisition	3
KIN 520L	Sport Skill Proficiency	1

KIN 523	Techniques of Teaching Fitness and Nutrition in Secondary Schools	3
KIN 589	Physical Education Instructional Strategies	6
KIN 607	Principles of Coaching	3
KIN 645	Advanced Motor Development	3
KIN 649	Adapted Physical Education	3
KIN 696	Elementary/Secondary Physical Education Internship	9
Total Hours		47-52

¹ Survey of Special Education Coursework: Required if not previously completed (0-3 hours)

Education Specialist Degree in Education with a Concentration in Physical Education

The Ed.S. degree requires a minimum of 33 credit hours for the Physical Education program. A minimum GPA of 3.50 is required.

Requirements	Hours	
At least 1/3 of the program shall be teaching field courses (12 hours)		
KIN 636	Current Readings in Physical Education	3
KIN 715	Advanced Field Experience in Physical Education	3
KIN 726	Supervised Research in Physical Education	3
Survey of Special Education Coursework: Required if not previously completed (0-3 hours)		
ECY 600	Introduction to Exceptional Learner ¹	0-3
KIN 729	Physical Education Seminar	3
Additional Courses		
EPR 692	Introduction to Educational Research Design	3
EPR 609	Statistical Methods and Research in Education: Intermediate	3
Select one course from the list below:		3
EDF 702	Critical Social Issues in American Education	
EDF 720	Cult and Amer Educ: Race Class and Gender	
KIN 649	Adapted Physical Education	
600-700 level Electives with permission of Advisor		9
Total Hours		30-33

¹ Not required if previously completed

School of Engineering

Dean: Dr. J. Iwan Alexander

The School of Engineering is comprised of five departments: Biomedical Engineering; Civil, Construction, and Environmental Engineering; Electrical and Computer Engineering; Materials Science and Engineering; and Mechanical Engineering. The School offers six programs leading to a master's degree and four programs leading to a doctoral degree.

Engineering at UAB is about the brightest, most talented researchers in their fields bringing new basic science discoveries and new applied technologies to fruition. Engineering at UAB is about smart, driven students from across the city, state, and world learning together and taking advantage of a multitude of opportunities for real-world educational experiences. Engineering at UAB is about collaboration: projects that are bringing engineers together with medical professionals, business leaders, and fellow scientists from other disciplines, in order to push the envelope and discover new, innovative solutions for the challenges our

world faces. The School of Engineering seeks to provide students with the opportunities you need to meet your goals.

Interdisciplinary Engineering (PhD)

Program Objectives

Today's professional must constantly change, adapt, focus, and navigate among disciplines to keep up with rapid market shifts and technological advances. Because of these market trends, industries are particularly interested in interdisciplinary graduate education that emphasize both breadth of knowledge and depth in a particular field. The premise of interdisciplinary programs is that students must be educated in multiple related subject areas to remain competitive and have successful careers in academia or industry. The Ph.D. Program in Interdisciplinary Engineering provides a rigorous academic curriculum including course work in two or more disciplines and unique opportunities for interdisciplinary research.

The Interdisciplinary Engineering Ph.D. Program draws upon strengths of the five departments in the School of Engineering: Biomedical Engineering, Civil Construction and Environmental Engineering, Electrical and Computer Engineering, Mechanical Engineering and Materials Science and Engineering. Students enrolled in the Interdisciplinary Engineering Ph.D. program will gain the skills necessary to succeed as independent and productive investigators in multidisciplinary analysis and design, with applications over a wide spectrum of science, engineering, health, and medical fields. Areas of emphasis in the Interdisciplinary Engineering Ph.D. program include advanced safety engineering; computational engineering, modeling and simulation; environmental health and environmental engineering; biomedical imaging; neural engineering; information engineering and engineering management; and integrated systems and systems engineering. The program provides unique opportunities for interdisciplinary research and fosters interdisciplinary collaborative interactions between students and faculty in the School of Engineering, the Schools of Business, Medicine, and Public Health and the College of Arts and Sciences. Interdisciplinary Engineering students have opportunities to develop a plan of study and a dissertation research topic that incorporates course work and faculty expertise from two or more of disciplines across UAB.

Students enrolled in the Interdisciplinary Engineering Ph.D. program will gain the skills necessary to succeed as independent and productive investigators in multidisciplinary analysis and design, with applications over a wide spectrum of science, engineering, health, and medical fields. The interdisciplinary program will:

- Provide a rigorous academic curriculum including coursework in two or more disciplines
- Provide collaborative interactions with students and faculty from a variety of disciplines
- Provide unique opportunities for interdisciplinary research
- Facilitate continued development of high quality research programs supported by external funding.

Program Resources

High Performance Computing (HPC), High Fidelity Simulations (HFS), Tera/Penta-scale data mining/management/analysis, image processing,

feature extraction, pattern recognition, and geometry reconstruction are the key enabling technologies in addressing 21st century science and engineering problems. These technologies are necessary for the development of cross-cutting tool kits to enhance research and development in interacting biological, chemical, medical, physical, business and finance, and engineering phenomena associated with interdisciplinary engineering research.

In response to this need, UAB has made a strategic investment in establishing high performance computing clusters. Both hardware and software essential for interdisciplinary engineering research can be fully supported by this equipment.

A 3D laser scanner necessary for full three-dimensional modeling and reconstruction was acquired by a collaborative team including faculty from the Schools of Engineering and Medicine. Access to this and other equipment, as well as clinical data available in the Radiology, Orthopedic, and Surgery departments and the School of Dentistry will be available to the students and interdisciplinary teams of faculty members participating in the interdisciplinary engineering program. These teams have already been collaborating on several sponsored and un-sponsored research programs in both computational engineering and environmental health and safety engineering tracks.

Additional equipment to facilitate engineering research is available to Interdisciplinary Engineering students through the laboratories of the Departments of Materials Science & Engineering, Mechanical Engineering, Electrical & Computer Engineering, Biomedical Engineering, and Civil, Construction, & Environmental Engineering. Additional equipment is available to students through participating faculty from other Schools across campus.

Admission Requirements

- Undergraduate or graduate degree in Engineering. Applicants who do not meet this criterion but who have an outstanding academic record in a related field, may be admitted on probation. Students admitted in this category will be required to complete a sequence of undergraduate courses (including prerequisites as appropriate) in addition to the normal requirements of the IE Ph.D. degree
- Minimum 3.0 on a 4.0 scale on most recent degree
- The GRE general test is required for all applicants. Applicants must score a 156 or higher on the quantitative section of the GRE to be considered for admission.
- For applicants whose first language is not English, TOEFL score of 80 (with a minimum score of 20 on each subsection) or higher OR IELTS score of 6.5 or higher (*Institution code – 1856. Applicable for the GRE and TOEFL only*)
- Personal statement identifying research interest
- CV/Résumé
- 3 recommendations from academic or professional contact
- Official transcripts from each institution where college credit was received to be mailed to:

UAB Graduate School
LHL G03; 1720 2nd Avenue South
Birmingham, AL 35294-0013

Institutions can also submit official transcripts electronically by choosing University of Alabama at Birmingham – Graduate Admissions or using the email gradschool@uab.edu.

Additional International Requirements

- For applicants whose first language is not English, TOEFL score of 80 or higher (with a minimum score of 20 on each subsection) OR IELTS score of 6.5 or higher (*Institution code – 1856. Applicable for the GRE and TOEFL only*)
- Financial Affidavit of Support
- Immigration documentation if currently residing in the US

Degree Requirements

The Ph.D. in Interdisciplinary Engineering promotes a research-based curriculum. A minimum number of core courses will be required of all students in the program, with additional coursework directed by the student's graduate research committee based on the student's area of interest. Committee members must be selected from at least two different disciplines (with a minimum of 2 faculty from the School of Engineering), and the planned curriculum must result in cross-training in two or more disciplines.

Students entering the Ph.D. program with a baccalaureate degree must, in keeping with UAB Graduate School Policies, complete at least 48 hours of coursework prior to admission to candidacy. Up to 16 credits of the 48 can be as non-dissertation research credits, and up to 10 credits can be as lab rotations, seminars, or directed study credits. Students entering the Ph.D. program with a Master's degree in a related field, MD, DMD, etc., must complete at least 27 credit hours of coursework prior to candidacy. Up to 6 credits of the 27 can be non-dissertation research credits, and up to 6 credits can be as lab rotations, seminars, or directed study credits.

The UAB Graduate School also requires that students complete at least two semesters as a full time student in candidacy or accumulate at least 24 credits in research hours or coursework in candidacy prior to granting of degree. At least 24 hours of dissertation research will be required for Ph.D. program graduates in Interdisciplinary Engineering.

All students in the IE program must complete the following core courses:

Requirements	Hours
EGR 710 Intro to Interdisciplinary EGR	3
EGR 711 Methodology for IEGR Research	3
Journal Club - 4 enrollments of 1 hour each	4
EGR 796 Journal Club in Interdisciplinary Engineering	
GRD 717 Principles of Scientific Integrity	3

A Comprehensive Exam is required of all doctoral candidates. The exam includes both written and oral components and will include presentation of the student's dissertation proposal. The exam will be administered by the student's graduate research committee. Upon successful completion of the exam and completion of at least 48 hours of coursework (in keeping with Graduate School requirements), a student is admitted into doctoral candidacy.

A dissertation showing the ability to conduct, analyze, and defend independent research must be prepared on a topic in the research field of interest. Dissertation results are expected to be submitted for refereed scholarly publication. The dissertation must comply with UAB dissertation preparation guidelines. When the dissertation has been completed, doctoral candidates will present and defend their work before their graduate research committee and the public. This defense will constitute the candidate's final exam. The results of the examination

must be reported to the Graduate School at least six weeks before the commencement at which the degree is to be conferred.

Coursework

In addition to EGR 710 Intro to Interdisciplinary EGR, EGR 711 Methodology for IEGR Research, EGR 796 Journal Club in Interdisciplinary Engineering, and GRD 717 Principles of Scientific Integrity, course selection is based on the research and career goals of the student, and curricula will vary between students. Students are guided by their faculty mentor (committee chair) and a graduate study committee composed of faculty representing an interdisciplinary team in the student's area of research interest. The coursework must include courses from at least two disciplines.

This work will be completed under the guidance of the student's faculty mentor (graduate study committee chair). An approved 6 hour internship may be substituted for 6 of the required dissertation research hours. Non-dissertation Research and Dissertation Research hours will be taken through the department of the student's faculty mentor.

Special Topics (590/690/790) courses and Independent Study (591/691/791) courses are reviewed for degree applicability for each program in the School of Engineering. No more than 6 combined hours of Special Topics and/or Independent Study courses will be applied to the Interdisciplinary Engineering Ph.D. without appeal to and approval from the Program Director.

Important Program Information

- The Interdisciplinary Engineering Program is not fully online.
- Students in the program can be part time for the first 30 credit hours and some or all of these coursework hours can be online.
- After 30 hours, the student will typically be full-time and spend at least one year in residency at UAB working on their dissertation, preferably in 3 consecutive terms.
- Students will take a minimum of 6 hours of cross-disciplinary training, which is defined as courses taken outside of the School of Engineering. These courses must be approved by IE Ph.D. Committee prior to registration.
- Students are expected to publish and present during their Ph.D. program.

Additional Information

Deadline for Entry Term(s):	Fall: August 1; Spring: December 1; Summer: May 1
Deadline for All Application Materials to be in the Graduate School Office:	Six weeks before term begins
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE General Test (TOEFL is also required for international applicants whose native language is not English.)
Application Fee	Domestic & green card holders: \$50; International: \$60

Contacts

Dr. Timothy M. Wick
Graduate Program Director

Senior Associate Dean
tmwick (tmwick@uab.edu)@uab.edu (littlefield@uab.edu)

Kristy Barlow
Director of Academic Programs
School of Engineering Dean's Office
kbarlow@uab.edu

Professional Degree Programs

In an effort to meet increasing industry demands for highly skilled workers, the School of Engineering offers a variety of professional programs. These programs are designed to benefit working professionals who seek to increase their qualifications through specialized degree and certificate programs. The following three tracks are available in the Master of Engineering (MEng): Construction Engineering Management; Advanced Safety Engineering and Management; and Information Engineering and Management.

Masters of Engineering with a Concentration in Advanced Safety Engineering and Management (M.Eng.)

Note that this program is totally online.

Website:	http://www.uab.edu/asem
Degree Offered:	MEng
Director:	Donald S. Burke, Ph.D.
E-mail:	dburke3@uab.edu
Phone:	(205) 975-3891

Instructors

The MEng-ASEM graduate program is taught by a team of practicing safety and health professionals with Dr. Donald Burke serving as overall Course Director. Practitioner-Scholars facilitate online discussions on key topics of interest in their industry sector and provide industry-specific case studies. Students participate in peer-to-peer learning activities discussing current topics of interest and real world experiences using online discussion boards.

Admission

Admission to the UAB MEng-ASEM program requires the following:

- 3.0 GPA on 4.0 scale
- Undergraduate degree from a nationally accredited school
- Experience in a safety profession

Applicants not satisfying the grade point average requirement and/or holding a degree from a nationally accredited school may receive admission on a provisional basis, subject to assessment and recommendation of the program director. To apply, visit the UAB Graduate School's website (uab.edu/graduate) and click the 'Apply Now' button.

Additional Information

Comments: The ASEM program is totally online. There are no campus classes, meetings, or activities. Course delivery includes asynchronous and synchronous learning modes.

Entrance Tests: None

Number of Recommendations Required: Three (including one personal essay and two letters of recommendation, one of which must be from your current, direct supervisor)

Deadline for All Application Materials to be in the Graduate School Office: Six weeks before term begins (see UAB academic calendar - <https://www.uab.edu/students/academics/academic-calendar>)

Application Submission Deadline for Fall: August 1; Spring: December 1; Entry Term(s): Summer: May 1

For detailed program information, contact:

Donald S. Burke, PhD
MEng in Advanced Safety Engineering and Management
UAB School of Engineering, HOEN 340
1720 2nd Avenue South, Birmingham, AL 35294-4440
Telephone: 205-975-3891
E-mail: asem@uab.edu
Web: <http://www.uab.edu/asem>

Master of Engineering in Advanced Safety Engineering and Management

If a student earns a grade of C in a course, they must retake that course in order to receive credit. Students must earn a grade of B or higher on the reattempt of the course.

Plan II - 33 hours

Requirements	Hours
ASEM 601 ASEM Seminar ¹	0
ASEM 610 Introduction to System Safety - Prevention through Design	3
ASEM 611 Hazard Analysis and Waste Elimination	3
ASEM 612 Engineering Risk	3
ASEM 613 Human Performance and Engineering Design	3
ASEM 614 Engineering Ethics and Acceptable Risk	3
ASEM 615 Leading through Climates of Change	3
ASEM 616 Policy Issues in Prevention through Design	3
ASEM 617 Crisis Leadership and Safety-Critical Design	3
ASEM 628 Electrical Systems Safety	3
ASEM 619 Capstone Project - Part 1	3
ASEM 620 Capstone Project - Part 2	3
Total Hours	33

¹ Must be taken each semester

Masters of Engineering with a Concentration in Construction Engineering Management (M.Eng.)

Degree Offered: M.Eng.
Director: Fouad Fouad, PhD
Phone: (205) 504-1386
E-mail: ffouad@uab.edu
Website: <http://www.uab.edu/engineering/cem/>

CEM Admission Requirements

Admission to the UAB CEM requires

1. Bachelors degree from a regionally accredited U.S. College or University
2. Personal interview with Program Director and Assistant Director
3. Two letters of recommendation
4. NO GRE REQUIRED if requirement number 1 is met

To apply: Visit the UAB Graduate School website (uab.edu/graduate) and click the 'Apply Now' button

- Should complete a Graduate Application. Visit: <https://www.uab.edu/graduate/>, and click the 'Apply Now' button to be taken to the application
- Before submitting your application, please contact Dianne Gilmer at 205-975-5848 or digilmer@uab.edu to schedule a 30-45 minute admissions interview, which can be held over the phone or by Skype
- Use the area on the left and choose "Application for Admission as a Degree-Seeking Student"
- Under the link Application Information and the option Program Applying to: choose Construction Engineering Management
- Under Additional Information you will be asked to upload a resume

Additional Information

Deadline for Entry Term(s): Spring: November 1, Fall: July 1
Deadline for All Application Materials to be in the Graduate School Office: Six weeks before term begins
Number of Evaluation Forms Required: Two
Entrance Tests: N/A

For detailed information, contact:

Dianne Gilmer, MEng
Hoehn 310, 1075 13th Street South, Birmingham, Alabama 35294-4440
Telephone: 205-975-5848
E-mail: digilmer@uab.edu
Web: <http://www.uab.edu/engineering/cem/>

Masters of Engineering in Construction Engineering Management

Requirements	Hours
CECM 669 Advanced Project Management	3
CECM 670 Construction Estimating and Bidding	3
CECM 671 Construction Liability & Contracts	3
CECM 672 Construction Methods and Equipment	3
CECM 673 Project Planning and Control	3
CECM 674 Green Building Design/Construction	3
CECM 675 Advanced Construction and Engineering Economics	3
CECM 676 Construction Project Risk Management	3
CECM 688 Strategic Management and Leadership Applications in a Global Environment	3
CECM 689 Building Information Modeling (BIM) Techniques	3
Total Hours	30

Masters of Engineering with Concentration in Information Engineering and Management (M.Eng.)

Degree Offered:	M.Eng.
Director:	Dr. Dale W. Callahan, PE
Phone:	(205) 934-8480
E-mail:	iem@uab.edu
Website:	http://www.uab.edu/iem

IEM Admission Requirements

Admission to UAB Information Engineering and Management requires:

1. An undergraduate degree from a regionally accredited university.
2. Preference is given to engineering, math, science or technical-related undergraduate degrees.
3. Original transcripts from every college/university attended should be requested by the applicant and sent directly to the UAB Graduate School.
4. Relevant industry work experience as evidenced by your resume and three recommendations.
5. An essay answering the questions listed on the IEM website Apply Now (<http://www.uab.edu/engineering/iem/apply-now>) page.
6. A video introducing yourself to IEM. The video should be less than 5 minutes in length. Please tell us a little about yourself, what you've done professionally and why you want to be admitted to IEM. The video should be posted to YouTube, marked unlisted with a limited access URL and the link emailed to iem@uab.edu.
7. An interview with the IEM admissions committee may also be required.
8. No GMAT/GRE required for admission to IEM.

To Apply:

Whether you are on campus or online, or some of both, here is what all entering clients need to do:

To Apply: Whether you are on campus or online, or some of both, here is what all entering clients need to do: Visit the UAB Graduate School website (uab.edu/graduate) and click the 'Apply Now' button to complete an application.

- Create an account and complete the application by filling out all necessary sections including biographical information, educational background information, providing the information of three references (the system will send an electronic request to each reference), uploading an essay which includes answers to the above questions, uploading a current resume, and providing payment for the application.
- IEM Requirements: The photograph and video link should be e-mailed to IEM directly at iem@uab.edu. (iem@uab.edu)
- We encourage applicants to complete their application early to make sure they are considered for admission as soon as possible. A complete application means that all materials (transcripts, essay, resume, etc.) have been received by the Graduate School and the video should be uploaded to YouTube.
- Acceptance is determined by the IEM Admissions Committee.

Late Applicants

Applicants who miss the Graduate School's deadline for admission may apply as "non-degree seeking" in **Apply Yourself** (https://app.applyyourself.com/AYApplicantLogin/fl_ApplicantLogin.asp?id=uab-grad) and pay an additional application fee. Late applicants are still required to submit the paperwork outlined above. The non-degree seeking deadline is typically 2-4 weeks before classes begin.

Additional Information

Number of Recommendations Required:	Three
Entrance Tests:	N/A

For more information, contact IEM Director-Dr. Dale Callahan, PE or IEM Program Manager-Maria Whitmire, MEng, CAP-OM; IEM, Hoehn 370, 1075 13th Street South, Birmingham, Alabama 35294-4440. Telephone: 205-934-8480
E-mail: iem@uab.edu
Web: www.uab.edu/iem

Masters in Engineering/Information Engineering and Management

Plan II - 33 hours

Requirements	Hours
IEM 601 Introduction to IEM	1
IEM 602 Leading Collaborative Teams	1
IEM 603 Communication for Technology Executives	1
IEM 610 Communication for Technology Professionals	3
IEM 611 Leading Technical Organizations	3
IEM 612 Project Leadership	3
IEM 620 Technical Entrepreneurship	3
IEM 625 Technology and Innovation	3
IEM 630 Systems Engineering	3
IEM 631 Operational Decision-Making	3
IEM 645 Financial Concepts for Entrepreneurs	3
IEM 646 Strategic Planning	3

IEM 695	IEM Design Project	3
Total Hours		33

Master of Science in Engineering Management (M.S.E.M.)

Website:	http://www.uab.edu/engineering/home/msem
Degree Offered:	M.S.E.M
Director:	Donald S. Burke, Ph.D.
Program Manager	Maria Whitmire
E-mail:	msem@uab.edu
Phone:	(205) 934-8480

The Master of Science in Engineering Management (M.S.E.M.) is a joint degree between the School of Engineering and the Collat School of Business. The MSEM will further develop the technical, managerial, and professional capabilities of engineering graduates, preparing them for earlier entry into positions of leadership within a wide variety of industries and organizational types. The technical engineering coursework will emphasize a systems-oriented, multidisciplinary approach to solving complex problems. The managerial and professional coursework will develop essential business acumen, an ability to think strategically, and a commitment to professional work habits that are the hallmark of excellence in engineering. Graduates will be well prepared for leadership roles and professional growth to serve their organizations, their communities, and contribute to the UAB mission of having an economic impact in the region.

Graduates will be well prepared for positions as engineers, project managers, program managers, product managers, consultants, technical sales representatives, technical sales support specialists, and engineering managers. They will have the knowledge and skills to manage an organization's relationship with technology vendors, evaluate technical proposals, develop internal technical training and education programs, or bring both a business and a technical perspective to cross-functional teams focused on strategic alignment or evaluation of emerging technologies.

While the focus is employment, graduates will also be prepared to pursue advanced degrees in management, engineering management, interdisciplinary engineering PhD programs and other similar programs.

Application Deadlines

Fall	August 1
Spring	December 1
Summer	May 1

Admissions Requirements

- Applicants to the program are expected to have one of the following:
 - ABET engineering degree with a 3.0 GPA
 - Professional experience in engineering or related field with an undergraduate GPA of 3.0
 - Engineering student (junior or senior) in good standing with 3.0 GPA

- An ABET equivalent degree from an international university as reviewed by entrance committee
- A STEM undergraduate degree in a field related to engineering.
- International students must have TOEFL (or equivalent) with a score of 20 or above on each subsection and an 80 or above overall
- An interview with the committee or committee member

Master of Science in Engineering Management

Curriculum

The MSEM degree consists of 18 hours of core courses, 3 hours of capstone and 12 hours of a student selected concentration.

The MSEM will allow students to focus on specific industry segments or technical fields through specific concentrations. Industry segment tracks are

- Biomaterials and Tissue Engineering
- Design and Commercialization
- Environmental Engineering
- Manufacturing Engineering
- Power Systems Engineering
- Software Engineering
- Vehicle and Robotics Engineering

If a student is not interested in one of the specified concentrations, they will have the ability to design their own concentration, with the help of their advisor, by selecting a set of 4 related graduate-level engineering courses. These courses should be consistent with the student's capstone/work path. Student-designed concentrations must be approved by the Program Director prior to registering for any of the proposed courses.

Special Topics (590/690/790) courses and Independent Study (591/691/791) courses are reviewed for degree applicability for each program in the School of Engineering. No more than 6 combined hours of Special Topics and/or Independent Study courses will be applied to the MSEM without appeal to and approval from the Program Director.

Requirements	Hours
MBA 601 Accounting and Finance for Managers	3
MBA 651 Marketing Strategy	3
MBA 681 From Idea to IPO	3
MSEM 640 Systems Engineering	3
MSEM 650 Technical Project Management	3
MSEM 660 Professional Development for Engineers	3
MSEM 695 Engineering Management Design Project	3
Concentration	12
Total Hours	33

Biomaterials and Tissue Engineering Concentration

Requirements	Hours
BME 535 Tissue Engineering	3
BME 520 Implant-Tissue Interactions	3
BME 572 Industrial Bioprocessing and Biomanufacturing	3

BME 630	Engineering Design and Commercialization	3
Total Hours		12

Design and Commercialization Concentration

Requirements		Hours
MSE 610	Advanced Materials, Manufacturing and Applications Development	3
EE 605	Embedded Systems for Industrial Scholars	3
EGR 602	Methods for Engineering Practice I	3
BME 630	Engineering Design and Commercialization	3
Total Hours		12

Environmental Engineering

Requirements		Hours
CE 580	Introduction to Water and Wastewater Treatment	3
CE 600	Sustainable Construction	3
CE 585	Engineering Hydrology	3
CE 531	Energy Resources	3
Total Hours		12

Manufacturing Engineering

Requirements		Hours
MSE 606	Introduction to Manufacturing Engineering	3
MSE 607	Measurement Systems Analysis	3
MSE 608	Process Characterization and Advanced Statistical Analysis	3
ASEM 612	Engineering Risk	3
Total Hours		12

Power Systems Engineering

Requirements		Hours
EE 571	Power Systems I	3
EE 572	Power Systems II	3
EE 573	Protective Relaying of Power Systems	3
EE 574	Industrial Power Systems	3
Total Hours		12

Software Engineering

Requirements		Hours
EE 640	Object-Oriented Design	3
EE 650	Software Engineering	3
EE 654	Mobile Computing	3
EE 656	Introduction to Big Data Analytics	3
Total Hours		12

Vehicle and Robotics Engineering

Requirements		Hours
ME 672	Advanced Dynamics	3
ME 531	Introduction to Vehicle Drive Systems Engineering	3
ME 530	Vehicular Dynamics	3

ME 632	Autonomous Wheel Power Management Systems: Theory and Design	3
Total Hours		12

Biomedical Engineering

Biomedical Engineering (PhD, MSBME, MSBME with Certificate in Technology Commercialization and Entrepreneurship)

Degrees Offered:	PhD, MSBME, MSBME with Certificate in Technology Commercialization and Entrepreneurship
Phone:	(205) 996-6936
E-mail:	uabbmegrad@uab.edu
Website:	www.uab.edu/bme

Additional Information

Deadline for Entry Term(s):	Fall
Deadline for All Application Materials to be in the Graduate School Office:	December 15
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE (TOEFL is also required for international applicants whose native language is not English)
Comments	Students are rarely admitted for the Spring term

For the Masters programs, the GRE general test is required for all applicants who did not receive a BS degree from a program accredited by the Engineering Accreditation Committee of ABET <http://www.abet.org>, or from other programs with reciprocal agreement under the Washington Accord <http://www.ieagreements.org/accords/washington/>.

For the PhD program, the GRE general test is required for all applicants. Applicants must score a 156 or higher on the quantitative section of the GRE to be considered for admission.

In addition, a minimum score of 80 on the TOEFL or a 6.5 on the IELTS is required for international applicants whose native language is not English.

For detailed information, contact:

Dr. Ho-Wook Jun
Professor, BME Graduate Program Director
UAB Department of Biomedical Engineering
1825 University Blvd.
Shelby Biomedical Research Building, 806
Birmingham, AL 35294-2182
Telephone (205) 996-6936
E-mail uabbmegrad@uab.edu
Web www.uab.edu/bme

Master of Science in Biomedical Engineering

A minimum GPA of 3.20 is required.

Plan I - 30 with Thesis

Requirements	Hours
BME 517 Engineering Analysis or ME 661 Math Methods in EGR I	3
BME 670 Quantitative Physiology	3
BST 621 Statistical Methods I	3
BME Elective 500-697	3
Life Science Elective at the 500+ level	3
BME/EGR/Math/Life Science Elective at the 500+ level	3
BME Seminar	3
BME 601 Seminar in Biomedical Engineering	
BME 698 Non-Thesis Research	3
Thesis Research	6
BME 699 Master's Degree Thesis Research	
Total Hours	30

Plan II - 33 hours

Requirements	Hours
BME 517 Engineering Analysis or ME 661 Math Methods in EGR I	3
BME 670 Quantitative Physiology	3
BST 621 Statistical Methods I	3
BME Elective 500-697	3
BME/EGR/MA/Life Science Elective at the 500+ level ¹	9
Life Science 500+ level	3
BME Seminar	3
BME 601 Seminar in Biomedical Engineering	
BME 698 Non-Thesis Research	6
Total Hours	33

¹ BME 698 may be taken for this elective

Special Topics (590/690/790) courses and Independent Study (591/691/791) courses are reviewed for degree applicability for each program in the School of Engineering. No more than 6 combined hours of Special Topics and/or Independent Study courses will be applied to the MSBME without appeal to and approval from the Program Director.

PhD Program

The PhD degree prepares students for careers in industry and academics. Students entering the doctoral program will possess a BS, MS, or be currently enrolled in the DMD/PhD or MD/PhD program at UAB.

Admission to the PhD program is competitive, and successful applicants will usually present scores of at least 156 on the verbal and at least 159 on the quantitative sections of the GRE General Test. Typical students have a graduate GPA of 3.5 or greater and have a significant research experience. Students admitted to the doctoral program typically receive a competitive stipend that usually includes payment of tuition.

Students can be admitted to the PhD program with a BS degree in a field of biomedical engineering or closely-related discipline. Students

with undergraduate degrees in the physical sciences, life sciences, or mathematics can also be considered to admission. Students entering the PhD program with a BS are required to complete at least 72 semester hours of graduate work, including 48 semester hours of graduate coursework, and a minimum of 24 hours of dissertation research (BME 799) earned over at least two semesters in candidacy. All students are required to take BME 517 Engineering Analysis, BME 770 Quantitative Physiology, at least one Biostatistics course (BST 621 Statistical Methods I), GRD 717 Principles of Scientific Integrity and 6 semesters of BME seminars (BME 701 Seminar in Biomedical Engineering). The remaining coursework should be a combination of life sciences, biomedical engineering, or mathematics elective courses that provide sufficient breadth and depth to gain the necessary graduate level, interdisciplinary knowledge to complete dissertation research. Three peer-reviewed first-author publications are required for completion of the PhD in the Department of Biomedical Engineering.

Students can be admitted to the PhD program following completion of a Master's Degree in BME or closely-related discipline. Students entering the PhD program with a MS are required to complete at least 51 semester hours of graduate work beyond the Master's degree including 27 semester hours of coursework and 24 hours of dissertation research (BME 799) earned over at least two semesters in candidacy. All students are required to take BME 517 Engineering Analysis, BME 770 Quantitative Physiology, BST 621 Statistical Methods I, GRD 717 Principles of Scientific Integrity, if not taken as part of their Master's program, and three semesters of BME 701 BME Seminar. The remaining coursework should be a combination of life sciences, biomedical engineering, or mathematics elective courses that provide sufficient breadth and depth to gain the necessary graduate level, interdisciplinary knowledge to complete dissertation research.

Special Topics (590/690/790) courses and Independent Study (591/691/791) courses are reviewed for degree applicability for each program in the School of Engineering. No more than 6 combined hours of Special Topics and/or Independent Study courses will be applied to the PhD without appeal to and approval from the Program Director.

A total of three first-author original research articles in peer-reviewed journals based on the student's dissertation research are required for completion of the PhD in the BME Department. If one article was published as part of the MSBME degree, then two articles are required for the PhD degree.

Civil, Construction and Environmental

The Civil, Construction, and Environmental Engineering (CCEE) department offers both a master and doctoral level program, and cutting-edge research covering various facets of Civil Engineering theory and practice. A knowledgeable and experienced group of faculty members work closely with students to provide them with the tools required to succeed professionally in globally-competitive work environments.

Civil Engineering

Degrees Offered	MSCE, PhD
Co-Director	Dr. Nasim Uddin
Email	nuddin@uab.edu
Phone	205-934-8432
Co-Director	Dr. Robert W. Peters

E-mail	rwpeters@uab.edu
Phone	205-934-9855
Website	http://www.uab.edu/engineering/

Admission Requirements

In addition to the UAB Graduate School admission requirements, requirements for admission to the program leading to the Master of Science in Civil Engineering degree include the following five criteria:

1. An undergraduate engineering degree from an ABET accredited program. Applicants who do not meet this criterion but who have an outstanding academic record in an engineering degree program not accredited by ABET, or in a baccalaureate degree program in a related field, may be admitted on probation. Students admitted in this category will be required to complete a sequence of undergraduate courses in addition to the normal requirements of the MSCE degree. This set of extra requirements will be specified in writing at the time of admission to the program.
2. GPA of 3.0 or better on a 4.0 scale in all undergraduate degree major courses attempted;
3. Three letters of evaluation concerning the applicant's previous academic and professional work; and
4. Submission of GRE scores:
 - a. For applicants to the MSCE program, the GRE general test is required for all applicants who did not receive a BS degree from a program accredited by the Engineering Accreditation Committee of ABET <http://www.abet.org>, or from other programs with reciprocal agreement under the Washington Accord <http://www.ieagreements.org/accords/washington/>. Admission to the program is competitive and is based on all available evidence; for admission in good academic standing, scores above 160 on each component of GRE General Test are preferred.
 - b. For applicants to the PhD program, the GRE general test is required for all applicants. Applicants must score a 156 or higher on the quantitative section of the GRE to be considered for admission. Admission to the program is competitive and is based on all available evidence: for admission in good academic standing, scores above 160 on each component of GRE General Test are preferred.
5. In addition, a minimum score of 80 on the TOEFL or a 6.5 on the IELTS is required for international applicants whose native language is not English.
6. Verification of registration by examination as a Professional Engineer (PE) will satisfy criteria 4 above.

CE Specialty Certificate Programs

Category A certificates are offered by the Civil, Construction, and Environmental Engineering Department. Any undergraduate or graduate student in good standing who is pursuing a Civil Engineering degree (BSCE, MSCE, PhD) may elect to simultaneously complete the requirements of his or her degree program and the Certificate Program.

These certificates are listed on student transcripts and in the university graduation bulletin. Certificates can be earned in:

1. Structural Engineering
2. Environmental Engineering
3. Transportation Engineering
4. Sustainable Engineering

5. Construction Engineering Management
6. Geotechnical Engineering

Civil Engineering (BSCE) graduates who complete the Certificate Program will have greater depth in a specific technical area. The certificates also allow a means for practicing engineers to acquire expertise beyond a Bachelor's degree, and have it formally recognized without completing a program leading to a Master's degree. This technical expertise will enhance their proficiency and marketability. Up to 12 graduate level credit hours taken for a certificate may be applied toward the MSCE degree.

Students who wish to pursue a CE Certificate must be admitted to the Department as either undergraduate or graduate students (BSCE or MSCE program). Students who are not currently enrolled in the civil engineering program may be admitted as a non-degree seeking student to earn a Certificate.

Certificates require a minimum of 15 semester hours. They consist of one required course (which may also count toward the BSCE degree at UAB) and four graduate level elective courses in the area of specialization.

Courses that can be applied towards the Certificate can be found at <http://www.uab.edu/engineering/home/departments-research/civil>

For more information, please contact Dr. Fouad Fouad, Department Chair, 140 Hoehn Engineering Building, 1075 13th Street South, telephone (205) 934-8430, e-mail ffouad@uab.edu

Master in Engineering Programs

The Department of Civil, Construction, and Environmental Engineering is pleased to offer three tracks under the Master in Engineering

Special Topics (590/690/790) courses and Independent Study (591/691/791) courses are reviewed for degree applicability for each program in the School of Engineering. No more than 6 combined hours of Special Topics and/or Independent Study courses will be applied to the any of the following degrees without appeal to and approval from the Program Director.

Master of Engineering in Construction Engineering Management Program

Degree Offered:	Master of Engineering - Construction Engineering Management
Interim Director:	Dr. Fouad H. Fouad
Phone:	(205) 875-5848
Assistant Director	Dianne Gilmer
E-mail:	digilmer@uab.edu (wah@uab.edu)
Web site:	http://www.uab.edu/engineering/

This program is designed to enhance the engineering and business qualifications of working professionals interested in project and company management.

In addition to the Graduate School admission requirements, requirements for admission to the program leading to the Master in Engineering – Construction Management degree include the following:

1. Must have a Bachelor's degree from an accredited U.S. College or University or equivalent
2. Must have an Undergraduate GPA of 3.0 or higher (individuals not meeting this requirement may start on a probationary status with strong interview and recommendations)
3. No GRE is required
4. Must submit at least two letters of recommendation
5. Must schedule an interview with the Program Director or Assistant Program Director
6. International students who do not have a degree from an accredited U.S. Institution are required to submit TOEFL scores.
7. Must successfully complete at least 30 semester hours of CECM graduate credit

Master of Engineering in Structural Engineering Program

Degree Offered:	Master of Engineering - Structural Engineering
Director:	Dr. Christopher Waldron
Phone:	(205) 934-8435
Fax:	(205) 934-9855
E-mail:	cwaldron@uab.edu
Web site:	http://www.uab.edu/engineering/

This program is designed to increase the technical knowledge of engineering professionals working in, or desiring to work in, the broad field of structural engineering.

In addition to the Graduate School admission requirements, requirements for admission to the program leading to the Master of Engineering – Structural Engineering degree include the following:

1. Must have an engineering bachelor's degree from an ABET accredited U.S. college or university
2. Must have an Undergraduate GPA of 3.0 or higher (individuals not meeting this requirement may start on a probationary status with strong interview and recommendations)
3. No GRE required
4. Must submit at least two letters of recommendation
5. Must schedule an interview with the Program Director or Coordinator
6. Must successfully complete at least 30 semester hours of graduate credit

Masters of Engineering in Structural Engineering

Requirements	Hours
Students must complete up to 30 hours with the classes listed below	30
All CESE courses at the 600 level	
All CECM courses with advisor-approval 600-791 (maximum of 9 hours)	
All CE courses with advisor-approval 500-791 (maximum of 12 hours)	
Total Hours	30

Master of Engineering in Sustainable Smart Cities Program

Degree Offered:	Master of Engineering - Sustainable Smart Cities
Director:	Dr. Jason Kirby
Phone:	(205) 934-8479
Fax:	(205) 934-9855
E-mail:	jt Kirby@uab.edu
Web site:	http://www.uab.edu/engineering/

Requirements

In addition to the Graduate School admission requirements, requirements for admission to the program leading to the Master of Engineering – Sustainable Smart Cities degree include the following:

1. A Bachelor's degree (or equivalent) from an recognized institution of higher education in an appropriate subject/related science including but not limited to: Urban Design and Planning, Political Science, Geography, Environmental Science, Environmental Management, Public Health, Social Sciences, Criminal Justice, Information and Communication Technology, and/or Engineering.
2. Candidates who have related employment or substantial industrial experience, with a demonstrable interest in or a commitment to urban planning, sustainability and environmental management issues, and / or smart city approaches will also be considered.
3. International students who do not have a degree from an accredited U.S. institution are required to submit TOEFL scores.
4. All program students will be required to register / enroll at both UAB and SU. Details on the Graduate application packet are available online.

Requirements for a Masters of Engineering/Sustainable Smart Cities

Requirements	Hours
CESE 600 Principles of Sustainable Development	3
CESE 602 Introduction to Sustainable Smart Cities	3
CESE 604 Low-Carbon and Renewable Energy Systems for Smart Cities	3
CESE 606 Managing Natural Resources and Sustainable Smart Cities	3
CESE 608 Green Infrastructure and Transportation	3
CESE 610 Health and Liveability	3
CESE 612 Green Buildings	3
CESE 614 Smart Cities Technologies	3
CESE 616 Big Data and Smart Cities	3
CESE 618 Research Methods and Project Planning	3
CESE 620 Sustainable Smart Cities Research Project	3
Total Hours	33

Master of Science in Civil Engineering Program Requirements

The following minimum requirements apply to the plan of study for a student who has earned a baccalaureate degree in civil engineering. A student with an undergraduate degree in another field may also be accepted into the civil engineering program but will normally have to take additional preparatory coursework as part of an expanded plan of study. Continuous enrollment for at least 3 credit hours per term is required.

Students receiving a research assistantship are required to be enrolled as full-time students every semester. A full-time student is one who is enrolled in at least 9 credit hours per semester. **Enrollment in the Civil Engineering Graduate Seminar (CE 641) is required at least once prior to graduation.**

Special Topics (590/690/790) courses and Independent Study (591/691/791) courses are reviewed for degree applicability for each program in the School of Engineering. No more than 6 combined hours of Special Topics and/or Independent Study courses will be applied to the MSCE without appeal to and approval from the Program Director.

Master of Science in Civil Engineering

Plan I (Thesis Option)

- In addition to the general Graduate School requirements, the student must successfully complete at least 33 semester hours of graduate credit, including:
 - A minimum of 18 semester hours in civil engineering;
 - Up to 6 semester hours in disciplines outside civil engineering, such as other engineering disciplines, mathematics, biology, earth science, physics, urban affairs, or public health.
 - A minimum of 9 hours of CE 699-Masters Thesis Research.
- The student must pass a comprehensive examination on the content of the program. This examination may be written, oral, or both and shall include an oral defense of a thesis.
- All Plan I Master's students are required to complete online modules covering the 9 topic areas of RCR research integrity. The modules can be accessed online at <https://www.citiprogram.org>.**

Plan II (Nonthesis Option):

- The student must successfully complete at least 33 semester hours of graduate credit including:
 - A minimum of 24 semester hours in civil engineering;
 - Up to 6 semester hours in disciplines outside civil engineering, such as; other engineering disciplines, mathematics, biology, earth sciences, physics, chemistry, or public health; and
 - A minimum of 3 hours of CE 698 – Non-Thesis Research under the direction of the graduate study committee chair, resulting in a committee approved written report.
- The student must pass a comprehensive examination on the content of the program. This examination may be written, oral, or both and shall include an oral defense of the nonthesis research project.

Areas of Specialization

The department offers specialization programs in the fields of structural engineering/structural mechanics, environmental engineering, transportation engineering, and construction engineering management. Supporting courses are offered in geotechnical engineering, optimization, engineering law and other areas. If a student chooses to declare a concentration, the student must choose from the courses listed below the appropriate concentration to fulfill the required 18 hours (Plan 1) or 24 hours (Plan 2) within civil engineering.

Enrollment in the Civil Engineering Graduate Seminar series (

CE 641 / CE 741) is required of all graduate students at least once prior to graduation.

Concentration in Structural Engineering

Requirements	Hours
Select 18 hours for Plan I or 24 hours for Plan II	
CE 516	Mechanical Vibrations 3
CE 520	Advanced Mechanics 3
CE 526	Foundation Engineering 3
CE 544	Civil Engineering Analysis II 3
CE 553	Design of Wood Structures 3
CE 554	Design of Masonry Structures 3
CE 556	Prestressed Concrete Design 3
CE 557	Concrete Technology 3
CE 560	Structural Mechanics 3
CE 561	Introduction to the Finite Element Method 3
CE 562	Advanced Structural Analysis 3
CE 564	Structural Dynamics 3
CE 590	Special Topics in (Area) ¹ 3
CE 612	Theory of Elasticity 3
CE 617	Theory of Plates and Shells 3
CE 641	Civil Engineering Seminar ² 0
CE 650	Advanced Structural Steel 3
CE 655	Advanced Reinforced Concrete 3
CE 690	Special Topics in (Area) ¹ 1-3
CE 691	Individual Study in (Area) 1-4

¹ or any CE 590/690 IITS course offerings from UAH, USA, and UA campuses

² requirement of the Department for all graduate students to take at least once prior to graduation

Concentration in Environmental Engineering

Requirements	Hours
Select 18 hours for Plan I or 24 hours for Plan II	
CE 530	Water Supply/Drainage Design 3
CE 531	Energy Resources 3
CE 533	Solid and Hazardous Wastes Management 3
CE 534	Air Quality Modeling and Monitoring 3
CE 537	Environmental Experimental Design and Field Sampling 3
CE 580	Introduction to Water and Wastewater Treatment 3
CE 585	Engineering Hydrology 3
CE 590	Special Topics in (Area) ¹ 3
CE 600	Sustainable Construction 3
CE 608	Green Building Design 3
CE 610	The Engineered Environment 3
CE 636	Stormwater Pollution Management 3
CE 640	Wastewater Treatment Engineering 3
CE 641	Civil Engineering Seminar ² 0
CE 690	Special Topics in (Area) ¹ 1-3
CE 691	Individual Study in (Area) 1-4

¹ or any CE 590/690 IITS course offerings from UAH, USA, and UA campuses

² requirement of the Department for all graduate students to take at least once prior to graduation

Concentration in Transportation Engineering

Requirements		Hours
Select 18 hours for Plan I or 24 hours for Plan II		
CE 543	Pavement Design & Construction	3
CE 590	Special Topics in (Area) ¹	3
CE 621	Transportation Engineering Seminar	1
CE 622	Traffic Flow Theory	3
CE 624	Simulation Models for Transportation Applications	3
CE 625	Intelligent Transportation Systems	3
CE 646	Traffic Engineering Operations	3
CE 641	Civil Engineering Seminar ²	0
CE 648	Urban and Transportation Planning	3
CE 690	Special Topics in (Area) ¹	1-3
CE 691	Individual Study in (Area)	1-4

¹ or any CE 590/690 IITS course offerings from UAH, USA, and UA campuses

² requirement of the Department for all graduate students to take at least once prior to graduation

The Department offers a variety of courses due to the focus areas under the Master of Science in Civil Engineering, which makes it difficult to designate all the courses in which students may enroll. Therefore, the lists above are not all-inclusive.

Required Courses for Specialization in Construction Engineering Management

In addition to the MSCE program requirements, the following undergraduate classes, or Program Director approved course equivalents (plus all associated prerequisites) are generally required of all MSCE students specializing in construction management.

Requirements		Hours
CE 395	Engineering Economics	3
CE 497	Construction Engineering Management	3

PhD Program Requirements

Special Topics (590/690/790) courses and Independent Study (591/691/791) courses are reviewed for degree applicability for each program in the School of Engineering. No more than 6 combined hours of Special Topics and/or Independent Study courses will be applied to the PhD without appeal to and approval from the Program Director.

Doctor of Philosophy in Civil Engineering

This is a joint program with the University of Alabama in Huntsville (UAH). A typical student entering the program will already have an undergraduate degree in Civil Engineering from a program accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. Students with outstanding records in related fields or from a non-accredited engineering program will be considered for admission on conditional standing and must remedy deficiencies in their preparation after the start of their academic program. They may then be granted unconditional standing in the doctoral program.

The program requires 48 credit hours of coursework beyond the baccalaureate level or 24 credit hours of coursework beyond the master's degree, plus a minimum of 24 credit hours of dissertation research. A

maximum of 6 graduate credit hours may be taken as independent study or special topics classes.

Enrollment in the Civil Engineering Graduate Seminar (CE 741) at least once prior to graduation is required. A minimum of 6 credit hours must be taken from the UAH campus and may be taken through the Intercampus Interactive Telecommunications (IITS) System here at UAB, Distance Learning courses from UAH (DL) or Web-based Instruction from UAH. Doctoral students are also required to take and pass the course GRD 717 (Responsible Conduct on Research) prior to admission to candidacy.

A dissertation committee must be set-up by the doctoral student, involving a minimum of 5 graduate faculty members; at least one faculty member must be from UAH. A comprehensive examination is required of all doctoral candidates. This examination is given after (a) all coursework is completed, and (b) the student's Graduate Committee, which consists of faculty representatives from both campuses, deems the student to have adequate preparation in the major and minor fields of study. The examination is conducted by the student's Graduate Committee and administered on the resident campus. The examination consists of a written part and an oral part. During the oral portion of the examination, the student also presents his/her dissertation proposal. The Comprehensive Examination may only be taken twice.

If the graduate student successfully passes the comprehensive exam and the dissertation proposal defense, the graduate student will then enter into doctoral candidacy. Once a doctoral candidate, the student must complete a minimum of 24 graduate hours of dissertation research (CE 799). Prior to admission of candidacy, the graduate can take research hours in the form of non-dissertation hours (CE 798); these non-dissertation research hours cannot be converted from CE 798 into CE 799).

After completing the research (a minimum of 24 hours of dissertation hours), the graduate student must develop their dissertation for review by their dissertation committee. The doctoral candidate must present an oral public defense of their dissertation. If the graduate student successfully defends their dissertation, the student then has ten working days to revise the dissertation and submit in its approved form to the Graduate School.

All required coursework must be selected from the list below.

Requirements		Hours
CE 712	Theory of Elasticity	3
CE 715	Theory of Elastic Stability	3
CE 717	Theory of Plates and Shells	3
CE 721	Transportation Engineering Seminar	1
CE 722	Traffic Flow Theory	3
CE 723	Non-Motorized Transportation Design and Planning	3
CE 724	Simulation Models for Transportation Applications	3
CE 725	Intelligent Transportation Systems	3
CE 731	Environmental Law	3
CE 732	Industrial Waste and Wastewater Treatment	3
CE 736	Stormwater Pollution Management	3
CE 738	Water and Wastewater Chemistry	3
CE 739	Sediment Sources and Controls	3
CE 740	Wastewater Treatment Engineering	3
CE 749	Engineering Liability	3
CE 750	Advanced Structural Steel	3
CE 755	Advanced Reinforced Concrete	3
CE 758	Engineering Management	3

CE 763	Finite Element Methods	3
CE 781	Environmental Chemistry	3
CE 782	Water Treatment Engineering	3
CE 783	Water and Wastewater Treatment Processes Lab	3
CE 786	Engineering Hydrogeology	3
CE 787	Stormwater Detention Pond Design	3
CE 790	Special Topics in (Area)	1-3
CE 791	Individual Studies (In Area)	1-4

Other Requirements

CE 741	Civil Engineering Seminar	0
GRD 717	Principles of Scientific Integrity	3
Dissertation Research ¹		24
CE 799	Dissertation Research	

PhD Students are required to complete two 3-credit hour courses offered from UAH and may be taken through IITS, at UAB, UAH Distance Learning, or web-based instruction from UAH

UAH PhD Students can also take CE 590 and CE 690 courses

¹ Minimum of 24 hours of Dissertation Research

Electrical and Computer Engineering

Chair: Murat M. Tanik, PhD

The Department of Electrical and Computer Engineering offers a Master of Science in Electrical and Computer Engineering (MSECE) degree and a PhD in Computer Engineering shared with the University of Alabama at Huntsville (UAH) Electrical and Computer Engineering Department.

Electrical and Computer Engineering (p. 132)

Computer Engineering (p. 133)

Electrical and Computer Engineering

Degree Offered:	MSECE
Director:	Karthikeyan Lingasubramanian
Phone:	(205) 934-8440
E-mail:	klinga@uab.edu
Website:	http://www.uab.edu/engineering/ece/graduate

Admission Requirements

Requirements for admission to the electrical and computer engineering master's degree program include the following:

1. A bachelor's degree in an accredited electrical, computer engineering, electrical and computer engineering or a bachelor's degree acceptable to the graduate faculty in Electrical and Computer Engineering.
2. A 3.0 on a 4.0 scale or better GPA in all junior and senior electrical and computer engineering and mathematics courses attempted;
3. Three letters of evaluation concerning the applicant's previous academic and professional work; and
4. The GRE general test is required for all applicants who did not receive a BS degree from a program accredited by the Engineering

Accreditation Committee of ABET <http://www.abet.org>, or from other programs with reciprocal agreement under the Washington Accord <http://www.ieagreements.org/accords/washington/>.

5. In addition, a minimum score of 80 on the TOEFL or a 6.5 on the IELTS is required for international applicants whose native language is not English.
6. Students not having a bachelor's degree in electrical and computer engineering, or electrical or computer engineering, may be required to complete prerequisite courses based on their prior coursework and their plan of study.

Financial Support

Limited financial assistance may be available for well-qualified students admitted into the MSECE program. In order to be considered for financial aid for the coming academic year, the completed application materials must usually be received at UAB by April 1.

There are a number of minority fellowships available through the Graduate School. Contact the UAB Graduate School directly for further information.

Additional Information

Deadline for Entry Term(s):	Deadline for Entry Term(s):
Deadline for All Application Materials to be in the Graduate School Office:	Fall: August 1; Spring: December 1; Summer: May 1
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)
Comments	GRE and evaluation forms requirements waived for persons holding registration as professional engineers

Master of Science in Electrical and Computer Engineering

The Master of Science in Electrical and Computer Engineering (MSECE) prepares students for a professional career in industry or entry into a doctoral program or professional school. The MSECE program builds upon the broad foundation provided by a Bachelor of Science in Electrical Engineering by supplying depth in specific area of electrical and computer engineering through advanced coursework and a thesis or project experience.

Special Topics (590/690/790) courses and Independent Study (591/691/791) courses are reviewed for degree applicability for each program in the School of Engineering. No more than 6 combined hours of Special Topics and/or Independent Study courses will be applied to the MSECE without appeal to and approval from the Program Director.

Program Requirements

Assuming that a student possesses appropriate academic preparation for this degree, 33 semester hours of coursework will be required beyond the bachelor's degree. This work must be distributed as follows:

Plan I (Thesis Option)

1. Twelve semester hours of graduate-level courses appropriate to the student's area of technical specialization
2. Six semester hours of graduate-level courses in an area related to the student's area of technical specialization; and
3. Six semester hours of courses having a mathematical emphasis;
4. Successful completion and oral defense of a thesis developed through registration for at least nine semester hours of EE 699.

Plan II (Nonthesis Option)

1. Twelve semester hours of graduate-level courses appropriate to the student's area of technical specialization;
2. Twelve semester hours of graduate-level courses in an area related to the student's area of professional emphasis (these courses may address technical subjects or subject matter appropriate to an emphasis in engineering management or entrepreneurship);
3. Six semester hours of courses having a mathematical emphasis;
4. Successful completion of a project developed through registration for at least 3 semester hours of EE 697.

Computer Engineering

Degree Offered:	PhD
Director:	Dr. Karthikeyan Lingasubramanian
Phone:	(205) 934-8440
E-mail:	klinga@uab.edu
Website:	https://www.uab.edu/engineering/ece/

Program Information

The PhD degree prepares students for professional and research careers in industry and academia. The PhD in Computer Engineering is awarded by UAB and is offered through a program shared with the University of Alabama in Huntsville (UAH), allowing both UAB and UAH to contribute to the program.

Admission Requirements

Requirements for admission to the PhD program include the following:

1. A bachelor's degree in an accredited electrical or computer engineering program or a bachelor's degree in a related program acceptable to the graduate faculty in Electrical and Computer Engineering;
2. The GRE general test is required for all applicants. Applicants must score a 156 or higher on the quantitative section of the GRE to be considered for admission;
3. In addition, a minimum score of 80 on the TOEFL or a 6.5 on the IELTS is required for international applicants whose native language is not English;
4. An overall GPA of at least 3.0 on a 4.0 point scale, or at least 3.0 for the last 60 semester hours completed; and
5. Three letters of evaluation concerning the applicant's previous academic and professional work.

Students not having a bachelor's degree in electrical or computer engineering may be required to complete prerequisite courses.

Financial Support

Fellowships and/or assistantships may be available for well-qualified students admitted into the PhD program. In order to be considered for financial aid for the coming academic year, the completed application materials must usually be received at UAB by April 1.

There are a number of minority fellowships available through the Graduate School. Contact the UAB Graduate School directly for further information.

Additional Information

Deadline for Entry Term(s):	Each semester
Deadline for All Application Materials to be in the Graduate School Office:	Fall: August 1; Spring: December 1; Summer: May 1
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)

For detailed information, contact

Dr. Karthikeyan Lingasubramanian, Graduate Program Director
UAB Department of Electrical and Computer Engineering, BEC 255D
1720 Second Avenue South, Birmingham, Alabama 35294-1170.

Telephone: 205-934-8440
E-mail: klinga@uab.edu

Web: <https://www.uab.edu/engineering/ece/>

Course Descriptions

See the graduate catalog of the University of Alabama at Huntsville (UAH) for doctoral courses at that university.

Unless otherwise noted, all courses are for 3 semester hours of credit. Course numbers preceded with an asterisk indicate courses that can be repeated for credit, with stated stipulations.

Special Topics (590/690/790) courses and Independent Study (591/691/791) courses are reviewed for degree applicability for each program in the School of Engineering. No more than 6 combined hours of Special Topics and/or Independent Study courses will be applied to the Computer Engineering PhD without appeal to and approval from the Program Director.

Program Requirements

The course of study leading to the PhD includes a minimum of 48 semester hours of coursework beyond the bachelor's degree (excluding dissertation research). A student's dissertation committee may allow appropriate coursework pursued in completing a master's degree to be counted towards the 48 hour coursework requirement. A maximum of nine semester hours credit of thesis/research work from the master's degree may be counted toward the 48 hour coursework requirement for the PhD. Special Topics (590/690/790) courses and Independent Study (591/691/791) courses are review for degree applicability for each program in the School of Engineering. No more than 6 combined hours of Special Topics and/or Independent Study courses will be applied to

the Computer Engineering PhD without appeal to and approval from the Program Director.

PhD requirements include the following:

1. A major consisting of a minimum of 18 semester hours of approved coursework in computer engineering;
2. A minor consisting of a minimum of 12 semester hours of approved coursework in mathematics, theoretical or formal methods as related to computer engineering;
3. A minor consisting of a minimum of 12 semester hours of approved coursework in electrical or computer engineering;
4. Additional coursework consisting of a minimum of 6 semester hours of approved coursework in supportive fields;
5. Successful completion of a preliminary examination;
6. Successful completion of a qualifying examination that includes a presentation of the dissertation research proposal. Successful completion of the qualifying examination leads to admission to candidacy;
7. Successful completion of a minimum of 18 semester hours in EE 799 Dissertation Research; and
8. Successful completion of a final examination on the dissertation.

1.

Materials Science and Engineering

Degree Offered:	PhD, MSMtE
Director:	Dr. Vinoy Thomas
Phone:	(205) 975-4098
E-mail:	vthomas@uab.edu
Website:	http://www.uab.edu/engineering/home/departments-research/mse

Admission Requirements

In addition to the general Graduate School admission requirements, requirements for admission to the MSMtE and PhD. graduate programs include the following criteria:

1. A 3.0 (A = 4.0) or better GPA on all undergraduate degree major courses attempted
2. Submission of GRE scores:
 - a. For applicants to the MSMtE program, the GRE general test is required for all applicants who did not receive a BS degree from a program accredited by the Engineering Accreditation Committee of ABET <http://www.abet.org>, or from other programs with reciprocal agreement under the Washington Accord <http://www.ieagreements.org/accords/washington/>.
 - b. For applicants to the PhD program, the GRE general test is required for all applicants. Applicants must score a 156 or higher on the quantitative section of the GRE to be considered for admission.
3. In addition, a minimum score of 80 on the TOEFL, 20 on each subscore, or a 6.5 on the IELTS is required for international applicants whose native language is not English.

Early Acceptance

Early Acceptance Programs are designed for academically superior high-school students. Early Acceptance Programs allow high achieving students to be admitted to the Materials Engineering program at the same time they are admitted to an undergraduate program.

Eligible students are required to maintain a 3.5 undergraduate GPA and complete the following pre-requisite courses: EGR 265 or MA 227, MSE 280, MSE 281, MSE 380, MSE 381, MSE 382.

Preparatory Content

A student seeking a graduate degree in Materials must demonstrate competence at the undergraduate level in the areas of engineering materials, physical behavior of materials, thermodynamics, and mechanical behavior of materials. Students may be exempted from individual courses or examination if they demonstrate that they possess the knowledge from that course, usually with a grade of a "B" or better. However, the burden of proof is on the student. He/she may accomplish this by passing a pre-requisite examination on the portion of the following course content depending on the student's academic background. The courses that fulfill the preparatory requirements are:

Requirements	Hours
MSE 280 Engineering Materials	3
MSE 281 Physical Materials I	4
MSE 380 Thermodynamics of Materials	3
MSE 381 Physical Materials II	3
MSE 382 Mechanical Behavior of Materials	3

Additional Information

Deadline for Entry Term(s):	Each semester and summer
Deadline for All Application Materials to be in the Graduate School Office - Fall Semester:	March 1st
Deadline for All Application Materials to be in the Graduate School Office - Spring Semester:	August 31st
Number of Evaluation Forms Required:	Three
Entrance Tests:	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)

Comments:

Master of Science in Materials Engineering Program

The following minimum requirements for a Master of Science in Materials Engineering apply to a student who has earned a baccalaureate degree from a program accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>, in materials or metallurgical engineering or in a similarly named engineering program. A student with an undergraduate degree in another field of engineering or in the physical sciences may also be accepted into the Materials Engineering program. All students will be required to demonstrate competence in fields of study that emphasize the interrelationship among structure, processing,

performance, and properties of materials. This can be accomplished by one of the methods described under "Preparatory Courses."

Special Topics (590/690/790) courses and Independent Study (591/691/791) courses are reviewed for degree applicability for each program in the School of Engineering. No more than 6 combined hours of Special Topics and/or Independent Study courses will be applied to the MSMtE without appeal to and approval from the Program Director.

Plan I (Thesis Option)

The student must successfully complete at least 35 semester hours of (primarily) materials engineering graduate work including 26 hours of courses and 9 hours of MSE 699 Thesis Research .

- Of these 26 hours, 3 to 6 semester hours will be approved courses in mathematics, physical sciences, another engineering discipline or management (a maximum of 3 hours are allowed in management).
- Up to 9 of the 26 hours may be at the MSE 500 level. If a student has completed the undergraduate equivalent at UAB, another MSE 500 level course should be completed in its place).
- A full time graduate student is required to register for 1 credit hour of MSE 601 Materials Science and Engineering Seminar for fall and spring semester, up to 2 hours of seminar can be applied for credit.
- Successful completion of a Masters Thesis Research Proposal following the NSF Proposal Preparation and Submission Guidelines and examination on topics related to the student's research. (Completion of this step is required for registration of MSE 699 Thesis Research).
- The student must successfully complete and defend a thesis. The thesis must be sent to a department approved proofreader and edits must be incorporated into the final submission.
- The student must register for and successfully complete at least 9 semester hours of MSE 699 Thesis Research in addition to the 26 semester hours of course work.

Plan II (Non-thesis Option): Research/Design Emphasis

The student must successfully complete at least 35 semester hours of (primarily) materials engineering graduate work including 32 hours of courses and 3 hours of MSE 698 Non-Thesis Research

- Of these 32 hours, 3 to 6 semester hours will be approved courses in mathematics, physical sciences, another engineering discipline or management (a maximum of 3 hours are allowed in management).
- Up to 9 of the 26 hours may be at the MSE 500 level. If a student has completed the undergraduate equivalent at UAB, another MSE 500 level course should be completed in its place).
- A full time graduate student is required to be registered for 1 credit hour of MSE 601 Materials Science and Engineering Seminar for fall and spring semester, up to 2 hours of seminar can be applied for credit.
- The student must complete 3 semester hours of MSE 698 Non-Thesis Research, involving an on-site research project (usually taken after completion of all coursework).

Plan II (Non-thesis Option): Fast Track, Fifth Year

This plan is open to undergraduate students in materials engineering within 48 hours of graduation with at least 15 hours of coursework

completed at UAB. The student must successfully complete at least 35 semester hours of (primarily) materials engineering graduate work.

- Of these 35 hours, 15 to 21 hours are required within the MSE department at the graduate level.
- Of these 35 hours, 9 to 12 hours of business related courses – students may focus these courses in several areas; business administration, management entrepreneurship, or engineering liability/law.
- Of these 35 hours, 0 to 6 hours may be completed by participation in an internship opportunity. This is an option and not a requirement. If internships are conducted for credit, each discipline will have requirements associated with the internship.
- A full time graduate student is required to be registered for 1 credit hour of MSE 601 Materials Science and Engineering Seminar for fall and spring semester, up to 2 hours of seminar can be applied for credit.
- Students are expected to complete at least two graduate courses during their senior year so that the masters can be completed in a one-year time period.

Plan II (Non-thesis Option): Technology/Engineering Management Emphasis

The student must successfully complete at least 35 semester hours of (primarily) materials engineering graduate work.

- 12 semester hours of course work in a specific area of materials science and engineering (at least 6 of these 12 hours must be at the 600 level).
- 6 semester hours of approved management course work.
- 9 semester hours of engineering-oriented management coursework.
- 3 hours of MBA 631 Management and Organizations.
- The student must also complete 3 semester hours of involving an on-site design or research project (usually undertaken after completion of all course work).
- A full time graduate student is required to be registered for 1 credit hour of MSE 601 Materials Science and Engineering Seminar for fall and spring semester, up to 2 hours of seminar can be applied for credit..

PhD Program

The PhD program in Materials Engineering is offered jointly with the Department of Metallurgical and Materials Engineering at the University of Alabama (Tuscaloosa).

The following minimum requirements for a PhD in materials engineering apply to a student who has earned a baccalaureate degree from a program accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>, in materials or metallurgical engineering or in a similarly named engineering program. A student with an undergraduate degree in another field of engineering or in the physical sciences may also be accepted into the Materials Engineering program. All students will be required to demonstrate competence in fields of study that emphasize the interrelationship among structure, processing, performance, and properties of materials. This can be accomplished by one of the methods described under "Preparatory Courses." A graduate student committee must be formed for all PhD candidates and one faculty member from UA Materials Engineering Program must be included.

Special Topics (590/690/790) courses and Independent Study (591/691/791) courses are reviewed for degree applicability for each program in the School of Engineering. No more than 6 combined hours of Special Topics and/or Independent Study courses will be applied to the PhD without appeal to and approval from the Program Director.

PhD Track (For students entering with a BS):

The requirements for a PhD student must complete 81 semester hours of (primarily) materials engineering graduate work as a requirement when entering with a BS degree:

- A minimum of 57 hours of approved graduate course work in metallurgical engineering, materials engineering, or fields supportive of these
- 15 hours may be at the MSE 500 level and is required for all students unless they completed the undergraduate equivalent at UAB (in which case another MSE 500 level course should be completed in its place).
- At least 6 semester hours but no more than 12 must be in supportive fields (a maximum of 6 hours can be in management). Additional course work may be required at the discretion of the mentor and program director.
- A full time graduate student is required to be registered for 1 credit hour of MSE 701 Materials Science and Engineering Seminar for fall and spring semester, up to 6 hours of seminar can be applied for credit.
- A student may apply 6 hours of MSE 798 Non dissertation Research can be applied for credit toward the 57 hour course requirement.
- Successful completion of a Dissertation Research Proposal following the NSF Proposal Preparation and Submission Guidelines and examination on topics related to the student's research. (Completion of this step is required for Admission to Candidacy).
- A minimum of 24 semester hours in MSE 799 Dissertation Research.
- Successful defense of a research dissertation in metallurgical/ materials engineering.
- The dissertation must be sent to a department approved proofreader and edits must be incorporated into the final submission.
- For students entering the PhD program with a BS degree, it is expected that they will be able to earn a plan II masters degree after completing the required coursework for the degree.

PhD Track (For students entering with a MS):

This track is for students entering the program with a master's degree in Materials Engineering or a closely related field.

The PhD student must complete 51 semester hours of (primarily) materials engineering graduate work as a requirement when entering with a MS degree

- A minimum of 27 hours of approved graduate course work in metallurgical engineering, materials engineering, or fields supportive of these
- 6 hours may be at the MSE 500 level is required for all students unless they completed the undergraduate equivalent at UAB (in which case another MSE 500 level course should be completed in its place).
- At least 3 semester hours but no more than 6 must be in supportive fields (a maximum of 3 hours can be in management). Additional

course work may be required at the discretion of the mentor and program director.

- A full time graduate student is required to be registered for 1 credit hour of MSE 701 Materials Science and Engineering Seminar for fall and spring semester, up to 4 hours of seminar can be applied for credit.
- A student may apply 6 hours of MSE 798 Non dissertation Research can be applied for credit toward the 27 hour course requirement.
- Successful completion of a Dissertation Research Proposal following the NSF Proposal Preparation and Submission Guidelines and examination on topics related to the student's research. (Completion of this step is required for Admission to Candidacy).
- A minimum of 24 semester hours in MSE 799 Dissertation Research.
- Successful defense of a research dissertation in metallurgical/ materials engineering.
- The dissertation must be sent to a department approved proofreader and edits must be incorporated into the final submission.

Mechanical Engineering

Degree Offered:	MSME
Director:	David Littlefield, PhD
Phone:	(205) 934-8460
E-mail:	littlefield@uab.edu
Website:	http://www.uab.edu/engineering/home/departments-research/me/graduate

Additional Information

Deadline for Entry Term(s):	Fall: August 1; Spring: December 1; Summer: May 1
Deadline for All Application Materials to be in the Graduate School Office:	Six weeks before term begins
Number of Evaluation Forms Required:	Three
Entrance Tests:	GRE General Test (TOEFL is also required for international applicants whose native language is not English.)

Mechanical engineering is a broad-based discipline, and graduate students will have opportunities to explore a number of research areas where they will work alongside nationally and internationally known faculty mentors. The ME department offers a Master of Science in Mechanical Engineering degree, including both Thesis and non-Thesis options.

Master of Science in Mechanical Engineering Admissions Requirements

- A bachelor's degree from an accredited (or equivalent) program in engineering or the physical sciences is required for admission to graduate study in mechanical engineering with not less than B-level scholarship overall or over the last 60 semester hours of earned credit.
- The GRE general test is required for all applicants who did not receive a BS degree from a program accredited by the Engineering

Accreditation Committee of ABET <http://www.abet.org>, or from other programs with reciprocal agreement under the Washington Accord <http://www.ieagreements.org/accords/washington/>.

- In addition, a minimum score of 80 on the TOEFL or a 6.5 on the IELTS is required for international applicants whose native language is not English.

A student with an undergraduate degree in a field of engineering other than mechanical or in the physical sciences may also be accepted into the mechanical engineering program. However, such a student will normally have to take additional, preparatory coursework as part of an expanded plan of study (see "Preparatory Courses" later in this section).

Special Topics (590/690/790) courses and Independent Study (591/691/791) courses are reviewed for degree applicability for each program in the School of Engineering. No more than 6 combined hours of Special Topics and/or Independent Study courses will be applied to the MSME without appeal to and approval from the Program Director.

Plan I (Thesis Option)

1. The student must successfully complete at least 24 semester hours of coursework, including (in addition to the general Graduate School requirements):
 - 6 semester hours in committee-approved* mathematics courses
 - 18 semester hours in committee-approved* mechanical engineering courses or approved related courses, including at least 2 semester hours of ME 694 Seminars in Mechanical Engineering and 3 semester hours in a course outside the student's research or specialization area.
2. The student must register for at least 6 hours of ME 699 Thesis Research in addition to the 24 semester hours of coursework.
3. The student must successfully complete and defend a thesis.

* Before the first graduate semester at UAB, the Graduate Coordinator will advise new students regarding courses for the first semester. Before the end of the first semester, students will be assigned a Thesis Director based on research interest, and students will assemble their graduate committees. The committee will consist of the Thesis Director and two graduate faculty members with experience or expertise related to the student's thesis topic. The Thesis Director in coordination with the graduate committee will set the curriculum for the student.

Plan II (Non-thesis Option): Research/Design Emphasis

Generally, Plan II will be approved for students working full-time and attending UAB on a part-time basis or when the student demonstrates that Plan II offers superior educational benefits. After 15 credit hours of coursework are completed, the student should select a project director and begin work on the final project. The election of Plan II must be approved by the student's graduate advisor.

1. The student must successfully complete at least 33 semester hours of coursework, including:
 - 6 semester hours in approved mathematics courses
 - A minimum of 27 semester hours in approved mechanical engineering courses or approved related courses. Out of these 27 semester hours, students must enroll in:
 - at least 3 semester hours in a course outside the student's research or specialization area

- at least 2 semester hours of ME 694 Seminars in Mechanical Engineering
- at least 3 hours of ME 698 Non-Thesis Research involving design or research

2. The student must make a presentation on the research project and submit a final report which must be approved by the project director.

Plan II (Non-thesis Option): Technology/Engineering Management Emphasis

1. The student must successfully complete at least 33 semester hours of coursework, including
 - At least 3 semester hours in approved mathematics courses
 - At least 6 semester hours in approved mechanical engineering courses
 - At least 2 semester hours of ME 694 Seminars in Mechanical Engineering
 - At least 6 semester hours in one of the following two management applications areas: MBA 662 Quantitative Analysis for Business Managers and MBA 631 Management and Organizations and MBA 642 Economics for Managers or another approved advanced management course
 - 3 semester hours in MBA 631 Management and Organizations Managerial Processes and Behavior
 - At least 3 semester hours in ME 698 Non-Thesis Research, involving design or research
 - At least 9 semester hours of engineering-oriented management coursework
2. The student must make a presentation on the research project and submit a final report which must be approved by the project director.

Early Acceptance

Early Acceptance Programs are designed for academically superior high-school students. Early Acceptance Programs allow high achieving students to be admitted to the Master of Science in Mechanical Engineering program at the same time they are admitted to an undergraduate program.

Eligible students are required to maintain a 3.5 undergraduate GPA and complete the following pre-requisite courses: ME 241, ME 321, ME 364, and ME 371.

Preparatory Courses

Students admitted to the graduate program in mechanical engineering without an undergraduate degree in mechanical engineering or who have not had the courses listed below must take the following courses or present equivalent prior coursework. Additional coursework may be required depending on the courses the student has taken during his/her undergraduate degree and the area of specialization for Masters.

Requirements		Hours
ME 241	Thermodynamics I	3
ME 321	Introduction to Fluid Mechanics	3
ME 322	Introduction to Heat Transfer	3
ME 360	Introduction to Mechatronic Systems Engineering	3
ME 370	Kinematics and Dynamics of Machinery	3
ME 371	Machine Design	3
CE 220	Mechanics of Solids	3

School of Health Professions

Dean:

Senior Associate Dean for Academic & Faculty Affairs:
Donna J. Slovensky, PhD

Senior Associate Dean for Strategic Partnerships & Enterprise Development: **M. Patrick McNeese, PhD**

Senior Executive Associate Dean: **Janelle M. Chiasera, PhD**

Assistant Dean for Administrative & Fiscal Affairs: **Melanie L. Talbot, MBA, CPA**

Assistant Dean for Student Recruitment, Engagement & Success: **Tracee M. Synco, PhD**

Assistant Dean for Undergraduate Research & Honors: **Fred (Ted) Bertrand, III, PhD**

The School of Health Professions delivers educational programs to prepare health personnel who will improve the services in health care and the systems through which these services are provided. In keeping with the mission of the University of Alabama at Birmingham, the resources and programs of the school are dedicated to excellence in teaching, research, and scholarly activity and to service to the institution, the community, and the professions represented by programs of the school.

Degree options in the School of Health Professions include bachelor's, master's, and doctoral programs sponsored by five academic departments – Clinical and Diagnostic Sciences, Health Services Administration, Nutrition Sciences, Occupational Therapy, and Physical Therapy. In addition, certificate options are available in some specialized areas. The School sponsors more than 25 degree and certificate options, all of which require students to apply for and be accepted to the specific degree or certificate program.

The School of Health Professions is committed to the practice of ethical standards of conduct. School policies, procedures, and regulations reflect this commitment and are in compliance with those of the University of Alabama at Birmingham. To ensure continued practice of ethical standards, the administration and the standing committees of the school (Faculty Affairs, Academic Affairs, Student Affairs, and Diversity, Equity, and Inclusion) regularly review school policies and procedures. All research endeavors are in compliance with policies of the UAB Institutional Review Board.

SHP Mission, Vision, Values

The mission of the School of Health Professions is *“To improve health care through teaching, research, and translation of discoveries into practice in partnership with the UAB community.”* The School vision is, *“To be recognized as the leading school of health professions – shaping the future of healthcare.”* Fulfilling the mission requires faculty and staff to embrace the following organizational values:

- Accountability
- Collaboration/Cooperation
- Diversity
- Excellence
- Innovation/Creativity
- Integrity/Ethical behavior
- Open communication
- Professional behavior

SHP Admissions

Entrance requirements for the individual educational programs of SHP vary. Persons desiring admission to a particular program should consult the appropriate section of the University Catalogs for specific entrance requirements, application process, and program information. Students who attend an institution other than UAB are encouraged to seek academic advisement from the SHP Office of Student Recruitment, Engagement, and Success as early as possible to plan for completion of program prerequisites.

The School of Health Professions welcomes applications from all individuals who are prepared for the programs offered. All applicants must offer acceptable evidence of ability and intent to meet the academic standards specified by the particular program into which admission is desired. In addition, certain immunizations are required prior to enrollment. For specific requirements, see the UAB Student Health and Insurance Programs and UAB Immunization Policy. If accepted into a SHP program, students must complete a background check and drug screen upon admission and again prior to clinical placement. Applicants are considered regardless of race, color, religion, sex, sexual orientation, national origin, disability unrelated to program performance, disabled veteran status, or Vietnam era veteran status (see UAB Equal Opportunity Policy). Persons who have not yet decided upon a specific health career may obtain information from the:

SHP Office of Student Recruitment, Engagement, and Success
 School of Health Professions Building
 1716 9th Avenue South / Room 230
 Telephone: (205) 934-4195

Interdisciplinary Programs

The School of Health Professions offers two graduate level interdisciplinary programs. The Graduate Certificate in Health-Focused Patient/Client Management for Physical and Occupational Therapists (p. 139) is designed to prepare PTs and OTs for expanding roles in the areas of prevention, health promotion, and wellness. Health Focused Patient/Client Management is the integration of health promotion and education methods in OT and PT practice to create a holistic approach to enhance patient/client wellness and quality of life.

The Ph.D. in Rehabilitation Science (p. 139) is an interdisciplinary program sponsored by the Department of Occupational Therapy and the Department of Physical Therapy within the School of Health Professions. This program is designed to prepare graduates to become academicians, scholars, scientists, and researchers in education, health care, industry, and government institutions as well as consultants to individuals, communities, and governments. The aim of this program is to prepare candidates to become leaders in teaching and research within the field of Rehabilitation Science. However, this is not a clinical training program.

Applicants planning to become occupational therapists or physical therapists should look at the graduate catalog entries for these two professions.

Health Focused Patient/Client Management for Physical and Occupational Therapists

Contact Information

Program Director:	Jennifer B Christy, PT, PhD
E-Mail:	jbraswel@uab.edu
Phone:	205 - 934 - 3566

Mailing address:

The University of Alabama at Birmingham
Department of Physical Therapy
1716 9th Avenue South
SHPB 346
Birmingham, AL 35294-1212

Program Information

The UAB Graduate Certificate in Health Focused Patient/Client Management for Physical and Occupational Therapists is designed to prepare PTs and OTs for expanding roles in the areas of prevention, health promotion, and wellness. Health Focused Patient/Client Management is the integration of health promotion and education methods in OT and PT practice to create a holistic approach to enhance patient/client wellness and quality of life. The ultimate goal of the certificate is to enable graduates to develop and implement clinical and community programs to address lifestyle and behavior factors that underlie many chronic diseases. Emphasis will be placed on program development for persons with disabilities. The concepts addressed in the certificate program are applicable across the patient/client lifespan and in a variety of practice settings.

Requirements		Hours
PTC 780	Hlth Focused Care in PT & OT	3
PTC 781	Health Focused Patient/Client Communication and Advocacy	3
PTC 782	Health Focused Patient/Client Management I	3
PTC 783	Health Focused Patient/Client Management II	3
PTC 784	Health Focused Care - Synthesis Project	3

Credentials Conferred

The Graduate Certificate in Health Focused Patient/Client Management for Physical and Occupational Therapists is awarded by the University of Alabama at Birmingham.

Length of Study

The certificate requires 5 semesters to complete; students take 1 course per semester.

Program Entrance Date

Students may begin the program in the spring, summer or fall term.

Admission Requirements

Admissions requirements include completion of a degree in physical or occupational therapy and current licensure as a physical or occupational therapist in the United States or foreign equivalent. Students from

countries where English is not the official and primary language must also take and receive an acceptable score on the TOEFL or IELTS.

Degree Requirements

15 credit hours (5 required courses)

Rehabilitation Science

Degree Offered:	Ph.D.
Director:	William Reed, DC, PhD, Interim
Phone:	(205) 934-3566
E-mail:	wreed@uab.edu
Website:	http://www.uab.edu/rspnd

Program Information

Ph.D. in Rehabilitation Science

The Ph.D. in Rehabilitation Science program is an interdisciplinary program offered by The Department of Occupational Therapy (<http://www.uab.edu/ot>) and The Department of Physical Therapy (<http://www.uab.edu/pt>) at the School of Health Professions. This exciting program is designed to prepare graduates to become*:

- Academicians, scholars, scientists and researchers in education, health care, industry, and government institutions.
- Consultants to individuals, communities, and governments.

The goal of the Program is to prepare graduates to have the following skills:

- Design and implement research studies that will contribute to the knowledge base of rehabilitation science.
- Design and deliver educational courses related to rehabilitation.
- Translate innovative rehabilitation research findings into practice so as to advance the field of rehabilitation science.

* The aim of this program is to prepare candidates to become leaders in teaching and research within the field of Rehabilitation Science. However, this is not a clinical training program. Applicants planning to become occupational therapists or physical therapists should visit the following websites to pursue training in these two professions: www.uab.edu/ot or www.uab.edu/pt.

Application Procedure

Received by UAB Graduate School

LHL G03
1720 2nd Avenue South
Birmingham, Alabama 35294-0013

- Complete and submit online Graduate School application (uab.edu/graduate)
- Submit application fee payment - Domestic: \$50.00
- Request one (1) official transcript to be mailed by the issuing institution to the UAB Graduate School
- Three (3) letters of recommendation are required. Please ask the individuals from whom you requested references to submit them online via the recommendation email request they receive. Electronic submission is the preferred method. However, if your referees prefer

to mail a recommendation letter, it should be mailed to the address of the department or program to which you are applying.

Minimum Requirements for Admission

- Note that each application will be reviewed by the Admission Committee to identify individuals with strong commitment and aptitude to perform research related to Rehabilitation Science, along with strong academic preparation and professional-leadership potential.
- Undergraduate or graduate degree in occupational or physical therapy, engineering, exercise science, neuroscience, medicine, nursing, or other health related professions.
- Recommended minimum Graduate Record Exam (GRE) score of 50th percentile for all categories.
- Recommended minimum GPA 3.0/4.0 in all previous coursework
- Three strong evaluation references, with at least one from a research lab mentor, and one from an academic source.
- With the written essay, provide evidence of appropriate goals of study, professional growth and commitment to research, with special emphasis on interest in research that is being conducted at UAB.
- Interview with faculty that shows passion and commitment to research and professional growth in Rehabilitation Science.

For further information contact:

David A. Brown, PT, Ph.D.
 Department of Physical Therapy
 205-934-3566
 dbrownpt@uab.edu

Typical Program

(Course requirements are listed in semester credit hours)

First Year			
First Term	Hours	Second Term	Hours
RHB 780	3	RHB 785	3
RHB 782	3	RHB 784	3
RHB 789	2	RHB 789	2
RHB 790	1	RHB 790	1
EPR 608	3	EPR 609	3
		GRD 717	1
		Qualifer Exam	3
12		12	
9			
Second Year			
First Term	Hours	Second Term	Hours
RHB 798	3	RHB 798	3
RHB 740	1	Electives	6
Electives	5		RHB 746
			Electives
			Dissertation Proposal
9		9	
9			
Third Year			
First Term	Hours	Second Term	Hours
RHB 799	6-9	RHB 799	6-9
6-9		6-9	
6-9			
Fourth Year			
First Term	Hours	Second Term	Hours
RHB 799	6-9	RHB 799	6-9
		Dissertation Defense	
6-9		6-9	

Total credit hours: 90-105

*The degree plan will vary by the student's academic discipline and preparation upon entry to the PhD in Rehabilitation Science Program.

A Sample of possible Elective Courses Currently Offered at UAB includes:

Requirements		Hours
RHB 791	Rehabilitation Sciences Clinical Project	1
RHB 590	Quantitative Biomechanics of Injury and Rehabilitation	3
HCO 787	Empirical Methods for Health Research	3
HCO 721	Clinical Decision Making and Cost Effectiveness Analysis	3
EPI 710	Analysis of Case Control Studies	3
HCO 692	Adv Top Hlth Disparities Rsch	3
HB 604	High Technology Approaches to Health Communications and Behavior Change Interventions	3
NCH 760	Child Health Theories and Concepts	3
NRM 773	Qualitative Research Methods	4
NUR 752	Responsible Conduct of Research: A Cross-Cultural Perspective	3
NCC 613	Acute & Continuing Care Pediatric Pharmacology	1
CS 610	Database Systems	3
CS 681	Simulation Models	3
CS 640	Foundations in Bioinformatics	3
NTR 650	Body Composition and Energy Metabolism	3
OT 677	Foundations in Low Vision Rehabilitation I	3
EPR 596	Introduction to Qualitative Methods in Educational Research	3

Clinical and Diagnostic Sciences

The Department of Clinical and Diagnostic Sciences is comprised of academic programs essential to today's healthcare system. Our programs provide training for future health care professionals in a variety of disciplines ranging from the diagnosis of illness and disease, the administration of advanced treatment therapies, to the performance of vital roles in surgical suites and in outpatient and inpatient healthcare settings. Graduates of our programs are well poised for a wide variety of job opportunities due to the outstanding education received at UAB. Current graduate program offerings include:

- **Biomedical and Health Sciences, M.S.**
- **Biotechnology, M.S. and Biotechnology Regulatory Affairs Certificate**
- **Clinical Laboratory Science, M.S.**
- **Clinical Pathology Assistant, M.S.**
- **Genetic Counseling, M.S.**
- **Health Physics, M.S.**
- **Nuclear Medicine Technology, M.S.**
- **Physician Assistant Studies, M.S.P.A.S.**

Students enrolled in CDS degree majors are required to complete a sequence of professional development courses that earn one academic credit and require submission of a graded project.

Biomedical and Health Sciences

Prospective students visit <http://www.uab.edu/shp/home/degrees-certificates/grad-professional-degrees> to obtain specific admissions requirements on how to apply to the Graduate School.

Degrees Offered:	M.S.
Co-Director:	Mark Bevensee, PhD
Phone:	(205) 934-7596
E-mail:	bevensee@uab.edu

Program Information

Program Mission

The mission of the Master of Science degree program in Biomedical and Health Sciences is to provide coursework and experiences that can help you make the transition from undergraduate to medical, dental, optometry, physician assistant, physical therapy, occupational therapy, and other health science professional programs.

Admission Requirements

In addition to the general Graduate School admission requirements, applicants to the M.S. program must:

- Have a BS degree in biology, chemistry, biochemistry, kinesiology/exercise science, biomedical sciences, psychology, or a related degree from an accredited college or university,
- Have a minimum undergraduate GPA of 3.0 (A= 4.0), computed from all undergraduate credits,
- Have a minimum science GPA of 3.0 (A=4.0), computed from all undergraduate coursework in biology, chemistry, mathematics, and physical sciences,
- Submit scores of Medical College Admissions Test (MCAT), Optometry Admissions Test (OAT), Dental Admission Test (DAT), or Graduate Record Exam (GRE),
- Have completed college level coursework that includes 8 hours of general biology, 8 hours of general or organic chemistry, and 4 additional hours of biological sciences,
- Submit a personal statement of interest to the program,
- Submit three letters of recommendation,
- If foreign-educated, have a score of at least 550 for paper version (or 80 for Internet version; or 213 for computer version) on the TOEFL, submit a transcript evaluation from World Education Services (WES) at www.wes.org (<http://www.wes.org>)

If accepted, students must complete the UAB medical history questionnaire and physical, provide proof of required immunizations, and receive satisfactory screening by the UAB Medical Center Student Health Service before enrollment. A background check and drug screen will be required at program admission.

Persons with a Bachelor of Science degree may be eligible to register for courses as non-degree seeking graduate students before acceptance into the M.S. program at the discretion of the program co-directors. If a non-degree seeking graduate student meets the M.S. program admission requirements, up to 12 semester hours of approved non-degree graduate coursework may be accepted for the M.S. degree. Admission of a student to any course as a non-degree seeking student does not constitute or guarantee admission to the M.S. degree program. Non-degree seeking students will be eligible to meet with M.S. BHS advisors to discuss course

selections and planning for future enrollment in either the M.S. BHS program or the graduate health professional school of their choice.

Essential Functions

Essential functions are physical abilities, mental abilities, skills, attitudes, and behaviors the students must evidence or perform at each stage of their education. The absence of an essential function would fundamentally alter a student's ability to meet the program goals. The essential functions for the BHS program include commitment to learning, interpersonal skills, communication, time management, problem-solving, professionalism, responsibility, critical thinking, and stress management.

If you have a disability, but have not contacted Disability Support Services (DSS), please call (205) 934-4205 (voice) or (205) 934-4248 (TDD), or visit the DSS offices at the Hill Student Center, Suite 409, 1400 University Boulevard. Additional information is available at <http://www.uab.edu/students/disability/>

Accreditation and Certification

None required.

Additional Information

Entry Term:	Summer Semester
Deadline for All Application Materials to be in the Graduate School Office:	March 15
Entrance Tests:	MCAT, OAT, DAT, or GRE and for international applications from non-English speaking countries, scores for the Test of English as a Foreign Language (TOEFL) and the Test of Written English (TWE)
Comments:	Transcript evaluation by WES is required for applicants with foreign university degrees

Contact Information

For detailed information, contact the Department of Clinical and Diagnostic Sciences, Biomedical and Health Sciences Program, UAB School of Health Professions, SHPB 446, 1705 University Blvd., Birmingham, Alabama 35294-1212

Telephone: 205-934-7596

E-mail: AskCDS@uab.edu

Master of Science in Biomedical and Health Sciences

Requirements	Hours
BHS 502 Molecules and Cells	4
BHS 503 Microbiology and Immunology	4
BHS 501 Seminar I	1
BHS 550 Integrated Systems I: Neuroendocrine	3
BHS 555 Integrated Systems II: Cardiopulmonary	3
BHS 560 Integrated Systems III: Genitourinary	2
BHS 601 Seminar II	1
BHS 600 Integrated Systems IV: Gastrointestinal	2
BHS 605 Integrated Systems V: Musculoskeletal and Skin	3

BHS 610	Clinical Application and Simulation	2
BHS 698	Non-Thesis Research	4
BHS 602	Seminar III	1
Electives (choose 3 hours from below)		3
CB 724	Special Topics in Cell Biology	
CDS 550	Introduction to Medical History Taking and Physical Examination	
CDS 605	Survival Spanish for Health Professionals	
KIN 637	Physiology of Exercise I	
Any Graduate CDS-prefix elective course (500-600 level)		
Total Hours		33

Biotechnology

Degree Offered:	M.S.
Program Director:	Tino Unlap, PhD
Phone:	(205) 934-7384
E-mail:	unlap@uab.edu
Website:	http://www.uab.edu/shp/cds/biotech

Program Information

Program Mission

The faculty members of the Biotechnology Program are devoted to providing excellent service to the community and its graduates. The faculty, in its concern for the health and safety of the general public, is committed to ensuring that each student develops knowledge, skills, and values essential to the appropriate role providing the basis for continuing intellectual and professional growth.

Out of a great concern for applied technology and the role that it plays in the diagnosis, management and treatment of human disease, and in developing products to solve problems for present and future generations, the Program is designed to provide instruction through didactic and practical training in order to ensure that its graduates possess the critical knowledge and skill sets that are required for intellectual and professional growth in the future.

Biotechnology Careers

The goal of the Master's degree program is to provide a more direct route to a career in biotechnology by focusing on mastering current techniques used in biotechnology coupled with the business fundamentals necessary for successful product/technology development in the industry. The multi-disciplinary aspects of this program will broaden and expand the knowledge base of students, thus making graduates particularly useful to potential industry employers. According to the U.S. Department of Labor Occupational Outlook Handbook, 2010, the demand in the biotechnology field continues to drive job growth, with much higher expected increases in career opportunities to be realized as compared to all other industries for the next several years (Batelle, 2012).

The Biotechnology Program is a Master of Science degree that requires 3 semesters for completion as full-time students. The Master of Science requires 37 credit hours and is designed for individuals who hold a Bachelor of Science or Bachelor of Arts degree in a related discipline including biology, chemistry, biochemistry, physics, engineering, mathematics, psychology and sociology.

M.S. Admission Requirements

In addition to the general Graduate School admission requirements, applicants to the M.S. program must:

- Have a biology, chemistry, or a related major from an accredited college or university,
- Have a minimum undergraduate GPA of 3.0 (A = 4.0), computed from all undergraduate credits or from the last 60 semester hours of undergraduate course credit,
- Provide a written statement of career goals,
- Complete an interview with the program admissions committee, and
- If foreign-educated, have a score of at least 550 for paper version (or 80 for Internet version; or 213 for computer version) on the TOEFL, submit a transcript evaluation from World Education Services (WES) at www.wes.org. (<http://www.wes.org>)

If accepted, students must complete the UAB medical history questionnaire and physical, provide proof of required immunizations, and receive satisfactory screening by the UAB Medical Center Student Health Service before enrollment. Accepted students must complete a background check and drug screen at admission and prior to placement in clinical internships by school policy.

Early Acceptance

Early Acceptance Programs are designed for academically superior high-school students. Early Acceptance Programs allow high achieving students to be admitted to the Biotechnology program at the same time they are admitted to an undergraduate program.

Eligible students are required to maintain a 3.5 undergraduate GPA and complete the following pre-requisite courses: MA 105, CH 115, CH 116, CH 117, CH 118, BY 123, and BY 210.

Essential Requirements

Fundamental tasks, behaviors, and abilities necessary to successfully complete the requirements of the Program are available upon request from the Biotechnology program office. If you have a disability, but have not contacted Disability Support Services (DSS), please call 934-4205 or visit <http://www.uab.edu/students/disability/>.

Additional Information

Entry Term	Fall semester
Deadline for All Application Materials to be in the Graduate School Office:	February 28 (Early Acceptance), August 1 (Final Acceptance)
Number of Evaluation Forms Required:	None
Entrance Tests:	For international applicants from non- English speaking countries, scores for the Test of English as a Foreign Language (TOEFL) and the Test of Written English(TWE)
Comments:	Financial aid (fellowship, stipend or assistantship) is not available from the program; scholarship availability is limited; transcript evaluation by WES is required for applicants with foreign university degrees

Contact Information

For detailed information, contact the Department of Clinical and Diagnostic Sciences, Biotechnology Program, UAB School of Health Professions, SHPB 430, 1716 9th Avenue South, Birmingham, Alabama 35294-1212.

Telephone 205-934-3209.

E-mail AskCDS@uab.edu

Master of Science in Biotechnology

Requirements	Hours
BT 500 Principles of Biotechnology - Nucleic Acid Technology	3
BT 550 Principles of Biotechnology - Amino Acid Technology	3
BT 600 Principles of Biotechnology - Systems Biology & Pharmacology	3
BT 650 Applications in Biotechnology I	1
BT 651 Applications in Biotechnology II	1
BT 652 Applications in Biotechnology III	1
BT 670 Bench to Commercialization I	3
BT 671 Bench to Commercialization II	3
BT 672 Bench to Commercialization III	3
BT 695 Biotechnology Internship	2
BT 698 Non-Thesis Research	4
CDS 501 Professional Skills I	0
CDS 502 Professional Skills II	0
CDS 503 Professional Skills III	1
CDS 610 Research Design and Statistics	3
CDS 625 Analysis of Scientific Publications	3
Innovative Technologies in Biotechnology (take three times)	3
BT 676 Innovative Technologies in Biotechnology	
Total Hours	37

Biotechnology and Regulatory Affairs Certificate

Degree Offered:	Biotechnology Regulatory Affairs Graduate Certificate
Program Director:	M. Tino Unlap, PhD
Phone:	(205) 934-7382
E-Mail:	unlap@uab.edu
Website:	https://www.uab.edu/shp/cds/biotechnology-regulatory-affairs

Program Information

Program Mission

As the biotechnology industry grows and life science companies mature, there is an increasing demand for a workforce trained in regulatory affairs to ensure that therapeutics, biologics, diagnostics and medical device products progress successfully through the development, manufacturing and marketing processes. Currently there are thousands of ongoing clinical trials of new drugs, with many of them soon to be approved and ready for full-scale production, resulting in an all-time high demand for individuals with regulatory training.

The Biotechnology Regulatory Affairs certificate program is designed to provide students with targeted training and education in:

- The philosophies and roles of the domestic and international regulatory agencies that oversee drug, biologic, device, and diagnostics development,
- The laws that govern the development, manufacturing and commercial distribution of drugs, biologics and medical devices,
- The analysis of how emerging developments and trends are reshaping drug development and medical device regulation,
- The biological processes and laboratory techniques utilized for the discovery, development and evaluation of therapeutic drugs,
- Major concepts under which clinical trials are designed and run,
- The roles of the U.S. Food and Drug Administration (FDA), Institutional Review Boards, the Code of Federal Regulations and ethical principles,
- The complexities of clinical trial initiation and the issues of site and data management.

Essential Requirements

Fundamental tasks, behaviors, and abilities necessary to successfully complete the requirements of the Program are available upon request from the Biotechnology program office. If you have a disability, but have not contacted Disability Support Services (DSS), please call 934-4205 or visit <http://www.uab.edu/students/disability/>.

Additional Information

Entry Term:	Fall Semester
Deadline for All Application Materials to be in the Graduate School Office:	February 28 (Early Acceptance); August 1 (Final Acceptance)
Number of Evaluation Forms Required:	None
Entrance Tests:	For international applicants from non-English speaking countries, scores for the Test of English as a Foreign Language (TOEFL) and the Test of Written English (TWE)
Comments:	Financial aid (fellowship, stipend, or assistantship) is not available from the program; scholarship availability is limited; transcript evaluation by WES is required for applicants with foreign university degrees

Contact Information

For detailed information, contact the Department of Clinical and Diagnostic Sciences, Biotechnology Program, UAB School of Health Professions, SHPB 430, 1716 9th Avenue South, Birmingham, Alabama 35294-1212.

Telephone 205-934-3209.

E-mail AskCDS@uab.edu

Certificate in Biotechnology/Regulatory Affairs

Requirements	Hours
BTR 605 Biotechnology Regulatory & Quality Systems	3
BTR 615 Applications of Biological Processes in Drug Development	3
BTR 620 Regulation of Food and Drugs	3

BTR 640	Clinical Development of Drugs, Biologics, Diagnostics, and Medical Devices	3
BTR 690	Clinical Trial Implementation	3
Total Hours		15

Clinical Laboratory Sciences

Degrees Offered:	M.S.
Director:	Floyd Josephat, EdD
Phone:	(205) 934-1348
E-mail:	josephat@uab.edu
Website:	http://www.uab.edu/shp/cds/clinical-laboratory-sciences

Program Information

Program Mission

The Faculty of the Clinical Laboratory Sciences program is committed to service to the community and to providing high quality education to prepare students with a solid educational background and a set of skills translatable to a variety of laboratory settings including hospital laboratories, industry, research laboratories, and many more. The Faculty, in its concern for the health and safety of the general public, is committed to ensuring that each student develops knowledge, skills and values essential to the appropriate role providing the basis for continuing intellectual and professional growth.

M.S. Admission Requirements

In addition to the general Graduate School admission requirements, applicants to the M.S. program must:

- Have a biology, chemistry, or a related major from an accredited college or university,
- Have a minimum undergraduate GPA of 3.0 (A = 4.0), computed from all undergraduate credits or from the last 60 semester hours of undergraduate course credit,
- Provide a written statement of career goals,
- If foreign-educated, have a score of at least 550 for paper version (or 80 for Internet version; or 213 for computer version) on the TOEFL, submit a transcript evaluation from World Education Services (WES) at www.wes.org (<http://www.wes.org>)

If accepted, students must complete the UAB medical history questionnaire and physical, provide proof of required immunizations, and receive satisfactory screening by the UAB Medical Center Student Health Service before enrollment. A background check and drug screen will be required at program admission and prior to clinical placement. Persons with a Bachelor of Science degree may be eligible to register for courses as non-degree seeking graduate students before acceptance into the M.S. program. If a non-degree seeking graduate student meets the M.S. program admission requirements, up to 12 semester hours of approved non-degree graduate coursework may be accepted for the M.S. degree. Admission of a student to any course as a non-degree student does not constitute admission to the M.S. degree program.

Essential Functions

Essential functions are fundamental tasks, behaviors, and abilities necessary to successfully complete the requirements of the Program.

A full list of the essential functions of the program is available from the CLS website under the link *Admission* (<http://www.uab.edu/shp/cds/clinical-laboratory-sciences>). Essential functions are physical abilities, mental abilities, skills, attitudes, and behaviors the students must evidence or perform at each stage of their education. The absence of an essential function would fundamentally alter a student's ability to meet the program goals. The essential requirements include categories of observation, movement, communication, intellect, and behavior.

If you have a disability, but have not contacted Disability Support Services (DSS), please call 934-4205 or visit the DSS offices at 1701 9th Avenue South. Additional information is available at <http://www.uab.edu/students/disability/>.

Accreditation and Certification

The program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences. Program graduates are eligible to apply for the certification examination offered by the American Society of Clinical Pathology Board of Certification (ASCP-BOC).

NAACLS

5600 N River Road, Suite 720
Rosemont, IL 60018-5119
Phone: 847.939.3597
Fax: 773.714.8886
URL: <http://www.naacls.org/>

ASCP Board of Certification

33 West Monroe Street, Suite 1600
Chicago, IL 60603
Phone: 312.541.4999
Fax: 312.541.4998
URL: <http://www.ascp.org/>

Additional Information:

Entry Term:	Fall semester
Deadline for All Application Materials to be in the Graduate School Office:	Early Admission: February 1; Regular Admission: May 1
Entrance Tests:	GRE and for international applicants from non- English speaking countries, scores for the Test of English as a Foreign Language (TOEFL) and the Test of Written English(TWE)
Comments:	Scholarship money is available, but is limited; transcript evaluation by WES is required for applicants with foreign university degrees

Contact Information

For detailed information, contact the Department of Clinical and Diagnostic Sciences, Clinical Laboratory Sciences Program, UAB School of Health Professions, SHPB 430, 1716 9th Avenue South, Birmingham, Alabama 35294-1212.
Telephone 205-934-3209.
E-mail AskCDS@uab.edu

Master of Science in Clinical Laboratory Science

Requirements	Hours	
CDS 500	Fundamentals of Phlebotomy and Body Fluid Collection	1
CDS 501	Professional Skills I	0
CDS 502	Professional Skills II	0
CDS 503	Professional Skills III	1
CDS 610	Research Design and Statistics	3
CDS 625	Analysis of Scientific Publications	3
CLS 500	Health and Safety Management	1
CLS 503	Body Fluids	1
CLS 504	Lab Analysis of Body Fluids	1
CLS 505	Laboratory Management	3
CLS 506	Laboratory Techniques	2
CLS 518	Immunology	3
CLS 523	Clinical Microbiology	3
CLS 524	Clinical Microbiology Laboratory	1
CLS 526	Instrumentation & Automation	2
CLS 527	Instrumentation and Automation Laboratory	1
CLS 528	Hematology I	3
CLS 529	Hematology I Laboratory	1
CLS 530	Immunohematology	4
CLS 531	Immunohematology Laboratory	1
CLS 532	Hematology II	3
CLS 533	Hematology II Laboratory	1
CLS 538	Infectious Diseases	3
CLS 539	Infectious Diseases Laboratory	1
CLS 542	Molecular Diagnostics	3
CLS 543	Molecular Diagnostics Lab	1
CLS 551	Clinical Chemistry	4
CLS 552	Clinical Chemistry Laboratory	1
CLS 560	Clinical Correlations	3
CLS 570	Professional Development	1
CLS 595	Clinical Practice	12
CLS 698	Master's Level Non-Thesis Research	4
Total Hours		72

Clinical Pathology Assistant

Clinical Pathology Assistant

Entry Term	Deadline
Degree:	M.S.
Director:	Floyd Josephat, EdD
Phone:	(205) 934-1348
E-mail:	josephat@uab.edu
Website:	http://www.uab.edu/shp/cds/Clinical-laboratory-sciences

Program Information

Program Mission

The Faculty of the Clinical Pathologist Assistant program is committed to service to the community and to providing high quality education to prepare students with a solid educational background and a set of skills translatable to a variety of laboratory settings including hospital

laboratories, industry, research laboratories, and many more. The Faculty, in its concern for the health and safety of the general public, is committed to ensuring that each student develops knowledge, skills and values essential to the appropriate role providing the basis for continuing intellectual and professional growth.

M.S. Admission Requirements

In addition to the general Graduate School admission requirements, applicants to the M.S. program must:

- Have a baccalaureate degree, or higher, in Medical Technology/ Medical Laboratory Science/Clinical Laboratory Science.
- Have a minimum GPA of 3.0 (A = 4.0).
- Have earned certification as a clinical laboratory scientist.
- Have worked as a Medical Technologist/Medical Laboratory Scientist/ Clinical Laboratory Scientist for 2 years minimum.

If accepted, students must complete the UAB medical history questionnaire and physical, provide proof of required immunizations, and receive satisfactory screening by the UAB Medical Center Student Health Service before enrollment. A background check and drug screen will be required at program admission and prior to clinical placement.

Persons with a Bachelor of Science degree may be eligible to register for courses as non-degree seeking graduate students before acceptance into the M.S. program. If a non-degree seeking graduate student meets the M.S. program admission requirements, up to 12 semester hours of approved non-degree graduate coursework may be accepted for the M.S. degree. Admission of a student to any course as a non-degree student does not constitute admission to the M.S. degree program.

Essential Functions

Essential functions are fundamental tasks, behaviors, and abilities necessary to successfully complete the requirements of the Program.

Essential functions are physical abilities, mental abilities, skills, attitudes, and behaviors the students must evidence or perform at each stage of their education. The absence of an essential function would fundamentally alter a student's ability to meet the program goals. The essential requirements include categories of observation, movement, communication, intellect, and behavior.

If you have a disability, but have not contacted Disability Support Services (DSS), please call 934-4205 or visit the DSS offices at 1701 9th Avenue South. Additional information is available at <http://www.uab.edu/students/disability/>.

Requirement	Fulfilled By:
Entry Term:	Fall and Spring Semester
Deadline for ALL Application Materials to be in the Graduate School Office:	Fall Term: May 1; Spring Term: October 1
Entrance Tests:	GRE and for international applicants from non-English speaking countries, scores for the Test of English as a Foreign Language (TOEFL) and the Test of Written English (TWE)

Contact Information

For detailed information, contact the Department of Clinical and Diagnostic Sciences, Clinical Pathology Assistant Program, UAB School

of Health Professions, SHPB 430, 1716 9th Avenue South, Birmingham, Alabama 35294-1212.
 Telephone 205-934-3209.
 E-mail AskCDS@uab.edu

First Year			
First Term	Hours	Second Term	Hours
CPA 606	3	CPA 605	3
CPA 607	3	CPA 608	3
CPA 650	3	CPA 652	3
		Summer Term	
		CPA 609	3
		CPA 651	3
		CPA 653	3
		<hr/>	
		9	9
		9	

Second Year	
First Term	Hours
CPA 654	3
CPA 698	3
CPA 690	5
<hr/>	
11	

Total credit hours: 38

Genetic Counseling

Degree Offered:	M.S.
Program Director:	Patricia (Tricia) Zartman Page
Phone:	(205) 934-7528
E-mail:	ppage@uab.edu
Website:	www.uab.edu/msgc

Master of Science in Genetic Counseling

Accreditation:

The Genetic Counseling Program is fully accredited by the Accreditation Council for Genetic Counseling (ACGC). The program received full accreditation in 2013 and was approved again 2018 for an additional eight years. Fully accredited programs must complete a rigorous process to demonstrate that the program is capable of meeting the criteria for a genetic counseling training program as established by ACGC. Programs that successfully complete this process are awarded full accreditation. All students that graduate from an accredited program may apply for board certification and licensure as a genetic counselor.

Admission Requirements

- Baccalaureate degree from a regionally-accredited college/university
- Graduate Record Examination (GRE) General Test scores from the Verbal, Quantitative and Analytic sections. Applicants with advanced degrees whose GRE scores are older than 5 years (the time limit that ETS will send scores) can send reports from previously attended graduate programs.
- A minimum cumulative undergraduate grade point average of at least 3.0 (A = 4.0)
- A minimum GPA of 3.0 in natural science courses
- A minimum cumulative grade point average of 3.0 in the program prerequisite courses, with a minimum grade of C in each (prerequisite courses are listed below)
- Resume or CV: This should include academic qualifications, a description and timeline of any paid or volunteer work experience in crisis counseling or peer counseling setting, working with individuals with genetic conditions or disabilities, technical work in laboratories, research, or teaching experience, and any other relevant information, such as job shadowing.

- A personal statement (no more than 500 words) highlighting your motivation to become a genetic counselor, and emphasizing your prior and current experiences and how they will benefit you in the profession.
- Paid or volunteer experience in a crisis counseling setting, peer counseling setting, working with individuals with genetic conditions or disabilities, technical work in genetics laboratories, research, or teaching experience in biology or genetics is recommended and encouraged in preparation for entering the genetic counseling field. Job shadowing is strongly encouraged.
- Interview with UAB faculty
- Three letters of recommendation
- Satisfactory screening on health data questionnaire by the UAB Medical Center Student Health Service.
- Complete a criminal background check and drug screen at program admission and again prior to clinical placement as required by school policy.
- Registration with National Matching Services.
- The following course prerequisites:
 - Biology (one full-year course sequence)
 - Biochemistry (one upper level semester course)
 - Genetics (one semester course to include Mendelian and molecular genetics)
 - General Psychology (one semester)
 - Statistics (one semester) (AP statistics is not acceptable)

Degree Requirements

The graduate program in genetic counseling will follow the Plan II (non-thesis) option.

Program Curriculum

First Year	
First Term	Hours
GC 501	3
GC 510	3
GC 560	1
GC 725	3
CDS 501	0
CDS 610	3
ECG 621	3
<hr/>	
16	

Total credit hours: 16

First Year	
Second Term	Hours
GC 504	3
GC 505	3
GC 506	3
GC 560	1
CDS Elective	1-3
CDS 502	0
ECG 638	3
<hr/>	
14-16	

Total credit hours: 14-16

First Year

Summer Term	Hours
GC 650	2
GC 651	4
	6

Total credit hours: 6

Second Year

First Term	Hours
GC 560	1
GC 600	2
GC 652	2
GC 653	2
GC 698	2
CDS 503	1
	10

Total credit hours: 10

Second Year

Second Term	Hours
GC 560	1
GC 602	2
GC 654	2
GC 655	2
GC 698	2
CDS 605	1
	10

Total credit hours: 10

Additional Information

Deadline for Entry Term(s):	January 7
Deadline for All Application Materials to be in the Graduate School Office:	January 15
Number of Evaluation Forms Required:	Three
Entrance Tests:	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)

Contact Information

For detailed information, contact Program Director, Graduate Program in Genetic Counseling, UAB School of Health Professions, 1716 9th Avenue South, SHPB 444, Birmingham, AL 35294-1212.

Telephone 205-975-4CDS (205-975-4237)

E-mail <mailto:AskCDS@uab.edu> (AskCDS@uab.edu)Website www.uab.edu/msgc**Master of Science in Genetic Counseling**

Requirements	Hours
CDS 501 Professional Skills I	0
CDS 502 Professional Skills II	0
CDS 503 Professional Skills III	1
CDS 605 Survival Spanish for Health Professionals	1
CDS 610 Research Design and Statistics	3

ECG 621	Theories of Individual Counseling	3
ECG 638	Practicum I: Clinical Skills and Techniques	3
GC 501	Genetics in Medicine	3
GC 504	Prenatal Genetics, Embryology and Teratology	3
GC 505	Principles of Cancer and Adult Genetics and Counseling	3
GC 506	Theory and Practice of Genetic Counseling	3
GC 510	Introduction to Genetic Counseling	3
GC 600	Advanced Clinical Skills in Genetic Counseling - SL	2
GC 602	Advanced Topics in Genetic Counseling	2
GC 650	Clinical Laboratory Rotation	2
GC 651	Clinical Rotation I	4
GC 652	Clinical Rotation II	2
GC 653	Clinical Rotation III	2
GC 654	Clinical Rotation IV	2
GC 655	Clinical Rotation V	2
GC 725	Advanced Medical Genetics and Genomics	3
	Non-Thesis Research (take twice)	4
GC 698	Non Thesis Research	

Non-Thesis Research (take twice)

GC 698 Non Thesis Research

One Elective Course¹ 1-3**Four hours of Journal Club** 4

GC 560 Genetic Counseling Journal Club (take four times)

Total Hours 56-58

¹ Various courses are pre-approved for this elective, including CDS 550, CDS 625, EPI 600, HB 635, HCO 613, HCO 670, HCO 672, HE 502, NTR 601. Others are possible - as approved by program director. All would be courses at 500 level or above.

Health Physics**Health Physics**

Degree Offered:	M.S.
Program Director	Norman E. Bolus, MSPH, MPH
Phone:	(205) 934-3427
E-Mail:	bolusn@uab.edu
Website:	www.uab.edu/shp/cds

Program Information

Health Physics is a discipline that focuses on the application of physics, nuclear science, and engineering physics to diagnostics, treatment, and therapeutic processes pertaining to public health protection. It includes instruction in radiation biophysics, biophysics, health effects of natural and artificially induced radiation, hazard evaluation, environmental radioactivity, nuclear physics, engineering physics, radiobiology, medical radiology, calibration and dosage theory, computer application and medical informatics, and specific research problems involving the use of non-ionizing and ionizing radiation.

Admission Requirements

In addition to the general Graduate School admission requirements, applicants to the M.S. program must:

- Have a baccalaureate degree in biology, physics, chemistry, biomedical sciences, bioengineering, or a related degree from an accredited college or university,

- Have a minimum undergraduate GPA of 3.0 (A= 4.0), computed from all undergraduate credits or from the last 60 semester hours of undergraduate course credit,
- Apply for admission to the UAB MHP Program,
- If foreign-educated, submit a transcript evaluation from World Education Services (WES) at www.wes.org. If English is second language, (<http://www.wes.org>) have a score of at least 550 for paper version (or 80 for Internet version; or 213 for computer version) on the TOEFL, or 6.5 on the IELTS overall and 6.5 on the spoken English section.

The completed application must be on file with the program office by February 15th for a priority interview to be granted. All eligible applicants will be interviewed in March for admission decisions in early April. Eligible late applicants will be considered on a space-available basis up to August 1st.

If accepted, students must complete the UAB medical history questionnaire and physical, provide proof of required immunizations, and receive satisfactory screening by the UAB Medical Center Student Health Service before enrollment. A background check and drug screen will be required at program admission and prior to clinical placement.

Persons with a baccalaureate degree may be eligible to register for courses as non-degree seeking graduate students before acceptance into the M.S. program. If a non-degree seeking graduate student meets the M.S. program admission requirements, up to 12 semester hours of approved non-degree graduate coursework may be accepted for the M.S. degree. Admission of a student to any course as a non-degree student does not constitute admission to the M.S. degree program.

Early Acceptance

Early Acceptance Programs are designed for academically superior high-school students. Early Acceptance Programs allow high achieving students to be admitted to the Health Physics program at the same time they are admitted to an undergraduate program.

Eligible students are required to maintain a 3.5 undergraduate GPA and complete the following pre-requisite courses: PH 201, PH 202, MA 125 or PH 221 and PH 222

Program Accreditation and Professional Credentials

Established Health Physics programs may seek accreditation from the Applied Science Accreditation Commission (ASAC) of the Accreditation Board for Engineering and Technology (ABET). Programmatic accreditation can be sought when the program is fully implemented and has graduated its first cohort of students. Program graduates will be eligible for part I of the certification examination administered by the American Board of Health Physics (ABHP).

Additional Information

Entry Term:	Fall Semester
Deadline for Application Materials to be in the Graduate School Office:	August 1
Program Length:	4 consecutive semesters

Contact Information

For detailed information, contact the Department of Clinical and Diagnostic Sciences, Health Physics Program, UAB School of Health

Professions, SHPB 446, 1716 9th Avenue South, Birmingham, Alabama 35294-1212.

Telephone 205-934-3209.

E-mail AskCDS@uab.edu

Master of Science in Health Physics

Requirements	Hours
CDS 610 Research Design and Statistics	3
MHP 601 Principles of Health Physics	3
NMT 610 Medical Radiation Physics	4
NMT 621 Nuclear Medicine Instrumentation I	4
CDS 625 Analysis of Scientific Publications	3
MHP 611 Physics of Diagnostic Imaging	3
MHP 620 Principles of Dosimetry	3
NMT 641 Regulations, Radiation Protection/Biology and Lab	4
MHP 621 Nonionizing Radiation	3
Supervised Practice Summer, Second Fall 6 Semester Hours each: Total 12 hours	12
MHP 691 Supervised Practice	6
Electives Substitution of elective courses must be approved by advisor	6
MHP 651 Advanced Radiation Biology	
MHP 652 Radiochemistry	
CDS 501 Professional Skills I	0
CDS 502 Professional Skills II	0
CDS 503 Professional Skills III	1
CDS 504 Professional Skills IV	1
MHP 698 Non-Thesis Research	4
Total Hours	54

Nuclear Medicine Technology

Degree Offered:	M.S.
Program Director:	Norman Bolus, MSPH, MPH
Phone:	(205) 934-3427
E-mail:	bolusn@uab.edu
Website:	http://www.uab.edu/shp/cds/nuclear-medicine-technology

Program Information

Program Mission

The UAB Nuclear Medicine Technology Program is dedicated to providing a quality program by offering didactic and clinical coursework in a curriculum that is designed to prepare students to become competent and productive entry level technologists. The program also serves the profession through its offering of continuing education activities and educational products.

Admission Requirements

In addition to the general Graduate School admission requirements, applicants to the M.S. program must:

- Have a baccalaureate degree in biology, physics, chemistry, biomedical sciences, bioengineering, or a related degree from an accredited college or university,
- Have a minimum undergraduate GPA of 3.0 (A= 4.0), computed from all undergraduate credits or from the last 60 semester hours of undergraduate course credit,

- Apply for admission to the UAB NMT Program,
- Complete a clinical observation and write a reflection on the observation,
- If foreign-educated, submit a transcript evaluation from World Education Services (WES) at www.wes.org. If English is second language (<http://www.wes.org>), have a score of at least 550 for paper version (or 80 for Internet version; or 213 for computer version) on the TOEFL, or 6.5 on the IELTS overall and 6.5 on the spoken English section.

The completed application and observation form must be on file with the program office by February 15th for a priority interview to be granted. All eligible applicants will be interviewed in March for admission decisions in early April. Eligible late applicants will be considered on a space-available basis up to August 1st.

If accepted, students must complete the UAB medical history questionnaire and physical, provide proof of required immunizations, and receive satisfactory screening by the UAB Medical Center Student Health Service before enrollment. A background check and drug screen will be required at program admission and prior to clinical placement.

Persons with a baccalaureate degree may be eligible to register for courses as non-degree seeking graduate students before acceptance into the M.S. program. If a non-degree seeking graduate student meets the M.S. program admission requirements, up to 12 semester hours of approved non-degree graduate coursework may be accepted for the M.S. degree. Admission of a student to any course as a non-degree student does not constitute admission to the M.S. degree program.

Early Acceptance

Early Acceptance Programs are designed for academically superior high-school students. Early Acceptance Programs allow high achieving students to be admitted to the Master of Science in Nuclear Medicine Technology program at the same time they are admitted to an undergraduate program.

Eligible students are required to maintain a 3.5 undergraduate GPA and complete the following pre-requisite courses: MA 106, CH 105-CH 108 or CH 115-CH 118, BY 216 or NMT 320, BY 115, BY 116, MA 180, PH 201, PH 202, HCM 350, HCM 330, CDS 425

Essential Functions

Essential functions are physical abilities, mental abilities, skills, attitudes, and behaviors the students must show evidence of to be able perform at each stage of their didactic and clinical education. A list of essential functions is on file in the NMT Program Office and in the NMT Student Handbook.

If you have a disability, but have not contacted Disability Support Services (DSS), please call (205) 934-4205 (voice) or (205) 934-4248 (TDD), or visit the DSS offices at 1701 9th Avenue South. Additional information is available at <http://www.uab.edu/students/disability/>.

Accreditation and Certification

Nuclear Medicine Technology academic programs are accredited by the Joint Review Committee on Nuclear Medicine Technology Programs (JRCNMT). Program graduates are eligible to apply for the certification examination offered by both the Nuclear Medicine Technology Certification Board (NMTCB) or the American Registry of Radiological Technologists (ARRT).

JRCNMT

2000 W. Danforth Road

Suite 130, #203

Edmond, OK 73003

Phone: 405.285.0546

Fax: 405.285.0579

jrcnmt@coxinet.net

<http://www.jrcnmt.org/>

NMTCB

3558 Habersham at Northlake

Building I

Tucker, GA 30084

Phone: 404.315.1739

Fax: 404.315.6502

board@nmtcb.org

<http://www.nmtcb.org/root/default.php>

ARRT

1255 Northland Drive

St. Paul, MN 55120

Phone: 651.687.0048

Fax: 651.687.3299

<https://www.arry.org/>

Additional Information

Entry Term:	Fall Semester
Deadline for All Application Materials to be in the Graduate School Office:	First Consideration: February 15th; Space available basis after first consideration, up to August 1st
Entrance Tests:	For international applicants from non-English speaking countries, scores for the test of English as a Foreign Language (TOEFL), IELTS, and the Test of Written English (TWE)
Comments:	Scholarship money is available, but is very limited; transcript evaluation by WES is required for applicants with foreign university degrees

Contact Information

For detailed information, contact the Department of Clinical and Diagnostic Sciences, Nuclear Medicine Technology Program, UAB School of Health Professions, SHPB 446, 1716 9th Avenue South, Birmingham, Alabama 35294-1212.
Telephone 205-934-3209.

E-mail AskCDS@uab.edu

Master of Science in Nuclear Medicine Technology

Requirements	Hours
CDS 501 Professional Skills I	0
CDS 610 Research Design and Statistics	3
NMT 602 Introduction to Nuclear Medicine, Patient Care & Communication Skills	3
NMT 610 Medical Radiation Physics	4
NMT 621 Nuclear Medicine Instrumentation I	4
NMT 631 Nuclear Medicine Anatomy & Physiology - Procedure I	4
CDS 502 Professional Skills II	0
CDS 625 Analysis of Scientific Publications	3
NMT 632 Nuclear Medicine Anatomy & Physiology - Procedures II	4
NMT 641 Regulations, Radiation Protection/Biology and Lab	4
Clinical Practice ¹	15
NMT 691 NMT Clinical Practice	
CDS 503 Professional Skills III	1
HA 650 Management and Leadership Skills for Clinical Professionals	3
NMT 605 Cross-Sectional Anatomy	3
NMT 622 NMT Instrumentation II	3
NMT 623 CT Instrumentation	3
NMT 660 Radiopharmacy, Pharmacology & Lab	3
NMT 698 Non-Thesis Research	4
Total Hours	64

¹ Varies by term 3, 5, 7 (Spring, Summer, 2nd Fall)

Physician Assistant Studies

Degree Offered:	M.S.P.A.S.
Program Director:	M. Tosi Gilford, MD, PA
Phone:	(205) 936-9921
E-mail:	AskCDS@uab.edu
Website:	www.uab.edu/pa

General Information

Physician Assistants (PAs) are valuable members of a multidisciplinary healthcare team. The profession was established in 1965 to help physicians provide healthcare services to under-served and rural populations. While the profession remains committed to its historical mission, PAs are now employed in almost all medical and surgical specialties.

PAs are healthcare professionals licensed to practice medicine under the supervision of a physician. Individual state practice laws and hospital bylaws define the scope of practice and prescribing authority of physician assistants. To be eligible for licensure, PAs must graduate from an accredited physician assistant program and pass the Physician Assistant National Certification Examination (PANCE). To maintain licensure, PAs must complete 100 hours of continuing medical education credits every two years and pass the Physician Assistant National Recertification Examination (PANRE) every ten years. PAs may obtain additional training through postgraduate residency programs in various subspecialty areas, but these programs are not required for licensure or practice in subspecialty areas.

The mission of the UAB Physician Assistant Studies Program is to provide qualified individuals with the knowledge, skills, and judgment needed to assist physicians in the care of patients in surgical, acute-care, and medical settings. While physician assistants function under the supervision of the physicians, they are capable of performing selected tasks autonomously.

Admission Prerequisite Coursework and Application Information

All prerequisite courses must be successfully completed in the United States.

Requirements	Hours
BY 115 Human Anatomy	4
BY 116 Introductory Human Physiology	4
or BY 409 Principles of Human Physiology	
BY 123 Introductory Biology I	4
BY 124 Introductory Biology II	4
BY 261 Introduction to Microbiology	4
or BY 271 Biology of Microorganisms	
CH 115 General Chemistry I	8
& CH 116 and General Chemistry I Laboratory	
& CH 117 and General Chemistry II	
& CH 118 and General Chemistry II Laboratory (CH 105, CH 106, CH 107, CH 108 accepted)	
PY 216 Elementary Statistical Methods	4
& 216L and Elementary Statistical Methods Laboratory	
PY 101 Introduction to Psychology	3
or PY 201 Honors Introduction to Psychology	
PY 212 Developmental Psychology	3
or PY 218 Abnormal Psychology	
HCM 360 Statistics for Managers	3

Deadline for All Application Materials to be received by the CASPA:	Completed applications must be received by the Central Application Service for Physician Assistants (CASPA) no later than August 1 the year prior to the expected term of enrollment
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Number of Evaluations/ Letter of Recommendations Required:	Three
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Entrance Tests:	GRE (TOEFL is required for international applicants whose native language is not English) or MCAT.
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Accreditation:

The Physician Assistant Program is accredited by the Accreditation Review Commission on Education for the Physician Assistant, Inc. (ARC-PA).

Credentials Conferred:

Diploma—The Master of Science in Physician Assistant Studies (MSPAS) degree is awarded by the University of Alabama at Birmingham.

Professional Certification:

Graduates of the UAB PA program are eligible to take the Physician Assistant National Certifying Examination (PANCE) sponsored by the

National Commission on Certification of Physician Assistants to become a certified PA.

Essential Requirements

Fundamental tasks, behaviors, and abilities necessary to successfully complete the academic and clinical requirements of the program and to satisfy licensure/certification requirements have been outlined and are available upon request from the academic program office. Students requesting disability accommodations should contact UAB Disability Support Services (DSS) at 205-934-4205.

Program Curriculum:

Course requirements are listed below with semester credit hours shown.

Didactic Curriculum

First Year

First Term	Hours
PA 601	4
PA 602	4
PA 605	3
PA 610	3
PA 615	1
CDS 501	0
	15

Total credit hours: 15

First Year

Second Term	Hours
PA 603	3
PA 606	6
PA 608	3
PA 611	3
PA 613	3
PA 616	1
CDS 502	0
	19

Total credit hours: 19

First Year

Summer Term	Hours
PA 609	3
PA 614	2
PA 618	1
PA 619	3
CDS 503	1
CDS 535	1
HCM 530	3
	14

Total credit hours: 14

Second Year

First Term	Hours
PA 604	3
PA 607	6
PA 617	3
PA 620	2
PA 634	1

PA 635	2
	17

Total credit hours: 17

Clinical Curriculum

The clinical component of the curriculum consists of 11 clinical rotations PA 621 – PA 632 plus Senior Seminar and a Master's Research Project Presentation. Of the clinical rotations, 7 are required and 4 are electives.

Second Year

Second Term	Hours
PA 621	4
PA 622	4
PA 623	4
PA 624	4
	16

Total credit hours: 16

Second Year

Summer Term	Hours
PA 625	4
PA 626	4
PA 627	4
PA 629	4
PA 698	1
	17

Total credit hours: 17

Third Year

First Term	Hours
PA 630	4
PA 631	4
PA 632	4
PA 641	5
	17

Total credit hours: 17

Clinical Rotations (PA 621- PA 632)

7 Required Clinical Rotations

4 Elective Clinical Rotations:

Requirements	Hours
PA 621 Clinical Services I	4
PA 622 Clinical Services II	4
PA 623 Clinical Service III	4
PA 624 Clinical Services IV	4
PA 625 Clinical Services V	4
PA 626 Clinical Service VI	4
PA 627 Clinical Service VII	4
PA 629 Clinical Service IX	4
PA 630 Clinical Service X	4
PA 631 Clinical Service XI	4
PA 632 Clinical Services XII	4

Master of Science in Physician Assistant Studies-Master of Public Health Degree Option

The coordinated Master of Science in Physician Assistant Studies and Master of Public Health (MSPAS-MPH) dual degree program will prepare physician assistant students for leadership roles that address community health care needs. The program aims to increase the number of high quality primary care clinicians with public health expertise and thus improve access, quality and cost of care. This plan of study provides students with a thorough understanding of the social and environmental determinants of health, population disease prevention and health promotion strategies, health disparities, epidemiological research analysis and healthcare quality improvement capabilities.

Admissions Requirements

Students must meet the admissions requirements for both the MSPAS degree program as well as the MPH degree program. Click here (<http://www.uab.edu/shp/cds/physician-assistant/admissions>) for MSPAS admissions requirements. Click here (<http://www.soph.uab.edu/graduate/prospective/admissions/us>) for UAB School of Public Health admissions requirements.

In addition to meeting the stated requirements for each degree separately, applicants for the dual degree must also have completed a bachelor degree and all prerequisites before December 30 in order to start the program in January of the following spring term.

Application Procedures

In order to be considered for admission to the UAB MSPAS/MPH dual degree program, candidates will need to complete and submit the following materials by the stated deadlines:

- August 1: The Central Application Service for Physician Assistants (CASPA) Application
- August 7: The UAB PA Supplemental Application
- August 7: The UAB Graduate School MPH/MSPAS ApplyYourself Application

For more information visit the Physician Assistant Studies web page for the MSPAS-MPH degree option at <http://www.uab.edu/shp/cds/physician-assistant/mspas-mph>

Master of Science in Physician Assistant Studies

Requirements	Hours
CDS 501 Professional Skills I	0
PA 615 Intro to the Profession	1
PA 601 Human Gross Anatomy	4
PA 602 Medical Physiology	4
PA 610 Clinical Lab Medicine	3
PA 605 Pathology	3
CDS 502 Professional Skills II	0
PA 611 History and Physical Examination I	3
PA 606 Clinical Medicine I	6
PA 603 Pharmacology I	3
PA 608 Surgical Disease I	3
PA 613 Surgical Techniques	3
CDS 535 Medical Genetics Across the Life Span	1
CDS 503 Professional Skills III	1

PA 614	Operating Room Techniques	2
PA 616	Electrocardiography	1
PA 618	Risk Management	1
PA 619	Fundamentals of Clinical Research	3
HCM 530	Health Care Delivery and Reimbursement	3
PA 604	Pharmacology II	3
PA 617	Applied Behavioral Medicine	3
PA 635	Special Populations in Medicine	2
PA 607	Clinical Medicine II	6
PA 620	Analysis of Professional Literature	2
PA 609	Surgical Disease II	3
PA 634	Simulated Clinical Concepts	1
Clinical Service		
PA 621	Clinical Services I	4
PA 622	Clinical Services II	4
PA 623	Clinical Service III	4
PA 624	Clinical Services IV	4
PA 625	Clinical Services V	4
PA 626	Clinical Service VI	4
PA 627	Clinical Service VII	4
PA 629	Clinical Service IX	4
PA 630	Clinical Service X	4
PA 631	Clinical Service XI	4
PA 632	Clinical Service XII, Clinical Services XII	4
PA 641	Senior Seminar	5
PA 698	Presentation of Res Project	1

Total Hours 115

Health Services Administration

The Department of Health Services Administration includes degree programs at baccalaureate, masters, and doctoral levels, as well as undergraduate minors and a variety of professional education opportunities for health services executives and clinicians. Some programs in the department are the only one of their kind in the state, or first of their kind in the nation. The MSHA Program is ranked #1 in the nation. Degree programs currently available include:

- Administration - Health Services, PhD
 - Applications of Mixed Methods Research, Graduate Certificate
- Administration -- Healthcare Leadership, DSc.
- Clinical Informatics, Graduate Certificate
- Health Administration, MSHA
 - Tracks: Residential, Executive, International
- Health Care Management, BS
 - Tracks: Clinical Manager, General Manager, Long Term Care Administration, Pre-Professional
- Health Informatics, MSHI
 - Tracks: Data Analytics, User Experience
- Healthcare Quality and Safety, MS and Graduate Certificate
- Healthcare Simulation, MS
- Undergraduate Minors
 - Clinical Coding and Reimbursement, Health Care Management, Health Information Management

Applications of Mixed Methods Research, Graduate Certificate

The Graduate Certificate in Applications of Mixed Methods Research is a certificate program that provides researchers with applied knowledge and skills to plan, design, conduct, evaluate, and report mixed methods research in the context of the research topic of interest.

Credentials Conferred

The Graduate Certificate in Applications of Mixed Methods Research is awarded by the University of Alabama at Birmingham.

Length of Study

The certificate requires 3 semesters (2 courses per semester) *OR* 5 semesters (1 course per semester) to complete.

Program Entrance Date

Fall, Spring, and Summer semesters

Requirements for Admission

Students holding a master's degree (MA or MS) and meeting qualifications for admission to the UAB Graduate School.

Certificate

On completion of the required coursework, the student will be awarded a Graduate Certificate in Applications of Mixed Methods Research by the University of Alabama at Birmingham and the student's name will appear in the commencement bulletin. A transcript of the coursework taken for the certificate will be available.

The curriculum for the certificate is offered online as web-based distance education. The four mixed methods courses are designed as independent courses and can be taken in any sequence. Each course has a different focus and objectives, and each course covers different aspects and practices of mixed methods research that can be successfully mastered within a separate course.

TYPICAL APPLICATIONS IN MIXED METHODS RESEARCH CURRICULUM

Requirements	Hours
Required Coursework 12 Hours	
AH 777 Mixed Methods Research I: Introduction	3
AH 778 Mixed Methods Research II: Designing and Conducting Mix Mthds Study	3
AH 779 Mixed Methods Applications in Community-Based Action Research	3
AH 783 Writing Effective Mixed Methods Grant Proposals	3
Elective Coursework (Select 3 hours)	
NRM 783 Foundations of Qualitative Research	3
HCO 628 Qualitative and Mixed Methods Research in Public Health	3
AH 785 Qualitative Research: Analysis and Interpretation	3

CONTACT INFORMATION

For detailed information, contact the office for the Graduate Certificate in Applications of Mixed Methods Research, UAB School of Health Professions Building, 1716 9th Avenue South, Birmingham, AL 35294-1212.

Telephone 205-934-3113
 Fax 205-975-6608
 E-mail mmrgradcert@uab.edu
 Web www.hsa.uab.edu

Administration Health Services

Degrees Offered:	Ph.D.
Director:	Dr. Larry Hearld
Phone:	(205) 934-3113
E-mail:	lheard@uab.edu
Website:	http://www.uab.edu/shp/hsa/doctoral-programs/ph-d

Degrees Offered:	D.Sc.
Director:	Dr. Robert Hernandez
Phone:	(205) 934-1665
E-mail:	hernande@uab.edu
Website:	http://www.uab.edu/execdoc

Prospective students should visit <http://www.uab.edu/shp/hsa/doctoral-programs/ph-d> to obtain specific admissions requirements on how to apply.

Doctor of Philosophy Program Information

The Ph.D. program in Administration–Health Services is a degree program offered jointly and cooperatively by the Department of Health Services Administration in the School of Health Professions and the Graduate School of Management in the School of Business. Faculty associated with the School of Public Health, School of Medicine, Lister Hill Center for Health Policy, Center for Outcomes and Effectiveness Research and Education, and Center on Aging also contribute to student learning.

The Ph.D. program is for those who wish to pursue the conceptual, philosophical, and applied aspects of administrative processes in health services, health policy, and outcomes research in health care. It provides doctoral-level study and research in administration with specific application to health services. The pedagogical focus is on developing a strong research orientation through course work, research seminars, and mentoring relationships with faculty. Students may choose a specialization in either strategic management, health services research, or health informatics. Students who are interested in pursuing academic careers are also afforded the opportunity to develop their teaching skills through course work and teaching opportunities. Job placement occurs in regional, national, and international markets. To date, more than 100 graduates have taken positions in academic institutions as well as health service delivery, governmental, and consulting organizations.

Admission Requirements

An applicant should already possess a master's degree in a relevant discipline or have completed an undergraduate program with an outstanding record. Completed applications of well-qualified candidates received by January 1 may be considered for early admission. The application deadline is March 15. Although applications may be considered after March 15, admission and financial aid priority is given to those applicants whose materials are complete by January 1.

Applications submitted after January 1 would be considered on a space-available basis only.

Admission recommendations are made by the Admissions and Policy Committee after examination of the candidate's qualifications, which should include a minimum GRE General Test score of 300 (verbal plus quantitative), if tested prior to August 2011; equivalent combined scores for the revised GRE; or a GMAT test score of 550. All applicants whose first language is not English are also required to submit a score for the Test of English as a Foreign Language (TOEFL). A TOEFL score of 80 is required if the TOEFL taken is based on the Internet version; if computer-based, the minimum score required is 213; and if the paper-based test version is taken, the minimum acceptable score is 550 or above. Consideration will also be given to the quality of the applicant's academic record, previous research experience and productivity, and estimated research potential as indicated by references.

Various forms of financial aid are available to students. Departmental research assistantships are awarded on a competitive basis and carry an obligation of 20 hours of work per week. Assistantships are awarded to incoming students for a period of one year, and may be renewable for a second year based on satisfactory work and academic progress, depending on the availability of funds. Some students are able to secure funding for additional years in the program through research assistant positions or other part-time jobs funded by faculty members' grants and contract activities. Other forms of financial assistance include minority fellowships offered through the UAB Graduate School, paid teaching opportunities in selected undergraduate programs, and federal student loans.

Prerequisites

Prerequisite requirements include one graduate-level statistics course with computer usage, one graduate-level course on the U.S. health care system, and an introductory healthcare finance course. Incoming students who have not met these prerequisites during a master's program may take courses prior to entering the program or during their first year of study in the program.

Program of Study

The program of study consists of five components

1. Courses in administration and health systems,
2. Courses in research methodology and statistics,
3. Specialization courses,
4. Comprehensive examinations,
5. The doctoral dissertation.

Specializations are currently available in strategic management and health services research. Students must complete all coursework in the first three areas and pass a comprehensive examination in each before work can officially begin on the dissertation. The investigation and other special work leading to the dissertation must be performed directly under the guidance and supervision of a five-person committee of the UAB graduate faculty. The normal minimum period in which the doctoral degree can be earned is three to four years of full-time study.

If entering with a baccalaureate degree, a student is required to earn a minimum of 72 credit hours comprised of the following:

1. Completion of 48 credit hours of course work prior to candidacy

- Up to 16 credits of the 48 can be non-dissertation research credits
- Up to 10 credits can be lab rotation, seminar, or directed study credits

2. Completion of 24 credit hours of research-based work which can be designated as either:

- Completion of at least two semesters in candidacy and accumulation of at least 24 semester credit hours in 799 dissertation research **OR**
- Completion of at least two semesters in candidacy and accumulation of at least 12 semester credit hours in 799 dissertation research **AND**, either during or before candidacy, 12 semester credit hours in other appropriate research-based coursework which has been approved by the graduate student's program

If entering with a previously earned master's degree appropriate to the doctoral degree field, a student is required to earn a minimum of 51 credit hours comprised of the following. These requirements also apply to students with previously earned M.S., D.V.M., D.M.D., D.D.S., etc.:

1. Completion of 27 credit hours of course work prior to candidacy

- Up to 6 credits of the 27 can be non-dissertation research credits
- Up to 6 credits can be lab rotation, seminar, or directed study credits

2. Completion of 24 credit hours of research-based work which can be satisfied by either:

- Completion of at least two semesters in candidacy and accumulation of at least 24 semester credit hours in 799 dissertation research **OR**
- Completion of at least two semesters as a student in candidacy and accumulation of at least 12 semester credit hours in 799 dissertation research **AND**, either during or before candidacy, 12 semester credit hours in other appropriate research-based coursework which has been approved by the graduate student's program.

Typical Program of Study

Requirements		Hours
HA 602	Introduction to Health Care Systems	3
HA 605	Health Policy and Politics in the U.S.	3
HA 632	Quantitative Methods in Health Services Admin	3
AH 700	Health Economics	3
AH 701	Administrative Theory	3
AH 703	Philosophy of Science	3
AH 705	Health Care Finance	3
AH 706	Strategic Management Theory and Research	3
AH 707	Research Methods	3
AH 710	Comparative Health Systems	3
AH 712	Research in Organizational Behavior	3
AH 714	Marketing Strategy and Research	3
AH 715	Research in Organizational Theory	3
AH 720	Continuing Seminar	2
AH 722	Regression Analysis	3
AH 755	Dissemination and Implementation Science in Health Care	3
AH 716	Macroenvironmental Analysis	3
AH 775	Strategic Planning and Management Health Care Organizations	3
AH 780	Strategic Information Systems	3
AH 798	Non-Dissertation Research	1-6
AH 799	Dissertation Research	12

NST 777	Multivariate Statistical Methods For Clinical Nursing Research	3
GRD 717	Principles of Scientific Integrity	3
Specialization Electives*		18

*The specialization electives should be 600+ level and chosen from any of the following departments/schools: Public Health, Sociology, Psychology, Engineering, Education, and Business.

Degree Completion

The granting of the Ph.D. degree is based on completion of all required coursework, residency requirements, comprehensive examinations, dissertation requirements, and the recommendation of the Administration–Health Services graduate program director and the dissertation committee.

Mission, Vision, and Values Statements

Because outstanding teaching and research are essential to the future of health care delivery in our nation and abroad, the Ph.D. program in Administration–Health Services provides doctoral-level training to individuals who will be our future health care leaders in academic and nonacademic research organizations.

We seek to recruit a diverse and talented group of national and international students who are attracted to careers in research and teaching. The educational experience in the Ph.D. program is characterized by exposure to the various disciplines relevant to health administration and policy from across the university, as well as one-on-one mentoring relationships with faculty. These experiences are expected to serve as a foundation for future research throughout the graduate careers.

Additional Information

Deadline for Entry Term(s):	January 1st
Deadline for All Application Materials to be in the Graduate School Office:	March 15th
Number of Evaluation Forms Required:	Three
Entrance Tests:	GRE or GMAT (TOEFL also required for international applicants whose native language is not English.)
Comments:	Stipend support available

Contact Information

For detailed information, contact the Program Office of the Doctoral Programs in Administration–Health Services, UAB School of Health Professions Building, 1705 University Boulevard, Birmingham, AL 35294-1212.
Telephone 205-934-3113
Fax 205-975-6608
E-mail phdha@uab.edu
Web www.hsa.uab.edu

Prospective students visit <http://www.uab.edu/shp/hsa/doctor-of-science-dsc-executive> to obtain specific admissions requirements on how to apply.

Doctor of Science Program Information

The Doctor of Science (D.Sc.) in Healthcare Leadership program is designed for healthcare executives who are seeking to engage in a rigorous course of study that will also permit them to retain their demanding work and life responsibilities. D.Sc. students are interested in continuing a practice-focused career, as opposed to the academic career sought by most residential Ph.D. students.

The program is offered by the Department of Health Services Administration. Faculty associated with the School of Public Health, Lister Hill Center for Health Policy, Center for Outcomes and Effectiveness Research and Education, and other national experts also contribute to student learning.

Admission Requirements

Qualified applicants will preferably have a master's degree in health administration; health informatics; business administration; or a related field. Degree(s) must be from an accredited institution. In addition, qualified applicants will have a minimum of five years of mid- to senior-level managerial experience in health management.

Students whose first language is not English must submit recent scores for the Test of English as a Foreign Language (TOEFL) exam or IELTS. Applicants who have received a degree from an accredited U.S. institution or from institutions in countries where English is the primary language of instruction are not required to submit the TOEFL or IELTS score.

The UAB Graduate School has approved a waiver of the GRE/GMAT requirement for all applicants to the Executive Doctoral Program in Healthcare Leadership.

The application procedure for the D.Sc. in Healthcare Leadership Program requires both an application to the UAB Graduate School as well as supplemental materials that must be submitted directly to the D.Sc. Program Office. A full checklist of required items can be found on the "Application Process" page of the program website www.uab.edu/execdsc.

Applications are reviewed by the Admissions and Policy Committee of the Executive D.Sc. in Healthcare Leadership Program. The committee forwards a recommendation to the Dean of the UAB Graduate School who then communicates official admission decisions via written letter.

As it is based on a cohort model, the Executive D.Sc. Program only admits for the fall of each year. Applicants who complete applications prior to February 1 will be given priority in the admission process. Applications received after February 1 will be considered on a space-available basis.

Program of Study

The program of study consists of four components

1. Courses in administration and health systems,
2. Courses in research methodology and statistics,
3. Comprehensive examinations,
4. The doctoral dissertation.

Students must complete all coursework and pass a comprehensive examination before work can officially begin on the dissertation. The investigation and other special work leading to the dissertation must be

performed directly under the guidance and supervision of a four-person committee of the UAB graduate faculty. The normal minimum period in which the doctoral degree can be earned is three years of full-time study.

Degree Completion

The granting of the D.Sc. degree is based on completion of all required coursework, residency requirements, a comprehensive examination, dissertation requirements, and the recommendation of the Healthcare Leadership graduate program director and the dissertation committee.

Mission, Vision, and Values Statements

The mission of the Executive Doctoral Program is to develop highly qualified strategic management practitioners and scholars. We accomplish this mission through: our strategic management courses, faculty/student interaction, publishing and presenting our work, and teaching others.

Additional Information

Deadline for Priority Application:	February 1st. After February 1st, applications will be considered on a space-available basis.
Number of Evaluation Forms Required:	Three
Entrance Tests:	TOEFL required for international applicants whose native language is not English.

Contact Information

For detailed information, contact the Program Office of the Doctoral Programs in Healthcare Leadership, UAB School of Health Professions Building, 1716 9th Avenue South, Birmingham, AL 35294-1212.
Telephone 205-934-3588
Fax 205-975-6608
E-mail execdoc@uab.edu (phdha@uab.edu)
Web www.uab.edu/shp/hsa/doctor-of-science-dsc-executive

Health Administration

Degree Offered:	M.S.H.A.
Residential and Executive M.S.H.A. Director:	Amy Yarbrough Landry, PhD
Phone:	(205) 936-7767
E-mail:	akyarb@uab.edu
Website:	www.uab.edu/msha

Master of Science in Health Administration Program Information

The Master of Science in Health Administration (MSHA) Program, accredited by the Commission on Accreditation of Healthcare Management Education, trains executives for health services organizations. The program has graduated more than 1,400 persons since 1965.

Students must complete 23 graduate courses and a 12-month administrative residency in a health care organization. A capstone core course is completed during the last on-campus semester. Twenty-one core courses and two elective courses are required as well as a summer

internship or international experience for single-degree MSHA students. All students begin in the fall term and complete coursework in 21 months followed by the administrative residency.

Complete applications for fall entry are due no later than the preceding December 1. Since admission to the MSHA program is very competitive, early application is encouraged.

- **Master of Science in Health Administration-Master of Business Administration**
- **Master of Science in Health Administration-Master of Science in Health Informatics**
- **Master of Science in Health Administration-Master of Public Health Coordinated Degrees**

Students wishing to pursue simultaneously the Master of Science in Health Administration (MSHA) and the Master of Business Administration (MBA) degrees must complete 29 graduate courses, including 1 elective. Students seeking to complete the Master of Science in Health Administration (MSHA) and the Master of Science in Health Informatics (MSHI) must complete 30 graduate courses including a summer internship. Students seeking to complete the Master of Science in Health Administration (MSHA) and the Master of Public Health must complete 27 graduate courses, including a summer internship. MSHA-MPH students will complete 13 hours of public health coursework in the summer term prior to MSHA program entry.

A 12-month administrative residency in a health services organization is required for completion of the MSHA degree. A student who enters a coordinated program, but subsequently decides to pursue only one of the degrees, must satisfy all the requirements for the degree sought.

Application Information

Applicants to the MSHA, MSHA-MBA, MSHA-MSHI, or MSHA-MPH programs must have completed or anticipate completion of at least a baccalaureate degree from a regionally accredited college or university or from a recognized university abroad before entry into the program. Application for the MSHA program should be made by visiting the UAB Graduate School website (uab.edu/graduate) and click the 'Apply Now' button.

Telephone 205-934-1583
E-mail parmstrong@uab.edu
Web www.uab.edu/msha

Additional Information

Deadline for Entry Term(s):	Fall
Deadline for All Application Materials to be in the Graduate School Office:	December 1 for first priority and June 1 if space is still available
Number of Evaluation Forms Required:	Three
Entrance Tests:	TOEFL and TWE are also required for all international applicants whose native language is not English.
Comments:	Additional application for admission is required by program

For detailed information, contact Admissions Coordinator,
Department of Health Services Administration, UAB School of Health
Professions, SHPB 567, 1716 9th Avenue South, Birmingham, AL 35294.
Telephone 205-934-1583
E-mail parmstrong@uab.edu
Web www.uab.edu/msha

Executive Master of Science in Health Administration Program Information

Qualified students can earn the Master of Science in Health Administration (MSHA) by completing the Executive format. This program is open to individuals with at least 5 years of experience in health care organizations, either as managers or as clinical professionals. Participants in the MSHA program (Executive format) complete both on-campus and distance-learning activities, and a brief field experience, within 2 years of study.

Executive Health Administration and Master of Science in Healthcare Quality and Safety Coordinated Degree

Students wishing to pursue simultaneously the executive format of the Master of Science in Health Administration and the Master of Science in Healthcare Quality and Safety degrees must be accepted into both programs and complete twenty-eight (28) courses, including an interactive capstone experience course. A student who enters a coordinated program, but subsequently decides to pursue only one of the degrees, must satisfy all the requirements of the degree sought.

Healthcare Quality and Safety Certificate for Executive Master of Science in Health Administration

Students enrolled in the Executive Master of Science in Health Administration program, may pursue a graduate certificate in Healthcare Quality and Safety. To obtain the certificate, Executive MSHA students may add an online HQS certificate course in each fall and spring term, increasing their credits hours from 9 to 13. For more information, please contact the HQS or MSHA programs.

Contact Information

For detailed information, contact Admissions Coordinator, Department of Health Services Administration, UAB School of Health Professions, SHPB 590C, 1716 9th Avenue South, Birmingham, Alabama 35294.
Telephone 205-996-6593
E-mail hjlee@uab.edu (sarap@uab.edu)
Web www.uab.edu/msha

Graduate Certificate in Healthcare Financial Management

Any student who receives three "C"s or one "F" in any graduate level course while in the MSHA program will be dismissed from the program.

Requirements	Hours
HA 620 Healthcare Financial Management I	3
HA 621 Healthcare Financial Management II	3
HA 623 Application of Health Care Finance Principles	3
HA 624 Revenue Cycle Management	3

Select one elective from the list below:

MBA 621 Topics in Corporate Finance

MBA 622 Portfolio Theory and Construction	
MBA 624 Global Financial Management	
MBA 629 Treasury Management	
MBA 626 Credit Markets and Instruments	3
Total Hours	15

Executive Master of Science in Health Administration

The Executive MSHA Program requires a minimum of 57 semester hours for the MSHA degree. Any student who receives three "C"s or one "F" in any graduate level course while in the MSHA Program will be dismissed from the program.

Requirements	Hours
HA 602 Introduction to Health Care Systems	3
HA 605 Health Policy and Politics in the U.S.	3
HA 606 Operations Management & Process Improvement in Health Care Organizations	4
HA 612 Essentials of Health and Human Disease	3
HA 613 Health Law	3
HA 614 Process Improvement	3
HA 620 Healthcare Financial Management I	3
HA 621 Healthcare Financial Management II	3
HA 625 Strategic Planning and Management	3
HA 631 Organization Theory and Behavior	3
HA 632 Quantitative Methods in Health Services Admin	3
HA 635 Human Resources Management in Health Services Administration	3
HA 637 Leadership	3
HA 640 Information Systems and Management Science in Health Services Administration	3
HA 645 Health Economics	3
HA 655 Seminar: Synthesis of Health Services Administration	3
HA 671 Health Care Marketing	3
HA 674 Health Care Innovation	3
HA 695 Independent Study	3
Total Hours	58

Residential Master of Science in Health Administration

Any student who receives three C's or one F in any graduate level program will be dismissed from the program.

Requirements	Hours
HA 602 Introduction to Health Care Systems	4
HA 605 Health Policy and Politics in the U.S.	3
HA 606 Operations Management & Process Improvement in Health Care Organizations	3-4
HA 612 Essentials of Health and Human Disease	3
HA 613 Health Law	3
HA 620 Healthcare Financial Management I	3
HA 621 Healthcare Financial Management II	3
HA 625 Strategic Planning and Management	3
HA 628 Leadership Development	3
HA 631 Organization Theory and Behavior	3
HA 632 Quantitative Methods in Health Services Admin	3

HA 635	Human Resources Management in Health Services Administration	3
HA 640	Information Systems and Management Science in Health Services Administration	3
HA 671	Health Care Marketing	3
HA 675	Health Administration Internship	3
HA 680	Health Administration Capstone	2
Administrative Residency (take twice)		10
HA 690	Administrative Residency	
HCO 601	Health Economics	3
MBA 601	Accounting and Finance for Managers	3
Two Electives ¹		6
Total Hours		70-71

Dual Master of Science in Health Administration and Master of Science in Health Informatics

Any student who receives three C's or one F in any graduate level course while enrolled in the MSHA program will be dismissed from the program.

Requirements	Hours
HA 602	Introduction to Health Care Systems 4
HA 605	Health Policy and Politics in the U.S. 3
HA 606	Operations Management & Process Improvement in Health Care Organizations 3-4
HA 612	Essentials of Health and Human Disease 3
HA 613	Health Law 3
HA 620	Healthcare Financial Management I 3
HA 621	Healthcare Financial Management II 3
HA 625	Strategic Planning and Management 3
HA 628	Leadership Development 3
HA 631	Organization Theory and Behavior 3
HA 632	Quantitative Methods in Health Services Admin 3
HA 635	Human Resources Management in Health Services Administration 3
HA 671	Health Care Marketing 3
HA 680	Health Administration Capstone 2
Administrative Residency (take twice) 10	
HA 690	Administrative Residency
HCO 601	Health Economics 3
One Elective	¹ 3
Total Hours 58-59	

Dual Master of Science in Health Administration and Master of Business Administration

Any student who receives three C's or one F in any graduate level course while enrolled in the MSHA program will be dismissed from the program.

Requirements	Hours
HA 602	Introduction to Health Care Systems 4
HA 605	Health Policy and Politics in the U.S. 3
HA 606	Operations Management & Process Improvement in Health Care Organizations 3-4
HA 612	Essentials of Health and Human Disease 3
HA 613	Health Law 3

HA 620	Healthcare Financial Management I	3
HA 621	Healthcare Financial Management II	3
HA 625	Strategic Planning and Management	3
HA 628	Leadership Development	3
HA 631	Organization Theory and Behavior	3
HA 632	Quantitative Methods in Health Services Admin	3
HA 635	Human Resources Management in Health Services Administration	3
HA 671	Health Care Marketing	3
HA 680	Health Administration Capstone	2
Administrative Residency (take twice)		10
HA 690	Administrative Residency	
HCO 601	Health Economics	3
HA 640	Information Systems and Management Science in Health Services Administration	3
Total Hours		58-59

¹ Pre-approved Electives: HA 623, HA 624, HA 675, HCO 620, HI 600, HI 640, HI 650, HI 651, HQS 600, HQS 625, HQS 635, MBA 690

Health Informatics

Degree Offered:	M.S.H.I.
Program Director:	Sue S. Feldman, RN, MEd, PhD
Phone:	(205) 934-3509
E-mail:	mshi@uab.edu
Website:	www.uab.edu/hi

Master of Science in Health Informatics

Program Admission

Admission to the program is in the fall semester only. Application to the program may be made September through May 31, preceding the expected date of enrollment for the next fall term. Applications received after May 31 are considered on a space-available basis. Applications are evaluated against the Graduate School criteria and those criteria developed specifically for the HI program. The ideal size of each entering class is 30 to 35 students.

Admission Requirements

Admission to the program requires acceptance to the Graduate School of The University of Alabama at Birmingham. Applicants must have completed or anticipate completion of at least a baccalaureate degree from a regionally accredited college or university or from a recognized university abroad before entering the program. As a criterion for unconditional admission, applicants must have no less than a B GPA (3.0 on a 4.0 scale) for the last 60 semester hours of earned undergraduate credit or overall undergraduate credit or overall undergraduate hours. Official transcripts of all previous academic work beyond the secondary level should be submitted. Before matriculation, entering students must have received a final transcript for each degree received.

The applicant should include a carefully drafted statement about his or her personal interests, career goals, and relevant background experience and a professional resume. Three **confidential** letters of recommendation from individuals qualified to write concerning the applicant's potential for success in both a graduate program and in the Health Informatics field must be submitted.

Prior to entering the program, applicants should have completed three credit hours of undergraduate or graduate course work in statistics and in SQL programming or a relevant continuing education course.

Admission to the MSHI program is determined by an interview process and the consensus of the Admissions Committee. The decision is based on previous academic record, professional recommendations as evidence of ability to perform graduate-level work, and an interview with two faculty members. The program director reserves the prerogative for final recommendation on admission status to the Graduate School.

Applicants accepted to the program must complete a criminal background check and drug screen at program admission and again prior to clinical placement as required by school policy.

To be considered for early admission, all application materials must be in the Graduate School Office by February 1.

Additional Information

Deadline for Entry Term(s):	Fall
Deadline for All Application Materials to be in the Graduate School Office:	May 31
Number of Evaluation Forms Required:	Three Professional Letters of Recommendation
Entrance Tests:	(TOEFL and TWE also required for international applicants whose native language is not English.)
Length of Study:	45 Credit Hours

Program Overview

Based on the needs of health care CIOs, UAB's MSHI curriculum integrates the domains of information and communication technology, the healthcare delivery process, and leadership and management principles.

This collaborative approach to healthcare IT allows our graduates to understand the complexity of relationships that must be considered when making technology decisions in a healthcare setting.

Our students graduate with a solid understanding of how clinicians and administrators use information and technology in making decisions. With courses in the effective design and use of information systems, databases, software, hardware and networks, students also learn how to successfully manage the flow of information throughout a healthcare organization and the value of building a solid business case for the purchase, implementation, and use of technology in a healthcare setting. Graduates are prepared to become senior and executive level leaders in the healthcare IT industry. Students are exposed to a variety of academic disciplines and gain a broad education that serves as a foundation for them throughout their careers as information and health service executives.

The program is comprised of a core curriculum plus one track of the student's choosing. The first year of the MSHI core curriculum includes HI 640-Introduction to Health Informatics and the US Healthcare Delivery System, HI 600-Analysis & Design of Information Systems in Healthcare, HI 685 Principles of Health Informatics, HI 601-Databases and Data Modeling, HI 602-Clinical & Administrative Systems, HI 630-Strategic Planning and Contracting, HI 620-Security and Privacy in Healthcare.

During the second year, students complete the MSHI core by taking HI 686-Leadership Theory, HI 687-Leadership Development and HI 688-

Leadership Advocacy, and completing a capstone project (HI 654 or HI 664, depending on track).

Data Analytics Track

The proliferation of information technology to support workers in the healthcare industry has resulted in a massive amount of healthcare data being generated. While the data are seen as an organizational asset that can both help determine trends and patterns in patient care delivery and increase organizational efficiency, there are very few individuals trained to extract, combine, organize, interpret, and display these data in meaningful ways. This track produces graduates who help healthcare organizations institute data-driven decision-making processes. Beyond that, graduates of this track in the MSHI program are trained to assist organizations with developing data governance strategies, which help them define the way they think about quality, security, access to data, and policies surrounding data.

Courses in the Data Analytics Track include HI 632-Quantitative Methods for Health Informatics, HI 660-Advanced Requirements Analysis, HI 661-Advanced Database Design and SQL for Healthcare, HI 662-Healthcare Business Intelligence and HI 664-Data Analytics Capstone Project.

Entry into this track requires admission to the MSHI Program and completion of the first year MSHI core curriculum. Declaration for this track occurs in the first summer semester of the student's first year in the program.

User Experience Track

Information technology has facilitated many significant improvements to the way that we deliver patient care. But, most IT solutions currently in use by healthcare organizations were not designed to enable new models of healthcare delivery and will require development of more intuitive interfaces that model the behaviors and needs of patients and clinical end users. New products and software cannot be perceived as too difficult to use, nor can they compromise clinicians' ability to interact meaningfully with their patients. Graduates of the Healthcare User Experience Track bring an in-depth understanding of a complex healthcare delivery system, the technologies that are required to support patient care delivery, and the understanding of best practices in designing safe, effective, and user-friendly products and software in a healthcare setting.

Courses in the User Experience Track include HI 650-Foundations of Healthcare User-Based Design, HI 651-Foundations of Healthcare User-Based Research, HI 652-Design Thinking for Healthcare, HI 653-Managing the User-Centered Development Process and HI 654-Healthcare User Experience Capstone Project.

Entry into this track requires admission to the MSHI Program and completion of the first year MSHI Core. Declaration for this track occurs in the first summer semester of the student's first year in the program.

Clinical Informatics Graduate Certificate

The Clinical Informatics Graduate Certificate is designed as a high-quality, rigorous educational forum for practicing clinicians interested in advancing their informatics skills. Students will develop a broad understanding of the strategic application of clinical and administrative information systems, the data contained in these systems, and the people and processes required for effective information systems deployment.

Expanding the number of clinical professionals who can act as health informatics champions in healthcare organizations is needed to enable

achievement of the 'triple aim' in healthcare – high quality health care, improved population health, and efficient use of healthcare resources.

The curriculum is delivered online, and is comprised of 15 credit hours (4 courses) that may be completed in two academic terms. Applicants must be admitted to the UAB Graduate School and to the Clinical Informatics Graduate Certificate program.

Additional Information

Requirement	Fulfilled By:
Deadline for Entry Term(s):	Fall
Deadline for All Application Materials to be in the Graduate School Office:	May 31
Length of Study:	15 Credit Hours

Contact Information

For detailed information, contact the Program Manager, Misty Altiparmak, Graduate Programs in Health Informatics, UAB School of Health Professions, SHPB 590A. Physical address: 1716 9th Avenue South. Mailing address: 1720 2nd Avenue South, Birmingham, AL 35294
Telephone 205-934-3509
Fax 205-975-6608
E-mail mshi@uab.edu

Graduate Certificate in Clinical Informatics

Requirements	Hours
HI 640 Intro to Health Informatics and Health Care Delivery	4
HI 600 Analysis and Design of Health Information Systems	4
HI 602 Clinical and Administrative Systems	3
HI 685 Principles in Health Informatics	4
Total Hours	15

Master of Science in Health Informatics

The MSHI Program follows a Core/Track model which consists of a total of 45 semester hours. 28 semester hours are taken in the core Informatics courses. The remaining 17 semester hours are taken in one of two specialty tracks (Healthcare Data Analytics or Healthcare User Experience).

The MSHI Program allows students to earn only two grade of "C" during their time in the program. Upon earning a third grade of "C," the student will be dismissed from the program. Any final grade of "D" or below in any course will result in dismissal from the program.

Requirements	Hours
HI 600 Analysis and Design of Health Information Systems	4
HI 602 Clinical and Administrative Systems	3
HI 601 Databases and Data Modeling	3
HI 620 Security and Privacy in Health Care	4
HI 630 Strategic Planning and Contracting for Health Information Systems	4
HI 640 Intro to Health Informatics and Health Care Delivery	4
HI 686 Leadership Theory	1
HI 687 Leadership Development	1
HI 688 Leadership Advocacy	1

HI 685 Principles in Health Informatics	3
Total Hours	28

Healthcare Data Analytics Track

Requirements	Hours
HI 660 Healthcare Requirements Analysis	3
HI 661 Advanced Database Design and SQL for Healthcare	3
HI 662 Healthcare Business Intelligence	3
HI 632 Quantitative Methods for Health Informatics	3
HI 664 Data Analytics Capstone Project	5
Total Hours	17

Healthcare User Experience Track

Requirements	Hours
HI 650 Foundations of Healthcare User-Based Design	3
HI 651 Foundations of Healthcare User-Based Research	3
HI 652 Design Thinking for Healthcare	3
HI 653 Managing the User-Centered Development Process	3
HI 654 Healthcare User Experience Capstone Project	5
Total Hours	17

Healthcare Leadership

Degrees Offered:	D.Sc.
Director:	Dr. Robert Hernandez
Phone:	(205) 934-1665
E-mail:	hernande@uab.edu
Website:	http://www.uab.edu/execdoc

Healthcare Leadership

Prospective students should use this [checklist \(D.Sc.\)](http://www.uab.edu/graduate/images/acrobat/checklist/adminhlthservices_dsc.pdf) (http://www.uab.edu/graduate/images/acrobat/checklist/adminhlthservices_dsc.pdf) to obtain specific admissions requirements on how to apply to the Graduate School.

Doctor of Science Program Information

The Doctor of Science (D.Sc.) in Healthcare Leadership program is designed for healthcare executives who are seeking to engage in a rigorous course of study that will also permit them to retain their demanding work and life responsibilities. D.Sc. students are interested in continuing a practice-focused career, as opposed to the academic career sought by most residential Ph.D. students.

The program is offered by the Department of Health Services Administration. Faculty associated with the School of Public Health, Lister Hill Center for Health Policy, Center for Outcomes and Effectiveness Research and Education, and other national experts also contribute to student learning.

Admission Requirements

Qualified applicants will preferably have a master's degree in health administration; health informatics; business administration; or a related field. Degree(s) must be from an accredited institution. In addition, qualified applicants will have a minimum of five years of mid- to senior-level managerial experience in health management.

Students whose first language is not English must submit recent scores for the Test of English as a Foreign Language (TOEFL) exam or IELTS. Applicants who have received a degree from an accredited U.S. institution or from institutions in countries where English is the primary language of instruction are not required to submit the TOEFL or IELTS score.

The UAB Graduate School has approved a waiver of the GRE/GMAT requirement for all applicants to the Executive Doctoral Program in Healthcare Leadership.

The application procedure for the D.Sc. in Healthcare Leadership Program requires both an application to the UAB Graduate School as well as supplemental materials that must be submitted directly to the D.Sc. Program Office. A full checklist of required items can be found on the "Application Process" page of the program website www.uab.edu/execdod.

Applications are reviewed by the Admissions and Policy Committee of the Executive D.Sc. in Healthcare Leadership Program. The committee forwards a recommendation to the Dean of the UAB Graduate School who then communicates official admission decisions via written letter.

As it is based on a cohort model, the Executive D.Sc. Program only admits for the fall of each year. Applicants who complete applications prior to February 1 will be given priority in the admission process. Applications received after February 1 will be considered on a space-available basis.

Program of Study

The program of study consists of four components

1. Courses in administration and health systems,
2. Courses in research methodology and statistics,
3. Comprehensive examinations,
4. The doctoral dissertation.

Students must complete all coursework and pass a comprehensive examination before work can officially begin on the dissertation. The investigation and other special work leading to the dissertation must be performed directly under the guidance and supervision of a four-person committee of the UAB graduate faculty. The normal minimum period in which the doctoral degree can be earned is three years of full-time study.

Degree Completion

The granting of the D.Sc. degree is based on completion of all required coursework, residency requirements, a comprehensive examination, dissertation requirements, and the recommendation of the Healthcare Leadership graduate program director and the dissertation committee.

Mission, Vision, and Values Statements

The mission of the Executive Doctoral Program is to develop highly qualified strategic management practitioners and scholars. We accomplish this mission through: our strategic management courses, faculty/student interaction, publishing and presenting our work, and teaching others.

Additional Information

Deadline for Priority Application:	February 1st. After February 1st, applications will be considered on a space-available basis.
Number of Evaluation Forms Required:	Three
Entrance Tests:	TOEFL required for international applicants whose native language is not English.

Contact Information

For detailed information, contact the Program Office of the Doctoral Programs in Healthcare Leadership, UAB School of Health Professions Building, 1716 9th Avenue South, Birmingham, AL 35294-1212.
 Telephone 205-934-3588
 Fax 205-975-6608
 E-mail execdod@uab.edu (phdha@uab.edu)
 Web www.uab.edu/shp/hsa/doctor-of-science-dsc-executive

Healthcare Quality and Safety

Degree Offered:	M.S.
Program Director:	Allyson Hall, PhD
Phone:	(205) 934-3509
E-Mail:	askhqs@uab.edu
Website:	www.uab.edu/hqs

Master of Science in Healthcare Quality and Safety

The Master of Science in Healthcare Quality and Safety will prepare individuals to provide leadership in the design, implementation, and evaluation of clinical and non-clinical process improvement and patient safety activities in complex healthcare environments. The program will comprise a didactic and experiential curriculum including:

- Quantitative and analytical methods and statistical process control techniques
- Quality management models such as PDSA, Lean, and Six Sigma
- Risk and patient safety assessment and management techniques
- Implementing and managing cultural and organizational change
- Team leadership and communication
- Leadership of high reliability organizations
- Integrative capstone project

The program is housed in the Department of Health Services Administration (HSA) in the School of Health Professions. The HSA Department offers graduate degrees in health administration and health informatics, both of which include courses with leadership, quality improvement, and data analytics content, as well as a graduate degree in healthcare simulation, and a graduate certificate in Healthcare Quality and Safety (HQS).

Admission Requirements

Admission requirements include eligibility for admission to the UAB Graduate School, and at least two years of relevant work experience in the healthcare industry. Applicants must have completed a bachelor's degree (or higher) from an accredited college or university or from a recognized university abroad, with a minimum GPA of 3.0 in course work.

Additional requirements will include completion of a program-specific application showing quality or safety-related employment and previous relevant training, personal statement regarding interest in the program, and prior completion of a basic statistics course.

An admissions committee comprised of program administrators and HQS course directors will review applications and make final admission decisions based on desired cohort size. Application to the program may be made September through May 31, preceding the expected date of enrollment for the next fall term. Applications received after May 31 are considered on a space-available basis.

Entry Term:	Fall Semester
Deadline for All Application Materials to be in the Graduate School Office:	May 31, after May 31 applications will be considered on a space available basis
Length of Study:	36 Credit Hours
Number of Evaluation Forms Required:	Three Professional Letters of Recommendation

Master of Science in Healthcare Quality and Safety and Executive Health Administration Coordinated Degree

Students wishing to pursue simultaneously the Master of Science in Healthcare Quality and Safety and the executive format of the Master of Science in Health Administration degrees must be accepted into both programs and complete twenty eight (28) courses, including an interactive capstone experience course. A student who enters a coordinated program, but subsequently decides to pursue only one of the degrees, must satisfy all the requirements of the degree sought.

Healthcare Quality and Safety Graduate Certificate

Prospective students should use this checklist to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	Graduate Certificate
Program Director:	Allyson Hall, PhD
Medical Director:	Scott Buchalter, MD
Phone:	(205) 994-3509
E-Mail:	askhqs@uab.edu
Website:	www.uab.edu/hqs

Program Information

The Graduate Certificate in Healthcare Quality and Safety is a unique, multidisciplinary approach to the analysis and solution of complex problems. The program, which is offered totally online, prepares clinical and administrative professionals to deploy quality- and safety-focused strategies for their organizations. HQS is a high quality, academically rigorous forum for developing the individual knowledge and skills needed

to conduct clinical practice and non-clinical process improvement projects in a complex medical environment.

The certificate program, housed in the Department of Health Services Administration in the School of Health Professions, requires a combined approach using data and models from the natural, social, technological, behavioral and life sciences, and other specialized fields. The curriculum is delivered by an interdisciplinary team of faculty from the University of Alabama at Birmingham Schools of Health Professions, Nursing, Public Health and Medicine.

Admission Requirements

- Undergraduate, graduate or professional degree in a health-related field and at least two years of experience in health care
- Personal statement regarding interest in the program and the identification of a quality related project topic
- Minimum G.P.A of 3.00 or above for the past 60 hours of course work
- Non-refundable application fee of \$50, payable online
- Official transcripts of all previous academic work beyond the secondary level
- Current Resumé or CV which outlines your professional work experience
- Three professional letters of recommendation

Entry Term:	Fall and Spring Semesters
Deadline for All Application Materials to be in the Graduate School Office:	May 31, after May 31, applications will be considered on a space available basis
Length of Study:	15 Credit Hours

Required Coursework

Requirements	Hours
HQS 600 Introduction to Clinical Quality Improvement	4
HQS 610 Quantitative Methods, Measurement, and Tools for Quality Improvement	4
HQS 625 Fundamentals of Patient Safety	4
HQS 630 Leadership of High Reliability Healthcare Organizations	3
Total Hours	15

Healthcare Quality and Safety Certificate for Executive Master of Science in Health Administration

Students enrolled in the Executive Master of Science in Health Administration program, may pursue a graduate certificate in Healthcare Quality and Safety. To obtain the certificate, Executive MSHA students may add an online HQS certificate course in each fall and spring term, increasing their credit hours from 9 to 13. For more information please contact the HQS or MSHA programs.

Contact Information

For detailed information, contact the Department of Health Services Administration, Healthcare Quality and Safety Program, UAB School of Health Professions, SHPB 590A, 1716 9th Avenue, Birmingham, Alabama 35294-1212.
Telephone 205-934-3509.
E-mail HQS (SHRP-GCHQS@uab.edu) askhqs@uab.edu

Website: <http://www.uab.edu/hqs>

Graduate Certificate in Healthcare Quality and Safety

A student who receives three grades of "C", or any grade of "F" on any course taken in pursuit of the HQS Graduate Certificate will be dismissed from the program.

Requirements		Hours
HQS 600	Introduction to Clinical Quality Improvement	4
HQS 610	Quantitative Methods, Measurement, and Tools for Quality Improvement	4
HQS 625	Fundamentals of Patient Safety	4
HQS 630	Leadership of High Reliability Healthcare Organizations	3
Total Hours		15

Master of Science in Healthcare Quality and Safety

A student who receives three grades of "C", or any grade of "F" on any course taken in pursuit of the MS degree in Healthcare Quality and Safety will be dismissed from the program.

Requirements		Hours
HQS 600	Introduction to Clinical Quality Improvement	4
HQS 610	Quantitative Methods, Measurement, and Tools for Quality Improvement	4
HQS 613	Advanced Data Use in Quality Improvement and Patient Safety	3
HQS 625	Fundamentals of Patient Safety	4
HQS 630	Leadership of High Reliability Healthcare Organizations	3
HCS 640	Project Management: Leading Successful Healthcare Initiatives	3
HQS 635	Healthcare Policy and Regulation	3
HCS 660	Financial Management for Healthcare Quality Leaders	3
HQS 675	Evaluating and Designing Quality Improvement Models	3
HQS 698	Integrative Capstone Experience/Non-Thesis Project	3
Students must take 3 hours of elective credit from the following options:		3
HCM 550	Healthcare Lean Six Sigma Green Belt Seminar	
HI 650	Foundations of Healthcare User-Based Design	
HI 651	Foundations of Healthcare User-Based Research	
HI 652	Design Thinking for Healthcare	
HRP 575	Introduction to Healthcare Simulation for Quality and Safety	
HCO 612	Strategic Management in Health Programs	
HCO 620	Health Insurance & Managed Care	
HCO 621	Clinical Decision Making and Cost-Effectiveness Analysis	
HCO 677	Patient-Based Outcomes Measurement	
Total Hours		36

Healthcare Simulation

Master of Science in Healthcare Simulation

Degree Offered:	M.S.
Program Director:	Michelle Brown, PhD
Phone:	(205) 975-9617

Email:	michellebrown@uab.edu
Website:	www.uab.edu/sim

Program Overview

The Master of Science in Healthcare Simulation guides students through the fundamentals of healthcare simulation as a tool for innovative education, training, research, and quality improvement. This 18-month program includes courses affiliated with our nationally ranked healthcare administration program. It will prepare graduates to become managers and leaders in the field of healthcare simulation. The program has both didactic and experiential components encompassing simulation methodology, teamwork and communication, and clinical quality improvement.

Admission Requirements

Admission requirements include eligibility for admission to the UAB Graduate School. Experience in the healthcare industry or a related field is preferred. Applicants must have a bachelor's degree (or higher) from an accredited college or university or from a recognized university abroad, with a minimum GPA of 3.0 in coursework.

Additional requirements include submission of a personal statement regarding interest in the program, three letters of recommendation, prior completion of a basic statistics course, and healthcare terminology (if undergraduate degree is not in a health-related field).

Requirement	Fulfilled By:
Deadline for Entry Term(s):	Fall
Deadline for All Application Materials to be in the Graduate School Office:	July 1st
Entrance Tests:	The Test of English as a Foreign Language (TOEFL) and the Test of Written English (TWE) for international applicants from non-English speaking countries
Number of Recommendation Letters Required:	Three
Comments:	Transcript evaluation by WES is required for applicants with foreign university degrees

Contact Information

For detailed information, contact the Department of Health Services Administration, Master of Science in Healthcare Simulation Program, UAB School of Health Professions, SHPB 590A. Physical address: 1716 9th Avenue South. Mailing address: 1716 9th Avenue South, Birmingham, AL 35294
 Telephone 205-934-3509
 Fax 205-975-6608
 E-mail dzink@uab.edu (dzink@uab.edu)

Master of Science in Healthcare Simulation

The MSHS program consists of a total of 33 semester hours. Twenty-seven semester hours are considered required core courses. The remaining 6 semester hours are elective courses chosen based on student interest and program director approval.

The MSHS program allows students to earn only two grades of "C". Upon earning a third grade of "C," the student will be dismissed from the program. Any grade of "D" or below in any course will result in dismissal from the program.

Requirements	Hours
HCS 575 Introduction to Healthcare Simulation for Quality and Safety	3
HCS 620 Current Trends in Simulation	2
HCS 625 Simulation Methodology	3
HCS 626 Healthcare Simulation Laboratory	1
HCS 640 Project Management: Leading Successful Healthcare Initiatives	3
HCS 698 Simulation Capstone/Non-thesis Research	3
HQS 600 Introduction to Clinical Quality Improvement	4
Select 6 hours of elective coursework approved by the program director. ¹	6
HCS 660 Financial Management for Healthcare Quality Leaders	3
HQS 630 Leadership of High Reliability Healthcare Organizations	3
HCS 610 Instructional Design in Simulation	2
Total Hours	33

¹ Students must take a minimum of 6 semester hours of elective courses. Program director approval is required for all elective courses

Nutrition Sciences

Nutrition Sciences

The School of Health Professions Department of Nutrition Sciences offers the most comprehensive nutrition education experience you will find on one campus. Everything you need to learn to save lives, prevent disease, and improve quality of life can be found at UAB.

You can study the clinical side of nutrition in the heart of Alabama's top medical center, a dynamic academic campus environment surrounded by highly regarded medical facilities such as UAB Hospital, Birmingham VA Medical Center, and Children's of Alabama. The Department of Nutrition Sciences offers an undergraduate minor in Nutrition Sciences, a Master of Science in Nutrition Sciences (multiple tracks available), and a Doctor of Philosophy in Nutrition Sciences.

Master of Science Program in Nutrition Sciences (NS)

Degree Offered:	M.S.
Director:	Dr. Brenda Bertrand
Phone:	(205) 934-8770
E-mail:	brendamb@uab.edu
Web site:	www.uab.edu/nutrition

The MS in Nutrition Sciences provides experiences that foster understanding about nutrition research, health promotion, and disease prevention. Students choose from various available track options as described below.

Admission to the Master of Science Program in Nutrition Sciences

The Nutrition Sciences graduate program recommends fall-term entry. Interested students must first obtain admission to the UAB Graduate School. Graduate School admission standards include:

1. A 'B' average computed overall, or alternatively computed over the last 60 semester hours of earned credit;
2. Evidence of a bachelor's degree from a regionally accredited university or college in the United States;
3. GRE Score within the past five years for select tracks (please check with the program for specific track requirements); competitive candidates have a combined GRE score of at least 300 on the verbal and quantitative sections; and
4. Complete a criminal background check and drug screen at program admission and again prior to clinical placement as required by school policy for select tracks. Please check with the program for specific track requirements.

Additional requirement for the Clinical Track/Dietetic Internship Option only:

1. Evidence of a bachelor's degree from a Didactic Program approved by the Accreditation Council for Education in Nutrition and Dietetics (ACEND).

Additional requirement for the Clinical Track/Prior Learning Option only:

1. Verification statement from the Accreditation Council for Education in Nutrition and Dietetics (ACEND) demonstrating successful completion of a Dietetic Internship.

Additional requirement for the Dietitian Education Program Track only:

1. Evidence of a bachelor's degree in nutrition or other major with specified prerequisite courses.

Degree Requirements

The MS in Nutrition Sciences requires successful completion of 14 semester hours in core courses, and additional specific courses for each of the tracks.

Core Requirements

Requirements	Hours
NTR 618 Nutritional Biochemistry	6
NTR 621 Applied Statistics to Nutrition Sciences I	3
NTR 637 Applied Research in Nutrition Sciences	3
NTR 690 Seminar	2
Total Hours	14

Additional Information

Deadline for Entry Term(s): Fall and Summer (Spring admission available for Lifestyle Management Disease Prevention Track and Clinical Track/Prior Learning Option)

Deadline for All Application Materials to be in the Graduate School Office: Fall - DEP-C/DEP Track May 15, all other MS Tracks June 1; Spring - November 1; and Summer - April 1

Number of Evaluation Forms Required:	Three
Entrance Tests:	GRE (TOEFL, IELTS, or PTEA also required for international applicants whose native language is not English.)

For detailed information, contact:

Dr. Brenda Bertrand, Professor and Director, Graduate Programs in Nutrition Sciences

Department of Nutrition Sciences, UAB School of Health Professions

Webb Building, Room 534, 1675 University Boulevard, Birmingham, AL 35294-3360

Telephone: 205-934-8770

E-mail: bertrandmb@uab.edu (miller1@uab.edu)

Website: www.uab.edu/shp/nutrition/education

Master of Science in Nutrition Sciences-Clinical Track/Dietetic Internship

Students in the MS in Nutrition Sciences Clinical Track/Dietetic Internship must complete 48 semester hours of graduate-level coursework (14 semester hours in core courses and 34 semester hours of required track courses). Students are required to complete 1,200 contact hours of supervised professional practice in nutrition and dietetics (NTR 589).

This is a non-thesis track. All non-practicum course work is offered online. Fall term admission only. Only students who have completed a bachelor's degree from a didactic program approved by ACEND are eligible to apply.

Requirements	Hours
NTR 500 Communications in Nutrition	1
NTR 501 RDN Certification Review	0
NTR 601 Advanced Medical Nutrition	3
NTR 604 Principles and Practice of Nutrition Support	3
NTR 611 Advanced Food System and Resource Management	3
Internship/Practicum	24
NTR 589 Internship Practicum	
Total Hours	34

Clinical Track / Dietetic Internship Accreditation

The Clinical Track / Dietetic Internship is accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND) and is designed to prepare entry-level dietitians for careers in a variety of health care, wellness, and community settings. Admission to this track is awarded on a competitive basis through a national matching process using the Dietetic Internship Centralized Application Service (DICAS) portal and D & D Digital. Upon acceptance into the Dietetic Internship, you must then apply to be admitted to the UAB Graduate School.

An onsite internship is offered in Birmingham, and offsite in Huntsville, Mobile, and Montgomery. Upon completion of the program, graduates are eligible to take the national examination to become a Registered Dietitian Nutritionist (RDN).

Additional Information

Requirement	Fulfilled By:
Entry Term(s)	Fall
Deadline for DICAS and D&D Digital:	February 15
Deadline for ALL Application Materials to be in the Graduate School Office:	June 1

For detailed information, contact:

Mrs. Carleton Rivers, Assistant Professor and Director, Clinical Track / Dietetic Internship

Department of Nutrition Sciences, UAB School of Health Professions

Webb Building, Room 540, 1675 University Boulevard, Birmingham, AL 35294-3360

Telephone: 205-934-3223

E-mail: meadows4@uab.edu (dintr@uab.edu)

Website: www.uab.edu/shp/nutrition/education/dietetic-internship

Master of Science in Nutrition Sciences-Clinical Track/Dietetic Internship/MPH Dual Degree

Students in the Dietetic Internship/MPH Dual Degree option must complete 30 semester hours of graduate-level coursework, comprising 26 hours of public health courses and 4 semester hours of NTR 589 to be applied to the MPH degree, in addition to the requirements of the MS in Nutrition Sciences Clinical Track/Dietetic Internship program described above. All required public health coursework is offered online.

Only students who are enrolled in the MS in Nutrition Sciences Clinical Track /Dietetic Internship are eligible to apply for the dual degree option.

Requirements	Hours
HCO 600 Management and Policy in Public Health Systems and Services	4
BST 601 Biostatistics	4
ENH 600 Fundamentals of Environmental Health Science	3
EPI 600 Introduction to Epidemiology	3
HB 600 Social and Behavioral Sciences in Public Health	3
PUH 695 The Public Health Integrative Experience	3
NTR 589 Internship Practicum	4
MPH Focus Courses	6
Total Hours	30

For further information about the MPH component of the dual degrees, contact:

Hannah VanSlambrouck, Director of Enrollment Management

University of Alabama at Birmingham School of Public Health

1720 2nd Avenue South, 130 Ryals Public Health Building, Birmingham AL 35294-0022

Telephone: 205-975-8688

E-mail: hannahv@uab.edu

Website: <https://www.soph.uab.edu/coordinated-degree-programs>

Master of Science in Nutrition Sciences-Lifestyle Management and Disease Prevention Track

Students in the MS in Nutrition Sciences Lifestyle Management and Disease Prevention Track must complete 36 semester hours of graduate-level coursework (14 semester hours in core courses, 19 semester hours of required courses, and 3 semester hours of graduate-level elective coursework). This is a non-thesis track and all didactic coursework is offered online. Prerequisite requirements include successful completion (with a grade of C or higher) in undergraduate courses, three semester hours each in the following subject areas: Introductory Nutrition, Biology, Organic Chemistry, Physiology, and Microbiology.

Requirements	Hours
NTR 609 Applied Nutrition for Physical Activity and Disease Prevention	3
NTR 631 Community Interventions for Healthy Lifestyles	3
NTR 632 Nutrition Counseling and Education	4
KIN 644 Application of Exercise Physiology to Fitness and Performance	3
CDS 545 Genetics and Genomics Applications in Healthcare	2
CDS 550 Introduction to Medical History Taking and Physical Examination	3
CDS 605 Survival Spanish for Health Professionals	1
Elective	3
Total Hours	22

Master of Science in Nutrition Sciences-Dietitian Education Program Track

Students may enter the MS in Nutrition Sciences, Dietitian Education Program Track (a coordinated program in Dietetics as defined by the Accreditation Council for Education in Nutrition and Dietetics of the Academy of Nutrition and Dietetics) with an undergraduate degree in nutrition or in another major with certain prerequisites, and cumulative GPA 3.0.

Students in the Dietitian Education Program Track must complete 58 hours of graduate-level coursework (5 semesters), comprised of 34 credit hours of didactic coursework and 24 credit hours of practicum (900 hours of supervised practice and 300 hours of alternate experiences). There are three practicum emphasis areas in the curriculum from which to choose: Lifestyle & Community Wellness, Diabetes Practice, or Translational Research in Obesity or Cancer. This is a non-thesis track and all non-practicum coursework is offered online. Practicum courses are offered in the Birmingham area, or in approved remote locations, allowing students to complete supervised practice requirements in their local setting. See information for "Locating Preceptors" on the program website

and contact the program director for additional admission requirements for a remote practicum, as students require guidance on locating their own supervised practice sites and preceptors. Students must complete required prerequisites prior to entering the Dietitian Education Program Track. The program does not grant credit for prior learning for any portion of the practicum components. All students must complete the required number of supervised practice hours. Upon successful completion of the program, which includes maintaining a cumulative 3.0 GPA, students will receive the MS Degree in Nutrition Sciences and the Verification Certificate required by the Accreditation Council for Education in Nutrition and Dietetics (ACEND) and the Commission on Dietetic Registration (CDR) for the Registered Dietitian Nutritionist credentialing exam.

Requirements	Hours
NTR 500 Communications in Nutrition	1
NTR 501 RDN Certification Review	0
NTR 600 Principles of Food Science Operations and Menu Planning	3
NTR 601 Advanced Medical Nutrition	3
NTR 604 Principles and Practice of Nutrition Support	3
NTR 611 Advanced Food System and Resource Management	3
NTR 631 Community Interventions for Healthy Lifestyles	3
NTR 632 Nutrition Counseling and Education	4
NTR 670 Practicum in Wellness	3
NTR 671 Practicum in Community Nutrition	3
NTR 672 Practicum in Food Systems Management	3
NTR 673 Practicum in Medical Nutrition Therapy I	3
NTR 674 Practicum in Medical Nutrition Therapy II	4
NTR 675 Practicum in Dietetic Administration	4
NTR 676 Advanced Practicum in Dietetics	4
Total Hours	44

For detailed information, contact Dr. Brenda Bertrand, Professor and Director, Graduate Programs in Nutrition Sciences, Department of Nutrition Sciences, UAB School of Health Professions, Webb Building, Room 534, 1675 University Blvd, Birmingham, AL 35294.

Telephone 205-934-8770

Web <http://www.uab.edu/shp/nutrition/education/dietitian-education-program>

The Dietitian Education Program Track has been granted Candidacy Status for Accreditation by The Accreditation Council for Education in Nutrition and Dietetics (ACEND). Students enrolled under candidacy status will be considered graduates of an accredited program on successful completion of the Dietitian Education Program Track.

Dietitian Education Program Graduate Certificate

The Dietitian Education Program Graduate Certificate (DEP-C) is restricted to students enrolled in the MS in Nutrition Sciences, Lifestyle Management and Disease Prevention track (LMDP) who have completed 29 hours in specific coursework and desire to be eligible to become credentialed as a registered dietitian. Students must complete an additional 37 credit hours (4 semesters) of graduate-level coursework in addition to the degree requirements above to earn the DEP Certificate.

The DEP graduate certificate requires 13 hours of didactic courses and 24 credit hours of practicum (900 hours of supervised practice and 300 hours of alternate experiences). In addition, for the Accreditation Council

for Education in Nutrition and Dietetics (ACEND) Verification Certificate, students concurrently complete 7 credits of LDMP track courses (NTR 609, KIN 644, CDS 605), 44 credit hours total over four semesters.

There are three practicum emphasis areas from which to choose: Lifestyle & Community Wellness, Diabetes Practice, or Translational Research in Obesity or Cancer. All non-practicum coursework is offered online. Practicum courses are offered in the Birmingham area. Practicum courses are also offered in approved remote locations, allowing students to complete their supervised practice requirements in their local setting. See information for "Locating Preceptors" on the program website and contact the program director for additional admission requirements for the remote practicums, as students require guidance on locating their own supervised practice sites and preceptors. The program does not grant credit for prior learning for any portion of the practicum components. All students must complete the required number of supervised practice hours. Upon successful completion of the degree and certificate requirements, which includes maintaining a cumulative 3.0 GPA, students will receive the MS in Nutrition Sciences degree, the DEP graduate certificate, and the Verification Certificate required by the Accreditation Council for Education in Nutrition and Dietetics and the Commission on Dietetic Registration (CDR) for the Registered Dietitian Nutritionist credentialing exam.

Requirements	Hours
NTR 500 Communications in Nutrition	1
NTR 501 RDN Certification Review	0
NTR 600 Principles of Food Science Operations and Menu Planning	3
NTR 601 Advanced Medical Nutrition	3
NTR 604 Principles and Practice of Nutrition Support	3
NTR 611 Advanced Food System and Resource Management	3
NTR 670 Practicum in Wellness	3
NTR 671 Practicum in Community Nutrition	3
NTR 672 Practicum in Food Systems Management	3
NTR 673 Practicum in Medical Nutrition Therapy I	3
NTR 674 Practicum in Medical Nutrition Therapy II	4
NTR 675 Practicum in Dietetic Administration	4
NTR 676 Advanced Practicum in Dietetics	4
Total Hours	37

Requirement	Fulfilled By:
Entry Term(s)	Fall
Deadline for ALL Application Materials to be in the Graduate School Office:	May 15
Number of Evaluation Forms Required:	Three
Other:	Personal Statement and May request interview
Entrance Tests:	TOEFL and TWE also required for international applicants whose native language is not English

For detailed information, contact Dr. Brenda Bertrand, Professor and Director, Graduate Programs in Nutrition Sciences, Department of Nutrition Sciences, UAB School of Health Professions, Webb Building, Room 534, 1675 University Blvd, Birmingham, AL 35294.

Telephone 205-934-8770

Web <http://www.uab.edu/shp/nutrition/education/dietitian-education-program>

The Dietitian Education Program Certificate (plus NTR 609, KIN 644, CDS 605 from the LDMP track requirements) has been granted Candidacy Status for Accreditation by The Accreditation Council for Education in Nutrition and Dietetics (ACEND). Students enrolled are considered graduates of an accredited program on successful completion of the MS degree and DEP Certificate.

Master of Science in Nutrition Sciences-Clinical Track/Prior Learning Option

Students in the MS in Nutrition Sciences Clinical Track/Prior Learning Option must complete 30 semester hours of graduate-level coursework (14 semester hours in core courses, 10 semester hours of required track courses, and 6 semester hours of elective credits). Only students who have a Verification Statement demonstrating successful completion of 1,200 hours of supervised practice from a program accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND) are eligible to apply. This is a non-thesis track and all required coursework is offered online.

Requirements	Hours
NTR 500 Communications in Nutrition	1
NTR 601 Advanced Medical Nutrition	3
NTR 604 Principles and Practice of Nutrition Support	3
NTR 611 Advanced Food System and Resource Management	3
Electives	6
Total Hours	16

Master of Science in Nutrition Sciences-Research Track

Students in the MS in Nutrition Sciences Research Track must complete 37 semester hours of graduate-level coursework (14 semester hours in core courses, 20 semester hours of required track courses, and 3 semester hours of elective credits). Students in the Research Track are required to complete and orally defend thesis research that contributes to the knowledge of nutrition sciences (NTR 698 and NTR 699). All non-research coursework is offered online.

Requirements	Hours
NTR 623 Applied Statistics to Nutrition Sciences II	3
NTR 636 Scientific Methods	3
NTR 698 Master's Level Non-Thesis Research	2
NTR 699 Master's Level Thesis Research	6
NTR 733 Laboratory Instruments and Methods in Nutrition Research	1
GRD 717 Principles of Scientific Integrity	3
Elective	3
Seminar	2
NTR 788 Advanced Nutrition Seminar	
Total Hours	23

Ph.D. Program in Nutrition Sciences (NS)

Degree Offered:	Ph.D.
Director:	Dr. Jose Fernandez
Phone:	(205) 934-2029

E-mail:	jose@uab.edu
Web site:	www.uab.edu/nutrition

The program leading to the Ph.D. in Nutrition Sciences at UAB is designed to provide coursework and research experience that emphasizes the science of nutrition in maintaining the health of individuals and populations and preventing a variety of diseases. The doctoral program combines required and elective didactic coursework in basic sciences and nutrition with research incorporating basic science, clinical applications, and translational research conducted in superb facilities in an outstanding research environment.

Admission for PhD in Nutrition Sciences

To meet Graduate School and departmental standards for admission into the PhD in Nutrition Sciences, a student must have a combined GRE score of 310 (GRE completed within the past 5 years), an undergraduate degree with a strong science background, three letters of recommendation based on thorough knowledge of the applicant's background and abilities, and, of great importance, a statement of goals and purpose that delineates the student's motivation and purpose in seeking this degree.

Coursework and Other Requirements

Successful completion of the Ph.D. will require completion of a minimum of 14 semester hours in core courses (encompassing the disciplines of biochemistry, nutritional biochemistry, statistics, and experimental design) and at least 24 additional graduate semester hours of required and elective coursework from nutrition and other disciplines; passing a comprehensive written qualifying examination; and defense of a dissertation reporting the results of original scientific research that makes a genuine contribution to the knowledge of nutrition sciences. In fulfilling the latter requirement, with rare exceptions, a student must author at least two papers that are publishable in peer-reviewed journals, with one paper already published at the time of dissertation defense.

Additional Information

For detailed information, contact Dr. José R. Fernández, Director of the Ph.D. Program in Nutrition Sciences, Department of Nutrition Sciences, UAB School of Health Professions, Susan Mott Webb Nutrition Sciences Building, Room 522, 1675 University Boulevard, Birmingham, AL 35294-3360.

Telephone 205-975-2029
E-mail phdntr@uab.edu
Web www.uab.edu/nutrition

Core Classes must include:

Requirements	Hours
Core Courses:	
NTR 621 Applied Statistics to Nutrition Sciences I	3
NTR 623 Applied Statistics to Nutrition Sciences II	3
NTR 637 Applied Research in Nutrition Sciences	3
NTR 690 Seminar	2
NTR 718 Nutritional Biochemistry	6
Required Courses:	
GRD 717 Principles of Scientific Integrity	3
NTR 733 Laboratory Instruments and Methods in Nutrition Research	2
NTR 736 Scientific Methods	3

NTR 747	Molecular Biology and Nutrition Sciences	3
NTR 779	Obesity in the 21st Century	3
NTR 788	Advanced Nutrition Seminar (Required each Fall and Spring semester for a total of 5 credits)	1

Total Hours	32
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Elective classes:

Requirements	Hours
NTR 604 Principles and Practice of Nutrition Support	3
NTR 609 Applied Nutrition for Physical Activity and Disease Prevention	3
NTR 631 Community Interventions for Healthy Lifestyles	3
NTR 632 Nutrition Counseling and Education	4
NTR 701 Advanced Medical Nutrition	3
NTR 722 Recent Advances in Nutrition and Cancer Research	3
NTR 745 Origin of Cancer: Microenviron	1
NTR 750 Body Composition and Energy Metabolism	3
NTR 755 Teaching Practicum in Nutrition Sciences	3
NTR 769 Race, Nutrition and Health	3

Occupational Therapy

Degree Offered:	Master of Science
Director:	Dr. Gavin Jenkins
Phone:	(205) 934-5437
Website:	http://www.uab.edu/shp/ot/

Degree Offered:	Occupational Therapy Clinical Doctorate (OTD)
Director:	Dr. Laura Vogtle
Phone:	(205) 934-7326
Website:	http://www.uab.edu/shp/otd

Degree Offered:	Graduate Certificate
Director:	Dr. Beth Barstow
Phone:	(205) 934-7321
Website:	http://www.uab.edu/shp/ot/low-vision-rehabilitation

Low Vision Rehabilitation, Graduate Certificate

The Graduate Certificate in Low Vision Rehabilitation is a practice oriented certificate degree program that prepares occupational therapists to provide comprehensive, competent intervention to adults with visual impairment from age-related eye diseases and brain injury. The program is designed for occupational therapists already working in low vision rehabilitation; those interested in starting low vision rehabilitation programs; and those just interested in expanding their practice skills. The program's flexible web-based distance format allows occupational therapists across the United States and other English speaking countries to obtain these skills while working full time.

Credentials Conferred

The Graduate Certificate in Low Vision Rehabilitation is awarded by the University of Alabama at Birmingham.

Length of Study

The certificate requires 5 semesters to complete; students take 1 course per semester.

Program Entrance Date

Fall semester (begins in August)

Requirements for Admission

Degree in occupational therapy from an accredited university program.

Essential Requirements

After acceptance and prior to enrollment into online programs, students must certify their ability to complete the essential tasks, with or without reasonable accommodation, associated with performing as an occupational therapy student. Reasonable accommodation refers to ways in which the University can assist students with disabilities to accomplish these tasks (for example, providing extra time to complete an examination). Reasonable accommodation does not mean that students with disabilities will be exempt from certain tasks; it does mean that the Department of Occupational Therapy will work with students with disabilities to determine whether there are ways to assist the student with completion of the required tasks.

After enrollment, a student with a disability who wishes reasonable accommodation contacts Disability Support Services (205) 934-4205 or (205) 934-4248 (TDD), provides appropriate and current documentation substantiating the claimed disability, meet the requirements of a disability as described in the ADA, and identify the needed accommodation. Reasonable accommodation in classroom and in practice settings cannot be provided without the formal request and the required documentation of the ADA defined disability. (Visit <http://www.uab.edu/students/disability>).

Essential Tasks

- Students must meet class standards for course completion throughout the curriculum.
- Students must be able to read, write, speak, and understand English at a level consistent with successful course completion and development of positive client-therapist relationships.
- Students must complete readings, assignments, and other activities.
- Students must gather decision-making pieces of information during client assessment activities.
- Students must perform evaluation and intervention activities by direct performance keys.
- Students must apply critical thinking processes to their work in the courses.
- Students must have interpersonal skills as needed for productive discussion, respectful interaction with classmates and faculty.
- Students must demonstrate appropriate health status prior to enrollment with annual updates on some items. Requirements found at www.uab.edu/studenthealth.
- Students must follow standards and policies specified in the Department of Occupational Therapy Student Handbook, and the University of Alabama at Birmingham *Directions* Handbook.
- Students must adhere to all policies outlined in the Department of Occupational Therapy Student Handbook which is posted online at www.uab.edu/shp/ot/contact-us/student-resources.

Application Deadline and Procedure

See Occupational Therapy Low Vision Rehabilitation Admissions Checklist on the Overview page.

International Students:

See Occupational Therapy Low Vision Rehabilitation Admissions Checklist, in addition to the following items:

- A transcript evaluation from World Education Services (www.wes.org) or Educational Credential Evaluators (www.ece.org) may be required.
- Students from countries where English is not the official and primary language may be required to take and receive an acceptable score on the TOEFL, or the IELTS.
- Submit official TOEFL test score (Institution code: 1856) or official IELTS score (provide the Graduate School's mailing address to the testing company/center)

Typical Program (Course requirements are listed in semester credit hours)

The curriculum is designed with the working occupational therapist in mind. Coursework emphasizes practical application to the clinic. Projects are designed to reinforce learning of application to practice. Materials for completion of the courses can be obtained through the internet and required texts. The student must have consistent access to the internet. A high-speed connection (DSL, cable, satellite) is strongly recommended.

Certificate

On completion of the required coursework the student will be awarded a Graduate Certificate in Low Vision Rehabilitation by the University of Alabama at Birmingham and the student's name will appear in the commencement bulletin. A transcript of the coursework taken for the certificate will be available.

The curriculum for the certificate is offered online as web-based distance education for practitioners. Students accepted into the program begin the curriculum in August and complete one course per semester. Because one course builds on another, students must take the courses in sequence. The final course requires that the student come to the UAB campus for a 2-day on campus intensive where they will work in small groups with instructors to demonstrate assessment and intervention skills. This is the only time the student is required to come to the UAB campus during the entire curriculum. Based on these requirements, course work for completion of the certificate will require 5 semesters.

LOW VISION REHABILITATION CURRICULUM

The courses must be completed sequentially in the order listed below.

Typical OT Curriculum Course Sequence

Requirements	Hours
Fall Cohort	
OT 677 Foundations in Low Vision Rehabilitation I (1st Fall semester)	3
OT 679 Foundations in Low Vision Rehabilitation II (1st Spring semester)	3
1st Summer semester Open	
OT 690 Foundations in Low Vision Rehabilitation III (2nd Fall semester)	3

OT 689	Foundations in Treatment of Visual Impairment from Brain Injury (2nd Spring semester)	3
OT 691	Foundations in Low Vision Rehabilitation IV (2nd Summer semester)	3

Total Credits 15 credits

For further information contact:

Program Coordinator
Occupational Therapy Low Vision Rehabilitation Certificate Program
UAB School of Health Professions
SHPB 352
1716 9th Avenue South
Birmingham, AL 35294-1212
Telephone 205-934-3569
E-mail lvrcert@uab.edu
Web <http://www.uab.edu/shp/ot/low-vision-rehabilitation>

Program Information

The Department of Occupational Therapy at the University of Alabama at Birmingham offers an entry level Master of Science (MS) degree in occupational therapy for individuals who hold a baccalaureate degree in a field other than occupational therapy. For individuals without a baccalaureate degree, this curriculum is also offered in conjunction with the undergraduate Health Care Management program as a Fast Track HCM/OT option (www.uab.edu/shp/ot/32-fast-ot).

M.S. in Occupational Therapy

The MS in Occupational Therapy entry-level, or professional program, is a full-time day program.

Accreditation

The program is fully accredited by the Accreditation Council for Occupational Therapy Education (ACOTE)[®] of the American Occupational Therapy Association (AOTA)[®], located at 4720 Montgomery Lane, Suite 200, Bethesda, MD 20814-3449; telephone: (301)652-6611 ext 2914.

Credentials Conferred

The Master of Science degree is awarded by the University of Alabama at Birmingham.

Professional Certification

Graduates of the program are eligible to sit for the national occupational therapist certification examination administered by the National Board for Certification in Occupational Therapy (NBCOT)[®]; website: www.nbcot.org (<http://www.nbcot.org>) After successful completion of the exam, the individual will be an Occupational Therapist, Registered (OTR). Most states require licensure in order to practice; however, state licenses are usually based on the results of the NBCOT Certification Examination.

Applicants should be aware that fieldwork placement sites, professional licensing agencies and prospective employers frequently require criminal history disclosures and background checks, although convictions do not necessarily disqualify someone for licensure or employment. Applicants with criminal convictions should recognize that such convictions may impede eventual licensure or employment and that the University of Alabama at Birmingham cannot predict the future decisions of fieldwork sites, licensing agencies, or employers. An individual who is considering, or who has entered, an occupational therapy educational program can

have his/her background reviewed by requesting an Early Determination Review from NBCOT at <http://www.nbcot.org/early-determination-character-review>.

Length of Study

Entry level program: Minimum of 7 semesters (2 1/2 years) as a full-time student.

Program Entrance Date

Fall semester of each year a new class is enrolled.

Application Deadline

This program participates in the Occupational Therapy Centralized Application Service (OTCAS). Please consult www.otcas.org for more information regarding specific OTCAS application requirements, procedures, and fees. Applicants should send all application materials directly to OTCAS. OTCAS will verify the application information and send completed applications to the program.

Contact Information for OTCAS:

Web: <https://portal.otcas.org/> Phone: (617) 612-2860 -- Monday through Friday 9:00 -- 5:00 EST Email: otcasinfo@otcas.org

International Students

See Occupational Therapy Entry Level Admissions Checklist on the Overview page, in addition to these items:

- Complete and submit UAB Graduate School International application;
- Request one (1) official transcript to be mailed by the issuing institution to the UAB Graduate School; a transcript evaluation from World Education Services (www.wes.org (<http://www.wes.org>)) or Educational Credential Evaluators (www.ece.org (<http://www.ece.org>)) is required;
- Take and receive an acceptable score on the TOEFL or the IELTS, if the student is from a country where English is not the official and primary language;
- Submit official TOEFL test score: Institution code: 1856 or official IELTS score (provide the Graduate School's mailing address to the testing company/center; and
- Mail Financial Affidavit of Support.

Requirements for Admission

The applicant must hold a baccalaureate degree from an accredited college or university in a field other than occupational therapy. Acceptance will be based on the student's academic ability, aptitude for a career as an occupational therapist, and an interview. The candidate is expected to satisfy the following requirements:

- Complete the OTCAS application.
- Hold a baccalaureate degree in a discipline other than occupational therapy from an accredited college or university; or receive a baccalaureate degree by June 1st of the admission year;
- Take the GRE, or report scores of the GRE taken within the last 5 years;
- Completion of prerequisite coursework by June 1st of the admission year.
- Have an overall minimum GPA of 3.0 as calculated by OTCAS or a minimum GPA of 3.0 in the last 60 hours of coursework;

- Have an overall minimum GPA of 3.0 or better for all prerequisite courses.
- If invited, participate in an interview with faculty of the Department of Occupational Therapy. The interview is scheduled once all applications are reviewed. Interviews are typically held in January and February.

Procedures Following Acceptance

Once accepted, students will be allowed to enroll into the program in the desired entry year only if the following requirements are met:

- Medical clearance requirements met as posted at www.uab.edu/studenthealth/;
- Application to and acceptance by the Graduate School (online) (www.uab.edu/graduate/online-forms) including the fee;
- Signed Letter of Intent received by the Department of Occupational Therapy; with,
- \$300 nonrefundable deposit to reserve a seat in the program (deposit will be applied to tuition).
- Complete a criminal background check and drug screen at program admission and again prior to fieldwork placement as required by school policy.

Essential Requirements

Prior to enrollment, students must certify their ability to complete the essential tasks, with or without reasonable accommodation, associated with performing as an occupational therapy student. Reasonable accommodation refers to ways in which the University can assist students with disabilities to accomplish these tasks (for example, providing extra time to complete an examination or enhancing the sound system in a classroom). Reasonable accommodation does not mean that students with disabilities will be exempt from certain tasks; it does mean that the Department of Occupational Therapy will work with students with disabilities to determine whether there are ways to assist the student with completion of the required tasks.

After enrollment, a student with a disability who wishes reasonable accommodation contacts Disability Support Services (205) 934-4205 or (205) 934-4248 (TDD) or visit 9th Avenue Office Bldg. 1701 9th Ave., provides appropriate and current documentation substantiating the claimed disability, meets the requirements of a disability as described in the ADA, and identifies the needed accommodation. Reasonable accommodation in classroom and in practice settings cannot be provided without the formal request and the required documentation of the ADA defined disability. (Visit <http://www.uab.edu/dss>)

Essential Tasks and Skills

The student must possess sufficient cognitive skills to:

- Acquire, process, retain and apply knowledge through a variety of instructional methods such as: written materials (i.e. texts, journals, documentation and other written sources), oral delivery, visual demonstrations, laboratory experiences, clinical experiences and independent learning.
- Complete reading assignments, search and analyze professional literature, and apply information gained to guide practice.
- Process (measure, calculate, analyze, synthesize and evaluate) large amounts of complex information; apply theoretical concepts to practice activities and perform clinical problem-solving in a logical and timely manner.

- Perceive and understand three-dimensional relationships and spatial relationships necessary for education and practice related tasks such a moving in a variety of environments, designing treatment equipment, and fabricating splints.
- Maintain attention for 2-4 hours; tolerate days when classes or fieldwork may last 8-10 hours.
- Take and pass test/quizzes in a variety of formats.
- Complete written assignments and produce written documentation in standard and organized English.
- Apply knowledge and judgment required to demonstrate ethical reasoning and behavior.
- Apply safety knowledge and judgment to a variety of situations.
- Comply with University, Program, and fieldwork site rules and regulations.
- Demonstrate problem-solving skills and judgment necessary to modify evaluation or intervention methods when necessary to address the specific needs of individuals (behavioral, cultural, etc.), in order to maximize client performance.
- Apply clinical reasoning and judgment necessary for interpretation of evaluation data and development of treatment plans.
- Identify and select occupations that are goal directed and motivate and challenge clients.
- Demonstrate judgment necessary to establish priorities and develop and use strategies.

The student must possess sufficient interpersonal skills, communication skills, and affective learning skills to:

- Demonstrate positive sufficient interpersonal skills including, but not limited to, cooperation, flexibility, tact, empathy, and confidence.
- Collaborate with classmates, clients, family members, significant others, and team members.
- Function successfully in supervisory, and instructor-student relationships; change and adjust behavior and performance in the classroom, laboratory, or clinic on the basis of instructor feedback.
- Participate equitably in cooperative group learning activities; actively participate in class discussions and as a member of a team.
- Sustain the mental and emotional rigors of a demanding educational program in occupational therapy that includes academic and clinical components that occur within set time constraints and often concurrently.
- Orally present information to groups of people.
- Communicate in the English language effectively and clearly in oral and written forms, using proper spelling, punctuation, and grammar to explain procedures and teach skills.
- Use language appropriate to the recipient, with faculty, peers, clients, and other health professionals from different social and cultural backgrounds; use communication skills needed to practice safely.
- Obtain information from clients, peers, faculty, supervisors, and other professionals.
- Use therapeutic communication skills such as attending and active listening during therapeutic interactions; and motivating and facilitating client behaviors in order to maximize client performance.
- Communicate effectively both verbally and non-verbally; elicit and describe factual information and perceive information derived from verbal and non-verbal communication and social cues.
- Be appropriately assertive as required to speak in class, initiate and guide the therapy process, establish limits as needed for the safety

of self and clients and establish professional identity within complex systems.

- Utilize the computer for communication and class assignments.
- Observe persons and scenarios and elicit relevant information for use in assessment and intervention.
- Plan, guide and implement both individual and group interventions.

The student must possess sufficient professional behavior to:

- Demonstrate respect for diversity, including but not limited to, socio-cultural, socioeconomic, spiritual, and lifestyle choices.
- Function successfully in supervisory and instructor-student relationships; change and adjust behavior and performance in the classroom, laboratory, or clinic on the basis of instructor feedback.
- Exhibit professional demeanor including appropriate language and dress, acceptance of responsibility for conduct.
- Demonstrate organizational and time management skills and ability to prioritize activities effectively as needed to attend class and fulfill class requirements.
- Exhibit flexibility and adapt to changing environments and expectations.
- Cope with stresses encountered in the intensive educational process as well as clinical practice environments.
- Demonstrate consistent work behaviors including initiative, preparedness, dependability, punctual attendance and work site maintenance.
- Tolerate working in environments where there is exposure to disability, illness, pain, and death.
- Maintain general good health and self-care in order not to jeopardize the health and safety of self and others in the academic and clinical settings.
- Maintain ethical standards including honesty, integrity, and confidentiality, at all times.
- Produce the required volume of work in the expected time frame.

The student must possess sufficient physical and sensory skills to:

- Tolerate sitting up to 2 hours at a time, over an 8-10 hour period.
- Tolerate periods of physical activity up to 8-10 hours per day.
- Demonstrate coordination, equilibrium, and sensory functioning required to manipulate parts of, or whole bodies of, simulated and real clients for purposes of evaluation and treatment.
- Demonstrate mobility and ability to move within environments adequately to access and maneuver within locations and destinations including classroom, lab, and clinical settings.
- Demonstrate lifting ability sufficient to maneuver an individual's body parts effectively to perform evaluation and treatment techniques including, but not limited to, transferring another person into and out of a wheelchair, to and from the commode or bed, etc.
- Demonstrate sufficient postural control, neuromuscular control, eye/hand coordination, and integrated function of the senses of vision, hearing, tactile sense, vestibular (movement sense) and proprioception (sense of muscles and joints) to manipulate and use common occupational therapy equipment, devices, materials, and supplies, and demonstrate competency in the use of these objects within assessment and treatment procedures commonly used in occupational therapy practice.
- Demonstrate motor skill capacities with sufficient levels of strength, endurance and fine and gross motor coordination to safely,

accurately, and effectively engage in a wide variety of therapeutic techniques, activities and occupations used in the occupational therapy assessment and intervention process; these capacities would include ability to lift and move objects, adequate manual dexterity, arm and hand function needed to use tools and perform other manipulative activities, use of limbs and trunk in bending, twisting, squatting, kneeling, reaching, pushing, pulling, holding, extending, and rotation.

- Manipulate or guide another person's body in transfers, ambulation, positioning and assisted or facilitated trunk, head, and limb movements.
- Manipulate bolsters, pillows, plinths, mats, assistive/adaptive devices, and other supports or chairs to aid in positioning, moving, or treating a patient/client effectively.
- Legibly record/document evaluations, patient care notes, and referrals, etc., in standard medical charts in clinical settings in a timely manner and consistent with the acceptable norms of clinical settings.
- Demonstrate or complete activities or tests with adequate degree of fine motor dexterity.
- Tolerate physical contact with others; tolerate manipulation of his/her own body by peers or instructors for instructional purposes.
- Demonstrate a sufficiently high degree of coordination of motor skills and vigilance to respond to emergency situations quickly and appropriately, including performance of CPR.
- Travel to various community and fieldwork sites for experiential learning, clinical opportunities, and fieldwork.

Program Prerequisites - UAB Equivalents*

(Course requirements are listed in semester credit hours)

Completion of prerequisite coursework within the last 8 years with a grade of "B" or better. No more than two prerequisites may be incomplete at the time of application; however, all courses must be completed by June 1st of the entrance year. Depending on the number and type of outstanding prerequisite courses, you may be accepted into the program early with certain conditions such as a requirement to achieve a grade of B or better in a course.

Have a minimum 3.0 (A=4.0) grade point average (GPA) overall, in the required prerequisite work, and last 60 semester hours.

Requirements	Hours
Prerequisite Courses Required	
Intro to Professional Writing (UAB Equivalent EH 315)	3
Biology with Lab (UAB Equivalent BY 123+L)	4
Human Anatomy with lab (UAB Equivalent BY 115+L)	4
Human Physiology with lab (UAB Equivalent BY 116+L)	4
Physics (UAB Equivalent PH 201) or Kinesiology (UAB Equivalent KIN 307)	3
Abnormal Psychology (UAB Equivalent PY 218)	3
Developmental or Lifespan Psychology (must be birth through death) (UAB Equivalent PY 212)	3
Statistics Elective (PY 214, PY 216, MA 180, EPR 214 or HCM 360)	3
Sociology Elective (UAB Equivalent SOC 101) or Anthropology Elective (UAB Equivalent ANTH 101)	3

UAB Entry-level Occupational Therapy Program requires taking the GRE within the last 5 years.

Typical Program

(Course requirements are listed in semester credit hours)

First Year

First Term	Hours
OT 595	1
OT 606	3
OT 607	3
OT 620	4
OT 667	3
OT 600	2
	16

Total credit hours: 16

First Year

Second Term	Hours
OT 596	1
OT 605	3
OT 609	3
OT 622	3
OT 623	3
OT 630	1
OT 631	3
	17

Total credit hours: 17

First Year

Summer Term	Hours
OT 597	1
OT 610	3
OT 624	4
OT 632	1
OT 662	4
OT 673	3
OT 698	2
	18

Total credit hours: 18

Second Year

First Term	Hours
OT 598	1
OT 625	4
OT 633	1
OT 661	3
OT 668	4
OT 670	3
OT 698	2
	18

Total credit hours: 18

Second Year

Second Term	Hours
OT 599	2
OT 634	2
OT 653	3
OT 665	4
OT 674	3

OT 698	2
HA 650	1-3
	17-19

Total credit hours: 17-19

Second Year

Summer Term	Hours
OT 685	10
	10

Total credit hours: 10

Third Year

First Term	Hours
OT 686	10
	10

Total credit hours: 10

Total Curriculum Hours: 107

*A minimum total of six credit hours Master's Level Non-Thesis Research must be completed to meet graduation requirements.

For further information contact:

UAB, Department of Occupational Therapy

Mr. Kerry McAlpine

Recruitment and Admissions Coordinator

SHPB 352

1716 9th Avenue South

Birmingham, AL 35294-1212

Telephone 205-934-3569

E-mail uabOT@uab.edu (msot@uab.edu)

Web <http://www.uab.edu/shp/ot/>

Clinical Doctorate in Occupational Therapy

The clinical doctorate in occupational therapy (OTD) program is designed to provide advanced educational and clinical opportunities for occupational therapy (OT) practitioners to develop knowledge and skills to improve health care for persons with functional limitations that influence their occupational performance or everyday living skills. The program aims to prepare occupational therapists to improve the health, well-being, and quality of life for all people, populations, and communities. The program's flexible web-based format allows occupational therapists across the United States and in other English speaking countries to obtain these advanced practice skills while working full time.

Credentials Conferred

The Clinical Doctorate in Occupational Therapy (OTD) degree is awarded by the University of Alabama at Birmingham.

Length of Study

The program requires variable semesters to complete; students taking two courses per semester should finish in 3 years. Students taking only one course per semester or a mix of credit hours across semesters will take longer.

Requirements for Admission

Admission is open to therapists with current master's or bachelor's degrees in occupational therapy conferred from an accredited occupational therapy program who are currently employed or have a minimum of five years' experience as an occupational therapist. Students who are second year entry-level master's students at the University of Alabama at Birmingham may apply as well.

Requirement	Fulfilled By:
Entry Term:	Fall
Deadline for ALL Application Materials to be in the Graduate School Office:	August 1
Entrance Tests:	For international applicants from non-English speaking countries, scores for the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS)

All applicants must meet the general requirements of the UAB Graduate School as well as the OTD admission requirements listed on the Admissions Checklist.

<https://www.uab.edu/graduate/admissionsrequirements>

International Students:

See Clinical Doctorate in Occupational Therapy Admissions Checklist, in addition to the following items:

- A transcript evaluation from World Education Services (www.wes.org) or Educational Credential Evaluators (www.ece.org) may be required.
- Students from countries where English is not the official and primary language may be required to take the TOEFL, or the IELTS. A minimum score of 550 on the paper text, 213 on the computer version, or 80 on the internet-based test of the TOEFL or a minimum score of 6.0 – 6.5 on the IELTS test is recommended.

Essential Requirements

After acceptance, and prior to enrollment into online programs, students must certify their ability to complete the essential tasks, with or without reasonable accommodation, associated with performing as an occupational therapy student. Reasonable accommodation refers to ways in which the University can assist students with disabilities to accomplish these tasks (for example, providing extra time to complete an examination). Reasonable accommodation does not mean that students with disabilities will be exempt from certain tasks; it does mean that the Department of Occupational Therapy will work with students with disabilities to determine whether there are ways to assist the student with completion of the required tasks.

After enrollment, a student with a disability who wishes reasonable accommodation must contact Disability Support Services at (205) 934-4205 or (205) 934-4248 (TDD), provide appropriate and current documentation substantiating the claimed disability, meet the requirements of a disability as described in the ADA, and identify the needed accommodation. Reasonable accommodation in classroom and in practice settings cannot be provided without the formal request and

the required documentation of the ADA defined disability. (Visit <http://www.uab.edu/dss>).

Essential Tasks

- Students must be competent in computer skills to include use of the Microsoft Office Suite (Word, PowerPoint, Excel, etc.), email correspondence, web search skills.
- The student must have adequate technology resources and reliable access to the Internet. Recommended technology resources are described here (<https://community.canvaslms.com/docs/DOC-10721>). Students must meet class standards for course completion throughout the curriculum.
- Students must be able to read, write, speak, and understand English at a level consistent with successful course completion and development of positive client-therapist relationships.
- Students must complete readings, assignments, and other activities.
- Students must gather decision-making pieces of information during client assessment activities.
- Students must perform evaluation and intervention activities by direct performance keys.
- Students must apply critical thinking processes to their work in the courses.
- Students must have interpersonal skills as needed for productive discussion, and respectful interaction with classmates and faculty.
- Students must demonstrate appropriate health status prior to enrollment with annual updates on some items. Requirements found at www.uab.edu/studenthealth.
- Students must follow standards and policies specified in the Department of Occupational Therapy Student Handbook, and the University of Alabama at Birmingham *Directions* Handbook.
- Students must adhere to all policies outlined in the Department of Occupational Therapy Student Handbook, which is posted online at <http://www.uab.edu/shp/ot/admissions>.

Degree

On completion of the required coursework the student will be awarded an OTD by the University of Alabama at Birmingham and the student's name will appear in the commencement bulletin. A transcript of the coursework taken for the degree will be available through the University Registrar's Office.

The curriculum for the degree is offered online via web-based learning management system for students in the program. Students accepted into the program begin the curriculum in August and complete one or more courses per semester. The clinical doctorate requires variable semesters to complete; students taking 2 courses per semester should finish in 3 years. Students taking only 1 course per semester or a mix of credit hours across semesters will take longer.

Typical Program

The curriculum is designed with the working occupational therapist in mind. Coursework emphasizes practical application to the OT clinic environment. Projects are designed to reinforce classroom learning for

application to practice. Materials for completion of the courses can be obtained through the Internet, materials provided, and required texts.

Students are required to complete 25 credit hours of core and 15 credit hours of elective coursework.

Requirements		Hours
Core Course Requirements		
OT 701	Theoretical Foundations for Occupational Therapy Practice	3
OT 702	Leadership for OT Practice Excellence	2
OT 703	Advocacy and Healthcare Policy in Population Health	3
OT 704	Research Design for Occupational Therapy Practice	3
OT 705	Evidenced-based Occupational Therapy Practice Design and Application	3
OT 707	Occupational Therapists as Educators	2
OT 798	Occupational Therapy Capstone Experience/Non-Thesis Project <small>Minimum of 6 credit hours after all coursework had been completed</small>	6
HA 650	Management and Leadership Skills for Clinical Professionals	3
Total Hours		25

Requirements		Hours
Elective Course Requirements for students completing the Low Vision Rehabilitation track		
OT 677	Foundations in Low Vision Rehabilitation I	3
OT 679	Foundations in Low Vision Rehabilitation II	3
OT 689	Foundations in Treatment of Visual Impairment from Brain Injury	3
OT 690	Foundations in Low Vision Rehabilitation III	3
OT 691	Foundations in Low Vision Rehabilitation IV	3
Total Hours		15

Requirements		Hours
Elective Course Requirements for students completing the Healthcare Quality and Safety track		
HQS 600	Introduction to Clinical Quality Improvement	4
HQS 610	Quantitative Methods, Measurement, and Tools for Quality Improvement	4
HQS 625	Fundamentals of Patient Safety	4
HQS 630	Leadership of High Reliability Healthcare Organizations	3

Requirements		Hours
Elective Course Requirements for students completing the General OTD track (select 15 hours)		
OT 710	Introduction to Occupational Science	3
OT 711	Adaptation and Disability in Occupational Therapy Practice	3
OT 712	Environment and Context in Occupational Therapy Practice	3
OT 713	Professional Writing	3
OT 714	Program Evaluation in Occupational Therapy	3
AH 777	Mixed Methods Research I: Introduction	3
OT 775	Independent Study in Occupational Therapy	1-3
AH 778	Mixed Methods Research II: Designing and Conducting Mix Mthds Study	3
AH 779	Mixed Methods Applications in Community-Based Action Research	3
AH 784	Qualitative Research: A Grounded Theory Approach	3
AH 785	Qualitative Research: Analysis and Interpretation	3

AH 786	Qualitative Research: A Case Study and Ethnographic Approaches	3
AH 787	Qualitative Research: A Phenomenological Approach	3

For further information contact:

UAB, Department of Occupational Therapy
 Program Coordinator, Occupational Therapy Clinical Doctorate Program
 SHPB 352, 1716 9th Avenue South
 Birmingham, AL 35294-1212
 Telephone 205-934-3569
 E-mail OTD@uab.edu
 Web <http://www.uab.edu/shp/otd>

Physical Therapy

Degree Offered:	D.P.T.
Director (D.P.T.):	Jennifer Christy, PT, PhD
Phone:	(205) 934-3566
Website:	www.uab.edu/shp/pt

Program Information

The Doctor of Physical Therapy program is a course of study for students who hold baccalaureate degrees in fields of study other than Physical Therapy. Completion of the program after nine semesters leads to a Doctor of Physical Therapy (DPT) degree and serves as initial preparation for practice as a physical therapist.

Doctor of Physical Therapy (D.P.T.)

Physical therapists provide services to patient/clients who have body structure and function impairments, activity limitations, participation restrictions, or changes in physical function and health status resulting from injury, disease, and other causes. Physical therapists also address risk and provide prevention services and promote health, wellness, and fitness. Physical therapists interact and practice in collaboration with a variety of professionals. Physical therapists also function in consultative, education, administrative and supervisory roles in many different types of practice, research, and education settings.

Accreditation: The program is accredited by the Commission on Accreditation in Physical Therapy Education. (www.captionline.org/home.aspx)

Credentials Conferred: The Doctor of Physical Therapy degree is awarded by the University of Alabama at Birmingham.

License : Graduates are eligible for the physical therapist licensure examination. Note that state law regulates the practice of Physical Therapy; contact a specific state's Board of Licensure for Physical Therapy to obtain information on that state's eligibility requirements. <http://www.fsbpt.org/LicensingAuthorities/index.asp>

Length of Study: Nine semesters.

Program Entrance Date: Spring semester.

Application Procedure: This program participates in the Physical Therapist Centralized Application Service (PTCAS). Please consult www.ptcas.org for more information regarding specific PTCAS application requirements, procedures and fees. The PTCAS application needs to be completed by the PTCAS deadline. Applicants should send all application materials including GRE scores (use code 7801)

directly to PTCAS. PTCAS will verify the application information and send completed applications to the program.

Requirements for Admission: The applicant must hold a baccalaureate degree from an accredited college or university within the United States in a field other than physical therapy. Acceptance will be based on the student's academic ability and aptitude for a career as a physical therapist. The candidate is expected to satisfy the following requirements:

- Complete the PTCAS application based on the PTCAS deadline.
- 75% of prerequisite courses must be completed by the end of the fall semester of the year of application.
- Complete at least 40 hours of documented observation of physical therapy. Various settings are recommended. Documentation should be submitted to PTCAS.
- Submit three letters of recommendation to PTCAS.
 - Letters 1 and 2: Written by a physical therapist who has interacted with the applicant for at least 20 hours in a clinical setting.
 - Letter 3: Written by a professor with whom the applicant had significant interaction in an academic setting. Complete the GRE and have scores sent to PTCAS (code 7801).
- Have a minimum 3.0 (A=4.0) overall, prerequisites, and last 60 semester hours grade point averages. For prerequisite courses, no grade lower than a C will be accepted.
- If invited, complete a personal interview with the Department of Physical Therapy.

Students who are **accepted** into the UAB Doctor of Physical Therapy program must:

- Complete the UAB Graduate School application to include the Graduate School fee.
- Complete the UAB medical history questionnaire and physical.
- Provide proof of required immunizations, and receive satisfactory screening by the UAB Medical Center Student Health Service.
- Send all official transcripts to the UAB Graduate School.
- Complete a criminal background check and drug screen before program matriculation and as specified by the Department of Physical Therapy.

State law regulates the practice of Physical Therapy. Therefore, applicants are encouraged to review the nonacademic eligibility requirements for licensure to practice physical therapy prior to application to the program. These may be obtained from each individual state's Board of Licensure for Physical Therapy. <http://fsbpt.org/LicensingAuthorities/index.asp>

Program Prerequisites—UAB Equivalents

(Course requirements are listed in semester credit hours)

Arts and Humanities

English Composition (6)

Social and Behavioral Sciences

Psychology (6)

Natural Sciences and Mathematics

Biology (12)

Human/Mammalian Physiology (4)

Chemistry for Science Majors (8)

Physics for Science Majors (8)

Pre-Calculus With Trigonometry (3)

Psychology (6)

Statistics (3)

Medical Terminology (1-3)

It is strongly recommended that applicants take the following courses: practical reasoning or logic course, biomechanics or kinesiology and upper level biology (physiology).

Essential Requirements: Fundamental tasks, behaviors, and abilities necessary to successfully complete the academic and clinical/residency requirements of the program and to satisfy licensure/certification requirements, if any, have been outlined and are available upon request from the academic program office. Students requesting disability accommodations must do so by filing a disability accommodation request with the UAB Office of Disability Support Services.

Typical Program

(Course requirements are listed in semester credit hours)

First Year	
Second Term	Hours
PT 700	3
PT 702	4
PT 713	3
PT 730	3
PT 760	2
<hr/>	
15	

Total credit hours: 15

First Year	
Summer Term	Hours
PT 701	2
PT 711	2
PT 712	3
PT 720	3
PT 731	3
PT 790	2
<hr/>	
15	

Total credit hours: 15

First Year	
First Term	Hours
PT 704	3
PT 706	3
PT 714	3
PT 715	3
PT 721	3
<hr/>	
15	

Total credit hours: 15

Second Year	
Second Term	Hours
PT 705	3
PT 707	3
PT 740	5
PT 761	3

PT 798	1
	15

Total credit hours: 15

Second Year

Summer Term	Hours
PT 743	4
PT 744	3
PT 770	4
PT 791	2
PT 798	1
	14

Total credit hours: 14

Second Year

First Term	Hours
PT 741	5
PT 746	5
PT 762	3
PT 798	1
	14

Total credit hours: 14

Third Year

Second Term	Hours
PT 763	2
PT 764	2
PT 770	9
	13

Total credit hours: 13

Third Year

Summer Term	Hours
PT 770	9
	9

Total credit hours: 9

Third Year

First Term	Hours
PT 770	9
	9

Total credit hours: 9

Total Credit Hours for Program: 119

Additional Information

For detailed information, contact Betsy Moore, Physical Therapy Department, School of Health Professions, SHPB, Room 375, 1716 9th Avenue South (mailing address: SHPB 375, 1720 2nd Avenue South), Birmingham, Alabama 35294-1212.

Telephone 205-934-4363

E-mail becol@uab.edu

Doctor of Physical Therapy

Requirements	Hours
PT 700 Human Gross Anatomy	3
PT 702 Functional Anatomy	4

PT 713	Physical Therapy Intervention I	3
PT 730	Essentials of Human Physiology	3
PT 760	PT Professional Practice I	2
PT 701	Human Gross Anatomy II	2
PT 711	PT Examination I	2
PT 712	Physical Therapy Examination II	3
PT 720	Pathology and Pharmacology for Movement Disorders I	3
PT 731	Human Performance Physiology	3
PT 790	Scientific Inquiry I	2
PT 704	Analysis of Human Movement	3
PT 706	Neuroscience I	3
PT 714	Physical Therapy Intervention II	3
PT 715	Physical Therapy Intervention III	3
PT 721	Pathology and Pharmacology for Movement Disorders II	3
PT 705	Human Movement Dysfunction	3
PT 707	Neuroscience II	3
PT 740	PT Management of Musculoskeletal Dysfunction I	5
PT 761	PT Professional Practice II	3
PT 798	Doctoral Level Non-Thesis Research	1
PT 743	PT Management of Cardiopulmonary Dysfunction	4
PT 744	PT Management of Neuromuscular Dysfunction I	3
PT 770	Clinical Education	4
PT 791	Scientific Inquiry II	2
PT 798	Doctoral Level Non-Thesis Research	1
PT 741	PT Management of Musculoskeletal Dysfunction II	5
PT 746	PT Management of Neuromuscular Dysfunction II	5
PT 762	PT Professional Practice III	3
PT 798	Doctoral Level Non-Thesis Research	1
PT 763	PT Professional Practice IV	2
PT 764	Professional Practice V - Capstone Experience	2
PT 770	Clinical Education	9
PT 770	Clinical Education	9
PT 770	Clinical Education	9
Total Hours		119

School of Medicine

At UAB, we're training the next generation of physicians and physician-scientists, answering basic scientific questions that lead to medical innovations and bringing the best medical care to bear for our patients.

UAB is an integral part of Birmingham and the region, and Birmingham is integral to UAB. The Birmingham campus is within walking distance of some of the best parks, entertainment and dining in the region. Our regional campuses—in Huntsville, Montgomery and Tuscaloosa—expand our academic reach and responsibilities, helping educate physicians in rural and underserved areas of the state.

The School of Medicine has approximately 750 students, 900 residents and 1,300 full-time faculty in 26 academic departments. We are the home of The Kirklin Clinic, a multi-disciplinary medical home; University Hospital, one of the largest academic hospitals in the country; and our faculty serve the Children's of Alabama hospital.

Interdisciplinary Academic Programs

UAB offers a **NIH-funded Medical Scientist Training Program** (<http://www.nigms.nih.gov/Training/InstPredoc/PredocOverview-MSTP.htm>) (MSTP), a combined MD/PhD program designed to prepare students for careers that combine laboratory investigation of disease mechanisms with the practice and teaching of clinical medicine in an academic setting. The Gerontology Education Certificate Program was established in 1980 through the cooperative efforts of the School of Social and Behavioral Sciences and the Center for Aging. Since that time, the program has expanded considerably and offers diverse academic opportunities. Students have access to a number of faculty members from multiple disciplines who bring research and academic expertise to the study of aging and the aged.

Gerontology

Certification Program Director:	Dr. Patricia L. Sawyer
Phone:	(205) 934-9261
E-mail:	psawyer@uab.edu
Website:	www.aging.uab.edu

Program Information

The Gerontology Education Program was established in 1980 through the cooperative efforts of the School of Social and Behavioral Sciences and the Comprehensive Center for Healthy Aging. Since that time, the program has expanded considerably and offers diverse academic opportunities. Students have access to a number of faculty members from multiple disciplines who bring research and academic expertise to the study of aging and the aged.

The Gerontology Education Program offers multidisciplinary academic courses in gerontology leading to a graduate certificate. The study of gerontology at these levels is designed to provide people educated in various disciplines with the background needed to work in programs related to aging and the aged. The main goals are to provide students with a thorough background in existing theory and research in gerontology, and a supplement to their existing backgrounds and professional disciplines. We have designed the program to prepare students for leadership roles in this field of growing importance for both the private and public sectors. Our program's curriculum integrates research, theory, and practice. Its multidisciplinary approach reflects the urban mission of UAB.

The program office is located at the UAB Comprehensive Center for Healthy Aging. This academic program is administered by the Director of the Gerontology Education Program, who also serves as Chair of the Guidance Committee on Graduate and Undergraduate Education in Gerontology. This committee is made up of representatives of academic departments and schools throughout the UAB campus active in the study of aging and the aged. The multidisciplinary gerontology program is offered to all UAB students in good standing with the sponsorship and support of the School of Social and Behavioral Sciences, the School of Health Related Professions, and the Comprehensive Center for Healthy Aging.

Student Admissions and Advisement

Although general advisement is handled through UAB student advising and parent departments, student advisement in gerontology is handled formally by the Director of the Gerontology Education Program. The director facilitates student advisement with other members of the Committee on Graduate and Undergraduate Education in Gerontology. A graduate specialty is offered to students who want a special emphasis in gerontology or geriatrics. The major objective of this specialization is to provide a strong academic background for professional careers in academic and aging-related settings. There are two avenues for undertaking the graduate gerontology certificate requirements. Students in good standing in the graduate school can specialize in gerontology through their primary department. Letters of application also are accepted from students who have already completed requirements for an advanced or professional degree.

Students not currently enrolled in a graduate program at UAB may petition the university for non-degree admission status. Once accepted, the student can undertake a course of study to receive a graduate certificate upon completion of the required sequence of classes.

A careful review of proposed curriculum is recommended before the student enrolls for gerontology study. This will give students an opportunity to receive initial advisement while reviewing available study plans and course schedules.

Requirements

Students must complete at least 15 credit hours of graduate-level work in gerontology or geriatrics, achieving a grade of B or better in each course. The curriculum consists of a required multidisciplinary course offered through the graduate school (GRD 600) or the completion of an aging course from each of the following departments: biology, psychology and sociology, and gerontology electives chosen from a roster of courses approved by the Committee on Graduate and Undergraduate Education in Gerontology, and a required research project or a relevant internship. To ensure a multidisciplinary perspective, courses must represent at least two departments.

Additional Information

For detailed information, contact Dr. Patricia L. Sawyer, Director, UAB Gerontology Education Program, Center for Aging, Room 201-E1, 933 19th Street South, Birmingham, AL 35294-2041.
Telephone 205-934-9261
Fax 205-934-7354
E-mail psawyer@uab.edu

Medical Scientist Training Program

Degree Offered:	M.D.-Ph.D.
Co-Director:	William Geisler, M.D., MPH.
Co-Director:	Talene Yacoubian, M.D., Ph.D
Director Title:	Co-Directors of Medical Scientist Training Program
Phone:	(205) 934-4092 or 934-0676
E-mail:	mstp@uab.edu
Website:	http://www.mstp.uab.edu

Overview

UAB's outstanding research and clinical training programs provide a unique opportunity for students interested in careers in basic biomedical research. As a designated NIH Medical Scientist (M.D.-Ph.D.) Training Program (MSTP), students are admitted concurrently to the School of Medicine and the Graduate School in order to pursue both the M.D. degree and the Ph.D. degree. Ph.D. study in this program is available in the areas of biochemistry, structural, and stem cell biology; biomedical engineering; biostatistics; cancer biology; cell, molecular and developmental biology; epidemiology; genomics, and bioinformatics; health behavior; immunology; microbiology, neuroscience; nutrition sciences; pathobiology and molecular medicine; public health; sociology; and vision science.

Individuals admitted to this highly competitive program must have excellent undergraduate academic records and MCAT scores. In addition, successful applicants must have demonstrated their commitment to a career pathway as an investigator with active participation in an original research project prior to admission. Fellowship support, including a stipend and payment of tuition and fees, is provided to successful applicants.

In general, M.D.-Ph.D. students will first complete the basic science phase of the medical curriculum and the first-year core curriculum of their chosen Ph.D. discipline simultaneously. The second phase of study will focus on mentor selection, research path, and completion of a dissertation research project leading to the Ph.D. degree. The final phase of the program is a series of clinical rotations and an abbreviated set of acting internships to complete the M.D. degree. Normally, the program involves about 8 years for completion, depending on the time required to complete the dissertation research.

Interested applicants must complete the standard AMCAS application to the UAB School of Medicine and a short secondary application to the M.D.-Ph.D. program once the AMCAS application has been reviewed for consideration. More information is available at <http://www.uab.edu/medicine/mstp/admissions/admissions-process>

Students who have initiated study in the University of Alabama School of Medicine or the UAB Graduate School may also apply to the MD-PhD Program. Please contact the MSTP Directors for further information.

Biochemistry, Structural, and Stem Cell Biology (BSSB) Theme - MSTP/Arise

Requirements	Hours
Module Courses (Recommended by Theme)	
GBS 781 Molecular Enzymology	2-3
GBS 712 Cellular and Molecular Aspects of Developmental Biology	2-3
GBS 782 Molecular Genetics	2-3
GBS 784 Stem Cell Biology	2-3
Theme Required Course	
GBSC 742 GBS Student Theme Meeting Course	1
GBS Required Courses	
GRD 717 Principles of Scientific Integrity	3
One Grant Writing/Scientific Writing ²	1
Biostatistics ³	2
Journal Clubs ⁴	3
Three Advanced Courses ⁴	9
MSTP/ARISE Required Courses	

MSTP 794	Translational Research Seminar ⁵	1
MSTP 795	Continuing Clinical Education ⁶	1
Research⁷		24
Total Hours		53-57

- Select from GBS 716, GBS 725, GBS 768, GBSC 726 or GRD 709.
- Select from GRD 770, BST 611, BST 612, BY 755, PY 716.
- Chosen in consultation with mentor.
- Chosen in consultation with mentor and thesis committee. Taken fall and spring.
- Taken every semester.
- Taken fall & summer
- MSTP students take MSTP 798 and MSTP 799. Arise students take PSDO 798 and PSDO 799 .

Please note:

- Seminars are recommended to attend, but registration is not required.
- Students must be registered for 9 hours each semester. Any hours over 9 must be approved by the MSTP/Arise Director.
- Career development course registration (GRD, CIRTL) requires the permission of the Thesis Mentor, Theme Director, and MSTP/ARISE Director.
- Students must be admitted to candidacy for a minimum of one year before the thesis defense.

Additional MSTP/Arise Requirements:

- Submission of F30/F31 on or before April of GS2 Year (MSTP requirement).
- Committee meetings held every six months.

Additional Theme Requirements:

- Publications: At least one published paper.
- Presentations: At least one presentation at a national or international scientific meeting.

Cancer Biology (CANB) Theme - MSTP/Arise

Requirements	Hours	
Module Courses		
GBS 710 Cell Signaling	2-3	
GBS 720 Genomic Structure and Function	2-3	
GBS 769 Carcinogenesis	2-3	
GBS 774 Cancer Immunology	2-3	
Theme Required Courses		
GBS 770 Pathobiology of Cancer	2-3	
GBS 777 Cancer Biology Seminar	1	
GBS Required Courses		
GRD 717 Principles of Scientific Integrity	3	
Grant Writing/Scientific Writing¹	2	
Biostatistics²	3	
Journal Clubs³	1	
Advanced Courses⁴	9	
MSTP/Arise Required Courses		
MSTP 794	Translational Research Seminar ⁵	1
MSTP 795	Continuing Clinical Education ⁶	1

Research ⁷	24
Total Hours	55-60

- ¹ Select from GBS 716, GBS 725, GBS 768, GBSC 726 or GRD 709.
- ² Select from GRD 770, BST 611, BST 612, BY 755, PY 716.
- ³ Chosen in consultation with mentor.
- ⁴ Chosen in consultation with mentor and thesis committee. Taken fall and spring.
- ⁵ Taken every semester.
- ⁶ Taken fall & summer
- ⁷ MSTP students take MSTP 798 and MSTP 799. Arise students take PSDO 798 and PSDO 799.

Please note:

- Seminars are recommended to attend, but registration is not required.
- Students must be registered for 9 hours each semester. Any hours over 9 must be approved by the MSTP/Arise Director.
- Career development course registration (GRD, CIRTL) requires the permission of the Thesis Mentor, Theme Director, and MSTP/ARISE Director.
- Students must be admitted to candidacy for a minimum of one year before the thesis defense.

Additional MSTP/Arise Requirements:

- Submission of F30/F31 on or before April of GS2 Year (MSTP requirement).
- Committee meetings held every six months.

Additional Theme Requirements:

- Publications: At least one published paper.
- Presentations: At least one presentation at a national or international scientific meeting.

Cell, Molecular & Developmental Biology (CMDDB) Theme - MSTP/Arise

Requirements	Hours
Module Courses	
GBS 710 Cell Signaling	2-3
GBS 712 Cellular and Molecular Aspects of Developmental Biology	2-3
GBS 714 Developmental Neuroscience	2-3
GBS 784 Stem Cell Biology	2-3
Theme Required Courses	
GBS 717 Methods and Scientific Logic	1
GBS 792 CMDDB Seminar	1
GBS Required Courses	
GRD 717 Principles of Scientific Integrity	3
Grant Writing/Scientific Writing ¹	
	2
Biostatistics ²	
	3
Journal Clubs ³	
	1
Advanced Courses ⁴	
	9
MSTP/ARISE Required Courses	
MSTP 794 Translational Research Seminar ⁵	1
MSTP 795 Continuing Clinical Education ⁶	1

Research ⁷	24
Total Hours	54-58

- ¹ Select from GBS 716, GBS 725, GBS 768, GBSC 726 or GRD 709.
- ² Select from GRD 770, BST 611, BST 612, BY 755, PY 716.
- ³ Chosen in consultation with mentor.
- ⁴ Chosen in consultation with mentor and thesis committee. Taken fall and spring.
- ⁵ Taken every semester.
- ⁶ Taken fall & summer
- ⁷ MSTP students take MSTP 798 and MSTP 799. Arise students take PSDO 798 and PSDO 799.

Please note:

- Seminars are recommended to attend, but registration is not required.
- Students must be registered for 9 hours each semester. Any hours over 9 must be approved by the MSTP/Arise Director.
- Career development course registration (GRD, CIRTL) requires the permission of the Thesis Mentor, Theme Director, and MSTP/ARISE Director.
- Students must be admitted to candidacy for a minimum of one year before the thesis defense.

Additional MSTP/Arise Requirements:

- Submission of F30/F31 on or before April of GS2 Year (MSTP requirement).
- Committee meetings held every six months.

Additional Theme Requirements:

- Publications: At least one published paper.
- Presentations: At least one presentation at a national or international scientific meeting.

Genetics, Genomics and Bioinformatics (GGB) Theme - MSTP/Arise

Requirements	Hours
Module Courses	
GBS 724 Principles of Human Genetics	2-3
GBS 720 Genomic Structure and Function	2-3
GBS 722 Bioinformatics	2-3
GBSC 718 Epigenetics	2-3
Theme Required Courses	
GBS 717 Methods and Scientific Logic	1
GBSC 742 GBS Student Theme Meeting Course	1
GBS Required Courses	
GRD 717 Principles of Scientific Integrity	3
Grant Writing/Scientific Writing ¹	
	2
Biostatistics ²	
	3
Journal Clubs ³	
	1
Advanced Courses ⁴	
	9
MSTP/Arise Required Courses	
MSTP 794 Translational Research Seminar ⁵	1
MSTP 795 Continuing Clinical Education ⁶	1
Research ⁷	24
Total Hours	54-58

- ¹ Select from GBS 716, GBS 725, GBS 768, GBSC 726 or GRD 709.
- ² Select from GRD 770, BST 611, BST 612, BY 755, PY 716.
- ³ Chosen in consultation with mentor.
- ⁴ Chosen in consultation with mentor and thesis committee. Taken fall and spring.
- ⁵ Taken every semester.
- ⁶ Taken fall & summer
- ⁷ MSTP students take MSTP 798 and MSTP 799. Arise students take PSDO 798 and PSDO 799.

Please note:

- Seminars are recommended to attend, but registration is not required.
- Students must be registered for 9 hours each semester. Any hours over 9 must be approved by the MSTP/Arise Director.
- Career development course registration (GRD, CIRTL) requires the permission of the Thesis Mentor, Theme Director, and MSTP/ARISE Director.
- Students must be admitted to candidacy for a minimum of one year before the thesis defense.

Additional MSTP/Arise Requirements:

- Submission of F30/F31 on or before April of GS2 Year (MSTP requirement).
- Committee meetings held every six months.

Additional Theme Requirements:

- Publications: At least one published paper.
- Presentations: At least one presentation at a national or international scientific meeting.

Immunology (IMM) Theme - MSTP/Arise

Requirements	Hours
Module Courses	
GBS 740A Introduction to Immunology Part 1	2-3
GBS 740B Introduction to Immunology Part 2	2-3
GBS 744 Mucosal Immunology	2-3
GBS 741 Lymphocyte Biology	2-3
Theme Required Courses	
GBS 742 Dendritic Cell Biology	3
GBS Required Courses	
GRD 717 Principles of Scientific Integrity	3
Grant Writing/Scientific Writing ¹	
	2
Biostatistics ²	
	3
Journal Clubs ³	
	1
Advanced Courses ⁴	
	9
MSTP/Arise Required Courses	
MSTP 794 Translational Research Seminar ⁵	1
MSTP 795 Continuing Clinical Education ⁶	1
Research ⁷	24
Total Hours	55-59

- ¹ Select from GBS 716, GBS 725, GBS 768, GBSC 726 or GRD 709.
- ² Select from GRD 770, BST 611, BST 612, BY 755, PY 716.
- ³ Chosen in consultation with mentor.

- ⁴ Chosen in consultation with mentor and thesis committee. Taken fall and spring.
- ⁵ Taken every semester.
- ⁶ Taken fall & summer
- ⁷ MSTP students take MSTP 798 and MSTP 799. Arise students take PSDO 798 and PSDO 799.

Please note:

- Seminars are recommended to attend, but registration is not required.
- Students must be registered for 9 hours each semester. Any hours over 9 must be approved by the MSTP/Arise Director.
- Career development course registration (GRD, CIRTL) requires the permission of the Thesis Mentor, Theme Director, and MSTP/ARISE Director.
- Students must be admitted to candidacy for a minimum of one year before the thesis defense.

Additional MSTP/Arise Requirements:

- Submission of F30/F31 on or before April of GS2 Year (MSTP requirement).
- Committee meetings held every six months.

Additional Theme Requirements:

- Publications: At least one published paper.
- Presentations: At least one presentation at a national or international scientific meeting.

Microbiology (MIC) Theme - MSTP/Arise

Requirements	Hours
Module Courses	
GBS 760 Prokaryotic Genetics and Molecular Biology	2-3
GBS 764 Structural Biology for Micro	2-3
GBS 763 Microbial Pathogenesis	2-3
GBS 762 Virology	2-3
Theme Required Courses	
GBS 742 Dendritic Cell Biology	3
GRD 717 Principles of Scientific Integrity	3
Grant Writing/Scientific Writing ¹	
	2
Biostatistics ²	
	3
Journal Clubs ³	
	1
Advanced Courses ⁴	
	9
MSTP/Arise Required Courses	
MSTP 794 Translational Research Seminar ⁵	1
MSTP 795 Continuing Clinical Education ⁶	1
Research ⁷	24
Total Hours	55-59

- ¹ Select from GBS 716, GBS 725, GBS 768, GBSC 726 or GRD 709.
- ² Select from GRD 770, BST 611, BST 612, BY 755, PY 716.
- ³ Chosen in consultation with mentor.
- ⁴ Chosen in consultation with mentor and thesis committee. Taken fall and spring.
- ⁵ Taken every semester.
- ⁶ Taken fall & summer

⁷ MSTP students take MSTP 798 and MSTP 799. Arise students take PSDO 798 and PSDO 799.

Please note:

- Seminars are recommended to attend, but registration is not required.
- Students must be registered for 9 hours each semester. Any hours over 9 must be approved by the MSTP/Arise Director.
- Career development course registration (GRD, CIRTLL) requires the permission of the Thesis Mentor, Theme Director, and MSTP/ARISE Director.
- Students must be admitted to candidacy for a minimum of one year before the thesis defense.

Additional MSTP/Arise Requirements:

- Submission of F30/F31 on or before April of GS2 Year (MSTP requirement).
- Committee meetings held every six months.

Additional Theme Requirements:

- Publications: At least one published paper.
- Presentations: At least one presentation at a national or international scientific meeting.

Neuroscience (NESC) Theme- MSTP/ARISE

Requirements	Hours
Module Courses (Recommended By Theme)	
GBS 747 Special Topics (Neuroanatomy)	2
GBSC 729 Cell Neurophysiology	2
GBS 714 Developmental Neuroscience	2
GBSC 727 Neuro Systems	2
Theme Required Course	
GBS 737 Neuro Student Summer Seminar Series	1
NBL 703 Nuerobiology Seminar Series	1
GBS Required Course	
GRD 717 Principles of Scientific Integrity	3
Grant-writing/Scientific-writing ¹	2
Biostatistics ²	3
Jornal Clubs ³	1
Three Advanced Courses ⁴	9
MSTP/ARISE Required Course	
MSTP 794 Translational Research Seminar ⁵	1
MSTP 795 Continuing Clinical Education ⁶	1
Research Hours ⁷	24
Total Hours	54

¹ Select from GBS 716, GBS 725, GBS 768, GBSC 726 or GRD 709.
² Select from GRD 770, BST 611, BST 612, BY 755, PY 716.
³ Chosen in consultation with mentor
⁴ Chosen in consultation with mentor and thesis committee
⁵ Thaken every semester
⁶ Taken Every Fall & Summer
⁷ MSTP students take MSTP 798 and MSTP 799. Arise students take PSDO 798 and PSDO 799 .

- Students must be registered for 9 hours each semester. Any hours over must be approved by the MSTP/ARISE Director.
- Must obtain permission of Thesis Mentor, Theme Director, and MSTP/ARISE Director to register for Career Development courses (e.g., GRD and CIRTLL)
- Students must be admitted to candidacy for a minimum of 1 year before the thesis defense

Additional MSTP/ARISE Requirements:

- Submission of F30/F31 **on or before** April of GS2 Year (MSTP Requirement)
- Committee Meetings held every 6 months

Additional Theme Requirements:

- Publications: At least one published first author paper & one submission to a journal. Co-author papers are encouraged.
- Presentations: At least two presentations at a national or international scientific meeting (poster and/or oral).

Pathobiology and Molecular Medicine (PBMM) Theme - MSTP/Arise

Requirements	Hours
Module Courses	
GBS 750 Nerves, Muscles and Bones	2-3
GBS 751 Heart, Lung, and Kidney	2-3
GBS 752 GI, Endocrine, and Immune System	2-3
GBS 753 Pharmacology, Toxicology, and Molecular Medicine	2-3
Theme Required Courses	
GBS 742 Dendritic Cell Biology	3
GBS Required Courses	
GRD 717 Principles of Scientific Integrity	3
Grant Writing/Scientific Writing ¹	2
Biostatistics ²	3
Journal Clubs ³	1
Advanced Courses ⁴	9
MSTP/Arise Required Courses	
MSTP 794 Translational Research Seminar ⁵	1
MSTP 795 Continuing Clinical Education ⁶	1
Research ⁷	24
Total Hours	55-59

¹ Select from GBS 716, GBS 725, GBS 768, GBSC 726 or GRD 709.
² Select from GRD 770, BST 611, BST 612, BY 755, PY 716.
³ Chosen in consultation with mentor.
⁴ Chosen in consultation with mentor and thesis committee. Taken fall and spring.
⁵ Taken every semester.
⁶ Taken fall & summer
⁷ MSTP students take MSTP 798 and MSTP 799. Arise students take PSDO 798 and PSDO 799.

Please note:

- Seminars are recommended to attend, but registration is not required.
- Students must be registered for 9 hours each semester. Any hours over 9 must be approved by the MSTP/Arise Director.

- Career development course registration (GRD, CIRTL) requires the permission of the Thesis Mentor, Theme Director, and MSTP/ARISE Director.
- Students must be admitted to candidacy for a minimum of one year before the thesis defense.

Additional MSTP/Arise Requirements:

- Submission of F30/F31 on or before April of GS2 Year (MSTP requirement).
- Committee meetings held every six months.

Additional Theme Requirements:

- Publications: At least one published paper.
- Presentations: At least one presentation at a national or international scientific meeting.

ARISE MD

OVERVIEW

The **Advance Research training In SciEnce for MDs (ARISE-MD) PHD** at UAB is a physician scientist training pathway designed to prepare residents and fellows at UAB for the roles of researchers, scholars and leaders capable of making a substantive contribution to academic medicine. The ARISE-MD pathway is designed to build on previous training at the undergraduate medical education level obtained from a nationally accredited school of medicine. The multi-year program offers future clinician-scientists a pathway that combines clinical training with advanced research training in multiple arenas of basic science leading to a PhD degree from one of eight Graduate Biomedical Science (GBS) PhD themes. It is through immersion in a research project that ARISE-MD students gain the knowledge and skills required for the successful completion of a dissertation. Residents or fellows from any graduate medical education (GME) training program at UAB can apply to the ARISE-MD.

PROGRAM OUTCOMES

- Synthesize historical and philosophical knowledge as a foundation for the design and conduct of research that generates new knowledge
- Critically appraise and synthesize evolving knowledge as a foundation for a scientific program of research
- Generate knowledge that informs the design, implementation, and evaluation of interventions that contribute to the advancement of science and facilitate optimal patient, population, and health systems outcomes
- Conduct investigations based upon scientifically sound conceptual and methodological decisions about research designs, measures, and analytic methods
- Demonstrate scientific integrity in the design, conduct, and dissemination of research
- Participate in the mentoring of the next generation of physician scientists

ARISE-MD MINIMUM ADMISSION REQUIREMENTS

- A Doctor of Medicine (MD) from a nationally accredited institution, equivalent to that in the UAB School of Medicine
- Eligibility for licensure as a physician in Alabama

- Active resident or fellow matched at UAB through the UASOM Graduate Medical Education Office (**ERAS Application and Match Acceptance**)
- A personal statement that evidences prior research experiences, congruence between the applicant's research interests and chosen mentor's research, and future endeavors as a physician scientist in academic medicine
- A current CV or NIH Biosketch
- Two references from individuals with expertise to comment on the applicant's capability for research and scholarship (e.g., research mentor and UAB Residency or Fellow Chair)
- A personal interview with an ARISE-MD advisory member or designee

Biochemistry, Structural, and Stem Cell Biology (BSSB) Theme - MSTP/Arise

Requirements	Hours
Module Courses (Recommended by Theme)	
GBS 781 Molecular Enzymology	2-3
GBS 712 Cellular and Molecular Aspects of Developmental Biology	2-3
GBS 782 Molecular Genetics	2-3
GBS 784 Stem Cell Biology	2-3
Theme Required Course	
GBSC 742 GBS Student Theme Meeting Course	1
GBS Required Courses	
GRD 717 Principles of Scientific Integrity	3
One Grant Writing/Scientific Writing ²	1
Biostatistics ³	2
Journal Clubs ⁴	3
Three Advanced Courses ⁴	9
MSTP/ARISE Required Courses	
MSTP 794 Translational Research Seminar ⁵	1
MSTP 795 Continuing Clinical Education ⁶	1
Research⁷	24
Total Hours	53-57

- 1 Select from GBS 716, GBS 725, GBS 768, GBSC 726 or GRD 709.
- 2 Select from GRD 770, BST 611, BST 612, BY 755, PY 716.
- 3 Chosen in consultation with mentor.
- 4 Chosen in consultation with mentor and thesis committee. Taken fall and spring.
- 5 Taken every semester.
- 6 Taken fall & summer
- 7 MSTP students take MSTP 798 and MSTP 799. Arise students take PSDO 798 and PSDO 799 .

Please note:

- Seminars are recommended to attend, but registration is not required.
- Students must be registered for 9 hours each semester. Any hours over 9 must be approved by the MSTP/Arise Director.
- Career development course registration (GRD, CIRTL) requires the permission of the Thesis Mentor, Theme Director, and MSTP/ARISE Director.

- Students must be admitted to candidacy for a minimum of one year before the thesis defense.

Additional MSTP/Arise Requirements:

- Submission of F30/F31 on or before April of GS2 Year (MSTP requirement).
- Committee meetings held every six months.

Additional Theme Requirements:

- Publications: At least one published paper.
- Presentations: At least one presentation at a national or international scientific meeting.

Cancer Biology (CANB) Theme - MSTP/Arise

Requirements	Hours
Module Courses	
GBS 710 Cell Signaling	2-3
GBS 720 Genomic Structure and Function	2-3
GBS 769 Carcinogenesis	2-3
GBS 774 Cancer Immunology	2-3
Theme Required Courses	
GBS 770 Pathobiology of Cancer	2-3
GBS 777 Cancer Biology Seminar	1
GBS Required Courses	
GRD 717 Principles of Scientific Integrity	3
Grant Writing/Scientific Writing ¹	
	2
Biostatistics ²	
	3
Journal Clubs ³	
	1
Advanced Courses ⁴	
	9
MSTP/Arise Required Courses	
MSTP 794 Translational Research Seminar ⁵	1
MSTP 795 Continuing Clinical Education ⁶	1
Research ⁷	24
Total Hours	55-60

¹ Select from GBS 716, GBS 725, GBS 768, GBSC 726 or GRD 709.

² Select from GRD 770, BST 611, BST 612, BY 755, PY 716.

³ Chosen in consultation with mentor.

⁴ Chosen in consultation with mentor and thesis committee. Taken fall and spring.

⁵ Taken every semester.

⁶ Taken fall & summer

⁷ MSTP students take MSTP 798 and MSTP 799. Arise students take PSDO 798 and PSDO 799.

Please note:

- Seminars are recommended to attend, but registration is not required.
- Students must be registered for 9 hours each semester. Any hours over 9 must be approved by the MSTP/Arise Director.
- Career development course registration (GRD, CIRTL) requires the permission of the Thesis Mentor, Theme Director, and MSTP/ARISE Director.
- Students must be admitted to candidacy for a minimum of one year before the thesis defense.

Additional MSTP/Arise Requirements:

- Submission of F30/F31 on or before April of GS2 Year (MSTP requirement).
- Committee meetings held every six months.

Additional Theme Requirements:

- Publications: At least one published paper.
- Presentations: At least one presentation at a national or international scientific meeting.

Cell, Molecular & Developmental Biology (CMDB) Theme - MSTP/Arise

Requirements	Hours
Module Courses	
GBS 710 Cell Signaling	2-3
GBS 712 Cellular and Molecular Aspects of Developmental Biology	2-3
GBS 714 Developmental Neuroscience	2-3
GBS 784 Stem Cell Biology	2-3
Theme Required Courses	
GBS 717 Methods and Scientific Logic	1
GBS 792 CMDB Seminar	1
GBS Required Courses	
GRD 717 Principles of Scientific Integrity	3
Grant Writing/Scientific Writing ¹	
	2
Biostatistics ²	
	3
Journal Clubs ³	
	1
Advanced Courses ⁴	
	9
MSTP/ARISE Required Courses	
MSTP 794 Translational Research Seminar ⁵	1
MSTP 795 Continuing Clinical Education ⁶	1
Research ⁷	24
Total Hours	54-58

¹ Select from GBS 716, GBS 725, GBS 768, GBSC 726 or GRD 709.

² Select from GRD 770, BST 611, BST 612, BY 755, PY 716.

³ Chosen in consultation with mentor.

⁴ Chosen in consultation with mentor and thesis committee. Taken fall and spring.

⁵ Taken every semester.

⁶ Taken fall & summer

⁷ MSTP students take MSTP 798 and MSTP 799. Arise students take PSDO 798 and PSDO 799.

Please note:

- Seminars are recommended to attend, but registration is not required.
- Students must be registered for 9 hours each semester. Any hours over 9 must be approved by the MSTP/Arise Director.
- Career development course registration (GRD, CIRTL) requires the permission of the Thesis Mentor, Theme Director, and MSTP/ARISE Director.
- Students must be admitted to candidacy for a minimum of one year before the thesis defense.

Additional MSTP/Arise Requirements:

- Submission of F30/F31 on or before April of GS2 Year (MSTP requirement).
- Committee meetings held every six months.

Additional Theme Requirements:

- Publications: At least one published paper.
- Presentations: At least one presentation at a national or international scientific meeting.

Genetics, Genomics and Bioinformatics (GGB) Theme - MSTP/Arise

Requirements	Hours
Module Courses	
GBS 724 Principles of Human Genetics	2-3
GBS 720 Genomic Structure and Function	2-3
GBS 722 Bioinformatics	2-3
GBSC 718 Epigenetics	2-3
Theme Required Courses	
GBS 717 Methods and Scientific Logic	1
GBSC 742 GBS Student Theme Meeting Course	1
GBS Required Courses	
GRD 717 Principles of Scientific Integrity	3
Grant Writing/Scientific Writing ¹	
	2
Biostatistics ²	
	3
Journal Clubs ³	
	1
Advanced Courses ⁴	
	9
MSTP/Arise Required Courses	
MSTP 794 Translational Research Seminar ⁵	1
MSTP 795 Continuing Clinical Education ⁶	1
Research ⁷	24
Total Hours	54-58

- ¹ Select from GBS 716, GBS 725, GBS 768, GBSC 726 or GRD 709.
- ² Select from GRD 770, BST 611, BST 612, BY 755, PY 716.
- ³ Chosen in consultation with mentor.
- ⁴ Chosen in consultation with mentor and thesis committee. Taken fall and spring.
- ⁵ Taken every semester.
- ⁶ Taken fall & summer
- ⁷ MSTP students take MSTP 798 and MSTP 799. Arise students take PSDO 798 and PSDO 799.

Please note:

- Seminars are recommended to attend, but registration is not required.
- Students must be registered for 9 hours each semester. Any hours over 9 must be approved by the MSTP/Arise Director.
- Career development course registration (GRD, CIRTL) requires the permission of the Thesis Mentor, Theme Director, and MSTP/ARISE Director.
- Students must be admitted to candidacy for a minimum of one year before the thesis defense.

Additional MSTP/Arise Requirements:

- Submission of F30/F31 on or before April of GS2 Year (MSTP requirement).
- Committee meetings held every six months.

Additional Theme Requirements:

- Publications: At least one published paper.
- Presentations: At least one presentation at a national or international scientific meeting.

Immunology (IMM) Theme - MSTP/Arise

Requirements	Hours
Module Courses	
GBS 740A Introduction to Immunology Part 1	2-3
GBS 740B Introduction to Immunology Part 2	2-3
GBS 744 Mucosal Immunology	2-3
GBS 741 Lymphocyte Biology	2-3
Theme Required Courses	
GBS 742 Dendritic Cell Biology	3
GBS Required Courses	
GRD 717 Principles of Scientific Integrity	3
Grant Writing/Scientific Writing ¹	
	2
Biostatistics ²	
	3
Journal Clubs ³	
	1
Advanced Courses ⁴	
	9
MSTP/Arise Required Courses	
MSTP 794 Translational Research Seminar ⁵	1
MSTP 795 Continuing Clinical Education ⁶	1
Research ⁷	24
Total Hours	55-59

- ¹ Select from GBS 716, GBS 725, GBS 768, GBSC 726 or GRD 709.
- ² Select from GRD 770, BST 611, BST 612, BY 755, PY 716.
- ³ Chosen in consultation with mentor.
- ⁴ Chosen in consultation with mentor and thesis committee. Taken fall and spring.
- ⁵ Taken every semester.
- ⁶ Taken fall & summer
- ⁷ MSTP students take MSTP 798 and MSTP 799. Arise students take PSDO 798 and PSDO 799.

Please note:

- Seminars are recommended to attend, but registration is not required.
- Students must be registered for 9 hours each semester. Any hours over 9 must be approved by the MSTP/Arise Director.
- Career development course registration (GRD, CIRTL) requires the permission of the Thesis Mentor, Theme Director, and MSTP/ARISE Director.
- Students must be admitted to candidacy for a minimum of one year before the thesis defense.

Additional MSTP/Arise Requirements:

- Submission of F30/F31 on or before April of GS2 Year (MSTP requirement).
- Committee meetings held every six months.

Additional Theme Requirements:

- Publications: At least one published paper.
- Presentations: At least one presentation at a national or international scientific meeting.

Microbiology (MIC) Theme - MSTP/Arise

Requirements	Hours
Module Courses	
GBS 760 Prokaryotic Genetics and Molecular Biology	2-3
GBS 764 Structural Biology for Micro	2-3
GBS 763 Microbial Pathogenesis	2-3
GBS 762 Virology	2-3
Theme Required Courses	
GBS 742 Dendritic Cell Biology	3
GRD 717 Principles of Scientific Integrity	3
Grant Writing/Scientific Writing ¹	2
Biostatistics ²	3
Journal Clubs ³	1
Advanced Courses ⁴	9
MSTP/Arise Required Courses	
MSTP 794 Translational Research Seminar ⁵	1
MSTP 795 Continuing Clinical Education ⁶	1
Research ⁷	24
Total Hours	55-59

- 1 Select from GBS 716, GBS 725, GBS 768, GBSC 726 or GRD 709.
- 2 Select from GRD 770, BST 611, BST 612, BY 755, PY 716.
- 3 Chosen in consultation with mentor.
- 4 Chosen in consultation with mentor and thesis committee. Taken fall and spring.
- 5 Taken every semester.
- 6 Taken fall & summer
- 7 MSTP students take MSTP 798 and MSTP 799. Arise students take PSDO 798 and PSDO 799.

Please note:

- Seminars are recommended to attend, but registration is not required.
- Students must be registered for 9 hours each semester. Any hours over 9 must be approved by the MSTP/Arise Director.
- Career development course registration (GRD, CIRTL) requires the permission of the Thesis Mentor, Theme Director, and MSTP/ARISE Director.
- Students must be admitted to candidacy for a minimum of one year before the thesis defense.

Additional MSTP/Arise Requirements:

- Submission of F30/F31 on or before April of GS2 Year (MSTP requirement).
- Committee meetings held every six months.

Additional Theme Requirements:

- Publications: At least one published paper.
- Presentations: At least one presentation at a national or international scientific meeting.

Neuroscience (NESC) Theme- MSTP/ARISE

Requirements	Hours
Module Courses (Recommended By Theme)	
GBS 747 Special Topics (Neuroanatomy)	2
GBSC 729 Cell Neurophysiology	2
GBS 714 Developmental Neuroscience	2
GBSC 727 Neuro Systems	2
Theme Required Course	
GBS 737 Neuro Student Summer Seminar Series	1
NBL 703 Neurobiology Seminar Series	1
GBS Required Course	
GRD 717 Principles of Scientific Integrity	3
Grant-writing/Scientific-writing ¹	2
Biostatistics ²	3
Jornal Clubs ³	1
Three Advanced Courses ⁴	9
MSTP/ARISE Required Course	
MSTP 794 Translational Research Seminar ⁵	1
MSTP 795 Continuing Clinical Education ⁶	1
Research Hours ⁷	24
Total Hours	54

- 1 Select from GBS 716, GBS 725, GBS 768, GBSC 726 or GRD 709.
- 2 Select from GRD 770, BST 611, BST 612, BY 755, PY 716.
- 3 Chosen in consultation with mentor
- 4 Chosen in consultation with mentor and thesis committee
- 5 Thaken every semester
- 6 Taken Every Fall & Summer
- 7 MSTP students take MSTP 798 and MSTP 799. Arise students take PSDO 798 and PSDO 799 .

- Students must be registered for 9 hours each semester. Any hours over must be approved by the MSTP/ARISE Director.
- Must obtain permission of Thesis Mentor, Theme Director, and MSTP/ARISE Director to register for Career Development courses (e.g., GRD and CIRTL)
- Students must be admitted to candidacy for a minimum of 1 year before the thesis defense

Additional MSTP/ARISE Requirements:

- Submission of F30/F31 **on or before** April of GS2 Year (MSTP Requirement)
- Committee Meetings held every 6 months

Additional Theme Requirements:

- Publications: At least one published first author paper & one submission to a journal. Co-author papers are encouraged.
- Presentations: At least two presentations at a national or international scientific meeting (poster and/or oral).

Pathobiology and Molecular Medicine (PBMM) Theme - MSTP/Arise

Requirements	Hours
Module Courses	
GBS 750 Nerves, Muscles and Bones	2-3
GBS 751 Heart, Lung, and Kidney	2-3
GBS 752 GI, Endocrine, and Immune System	2-3
GBS 753 Pharmacology, Toxicology, and Molecular Medicine	2-3
Theme Required Courses	
GBS 742 Dendritic Cell Biology	3
GBS Required Courses	
GRD 717 Principles of Scientific Integrity	3
Grant Writing/Scientific Writing ¹	2
Biostatistics ²	3
Journal Clubs ³	1
Advanced Courses ⁴	9
MSTP/Arise Required Courses	
MSTP 794 Translational Research Seminar ⁵	1
MSTP 795 Continuing Clinical Education ⁶	1
Research ⁷	24
Total Hours	55-59

- ¹ Select from GBS 716, GBS 725, GBS 768, GBSC 726 or GRD 709.
- ² Select from GRD 770, BST 611, BST 612, BY 755, PY 716.
- ³ Chosen in consultation with mentor.
- ⁴ Chosen in consultation with mentor and thesis committee. Taken fall and spring.
- ⁵ Taken every semester.
- ⁶ Taken fall & summer
- ⁷ MSTP students take MSTP 798 and MSTP 799. Arise students take PSDO 798 and PSDO 799.

Please note:

- Seminars are recommended to attend, but registration is not required.
- Students must be registered for 9 hours each semester. Any hours over 9 must be approved by the MSTP/Arise Director.
- Career development course registration (GRD, CIRTL) requires the permission of the Thesis Mentor, Theme Director, and MSTP/ARISE Director.
- Students must be admitted to candidacy for a minimum of one year before the thesis defense.

Additional MSTP/Arise Requirements:

- Submission of F30/F31 on or before April of GS2 Year (MSTP requirement).
- Committee meetings held every six months.

Additional Theme Requirements:

- Publications: At least one published paper.
- Presentations: At least one presentation at a national or international scientific meeting.

School of Nursing

Degree Offered:	M.S.N.
Director (M.S.N.):	Dr. Michele Talley
Phone:	(205) 934-6647
Email:	talleym@uab.edu
Director (Nurse Anesthesia)	Dr. Susan P. McMullan
Phone	(205) 934-6587
Email	susanpmcm@uab.edu
Director (A.M.N.P.)	Mr. Michael Mosley
Phone	(205) 975-3465
Email	mmosley@uab.edu

Degree Offered:	D.N.P.
Director (D.N.P.):	Dr. Aimee Holland
Phone:	(205) 996-9824
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Degree Offered	Ph.D.
Director (Ph.D.):	Dr. Karen Heaton
Phone:	(205) 996-9467
Email:	kharp@uab.edu

Degree Offered:	M.S.N.
Director (A.M.N.P.):	Mr. Michael Mosley
Phone:	(205) 975-3465
E-mail:	mmosley@uab.edu

A.M.N.P. Program Description

The Accelerated Master's Entry to Nursing Pathway (AMNP) is an alternate pathway into the existing master's in nursing (MSN degree) for applicants who have a bachelor's degree in a field other than nursing, who are not registered nurses, and who seek MSN preparation. Students may apply for continued graduate options while in the AMNP coursework to start after successful completion of the AMNP. The AMNP was developed in response to the growing need for well-educated, highly skilled professionals who can manage complexity within clinical environments.

A.M.N.P. Admission Requirements

Admission is based on the applicant's academic record and all application materials at the time of the application deadline. *All grades (UAB and other colleges/universities) from previous college course work must be posted on applicant's UAB transcript by the application deadline. Courses *in progress* must be validated with a letter from the college or university students are attending.

- Applicants must have earned a minimum of a baccalaureate degree from a regionally accredited college/university prior to beginning classes. Applications are completed through the School of Nursing at: <http://www.uab.edu/nursing/home/apply-now>.
- Upon receipt of ALL official transcripts, course work will be evaluated for advisement purposes regarding AMNP Foundational Courses.
- Pre-requisites: Students are eligible to apply if they will have successfully completed a minimum of 29 semester credit hours by the Application Deadline of the AMNP Pre-requisite Foundation

Coursework (listed on the next page). Successful completion of all AMNP Pre-requisite Foundation Coursework with a "C" or above must be met prior to matriculation into the AMNP coursework. The final minimum cumulative/overall and Pre-requisite Foundation Coursework GPA must be a 3.0 or greater. Once you have applied through UAB Graduate School, and upon receipt of ALL official transcripts, your coursework will be evaluated for advisement purposes.

- GPA: The minimum cumulative AND foundational GPA for all AMNP applicants is 3.0 at the time of application. Admission is competitive and is based on space availability. A minimum cumulative GPA of 3.0 does not guarantee admission to the School of Nursing. It is strongly recommended that applicants to the School of Nursing demonstrate a record of full-time study; a minimum number of course repeats/grade forgiveness options, and withdrawals.
- A minimum score of 410 on the MAT; or a minimum score of 480 on the GMAT; or a combined score of 297 on the verbal and quantitative sections of the Graduate Record Examination (GRE). Students who have a 3.2 GPA or better may waive this requirement.
- Test Waiver: The GRE/GMAT/MAT Waiver process allows eligible candidates for master's study to have this requirement waived if they meet the following criteria: Have earned a baccalaureate degree from a regionally accredited university and have a cumulative GPA of 3.2 on a 4.0 scale. Approval for the waiver does not imply or guarantee admission to the AMNP. The following individuals are not eligible for the waiver process: International applicant and Non-native English speaking applicants. Candidates not eligible for the Waiver Process will be required to take the GRE/GMAT/MAT and submit an official score by the application deadline. Upon receipt of the applicant's transcripts, the Office of Student Affairs at the SON will verify with the student that they do not need to take one of the following: GRE/GMAT/MAT.
- International students must achieve a TOEFL examination score of at least 500;
- Three (3) letters of professional reference attesting to the applicant's potential for graduate study.
- A resume, outlining health care interest/experience, campus/community involvement, leadership, and employment will be due by the application deadline. Resumes should not be more than one page in length. Applicants are strongly encouraged to provide proof of work/volunteer experience in a healthcare setting as part of the application process. The healthcare work is to be documented by letters from a supervisor (on agency letterhead). Completion of a nursing skills course does not meet these criteria.
- Interviews: Due to the competitive nature, not all candidates that apply will be invited for interviews. Applicants will be notified if they are invited to participate in the interview round for continued consideration for admission. Interviews will be conducted in either October or November. You will be given ample time to plan for a trip to campus if you are selected to be interviewed. Students will be notified shortly after the interviews of our admission decision.

A.M.N.P. Degree Requirements

AMNP provides pre-licensure coursework leading to a Master of Science in Nursing, MSN, degree. Students should be prepared to dedicate 40 hours or more a week to coursework and clinicals. Students find that it is

not feasible for them to work while completing coursework and clinicals. AMNP is live and not distance accessible.

The pre-licensure:

54 Credits, 930 contact hours. Consists of 16 months of full-time study in which students complete the required courses and clinical experiences and are eligible to apply for licensure as a registered nurse.

Students emerge with the knowledge and skills required to function as a registered nurse through an intense learning experience. Upon successful completion of pre-licensure requirements, the UAB University Registrar sends a certified letter to the Alabama Board of Nursing stating that students have successfully completed requirements and are eligible to take the National Certification Licensure Exam for RNs (NCLEX-RN). Students who successfully complete the NCLEX-RN may apply for licensure and for employment as a Registered Nurse.

The Master of Science in Nursing:

The MSN degree provides an entry-level focus in healthcare technology and transitional care while allowing for further graduate nursing education into multiple pathways of graduate nursing studies

A.M.N.P. Program Goals

The MSN program of study is designed to prepare nurses who: synthesize research, theoretical formulations, and principles of scientific inquiry to provide evidence-based practice; assume leadership in managing and evaluating continuous quality improvement processes; use information systems/technology to evaluate programs of care, outcomes of care and care systems; advocate and implement health care policies that improve access, equity, efficiency, and social justice in the delivery of health care; design innovative educational programs for patients, nursing staff, and nursing students using teaching and learning principles; provide ethical, culturally sensitive care in an advanced nursing role independently and collaboratively with professionals from multiple disciplines; monitor the quality of one's own nursing practice based on professional practice standards and relevant statutes and regulations; and apply theories and principles of marketing, economics, consultation, management, and leadership to comprehensively perform an advanced nursing role.

Degree Offered:	M.S.N.
Director (M.S.N.):	Dr. Michele Talley
Phone:	(205) 934-6647
E-mail:	talley@m@uab.edu

Master of Science in Nursing

Program Description

The MSN curriculum is designed to prepare nurses for advanced generalist or specialty practice, advanced nursing roles, and doctoral study in nursing. Preparation for advanced study in nursing at the MSN level is available in a variety of specialties and advanced roles including **Nurse Practitioner, Nursing Informatics, Nursing and Health Systems Administrator**, and Clinical Nurse Leader (http://www.uab.edu/nursing/home/images/stories/info_sa/MSN_Flyer_MSNCNL.pdf). Students are admitted to master's study during the fall and spring terms. All nursing core courses and the majority of the master's specialties are offered in the distance accessible format. The total number of clinical hours required varies depending on the option that is selected. Students must meet the full-time relevant clinical practice

experience requirement of the specialty and have a current RN license in the state in which they will do their clinical practice prior to enrolling in the advanced practicum courses. Because only a limited number of applicants can be accommodated in a given academic year, some well-qualified applicants may not be offered admission. In cases where there are more qualified applicants than slots available, the School of Nursing accepts the most qualified who apply. In addition to the specialties and advanced roles, there are several subspecialty course options. Currently, these options are Nurse Educator, Advanced Forensic Nurse, Advanced Palliative Care, Emergency, Registered Nurse First Assist (RNFA), and Oncology. Please contact UAB School of Nursing Office for Student Success at 205-975-7529 or go to <https://www.uab.edu/nursing/home/msn-specialty-tracks> for more information on subspecialty course options.

Non-Degree Options at the MSN Level

The Post-Master of Science in Nursing (MSN) certificate track curriculum prepares nurses for advanced nursing practice as a nurse practitioner.

This option is available for nurses who hold or are eligible for an advanced practice certification. MSN graduates who wish to take a designated program of study in preparation for sitting for one of the nurse practitioner certification examinations may apply for non-degree graduate status. Applicants for the Post MSN NP Option are considered on an individual basis, depending on NP practice experience and previous coursework. Applicants that are determined to be ineligible for the Post MSN NP Option will be encouraged to apply for a second MSN degree. Post-master's non-degree students will be not awarded a degree, not be eligible to participate in commencement activities, and may not qualify for financial aid or scholarships. Students that successfully complete the course work will receive documentation confirming that the course work meets the requirements to be eligible to take the advanced certification exam.

The non-degree graduate student classification also makes selected master's-level nursing courses available to persons who have a bachelor's degree in nursing from a regionally accredited institution.

Students interested in the non-degree graduate student classification and the non-degree options below will need to contact UAB School of Nursing Office for Student Success at 205-975-7529 for application instructions.

In addition to the non-degree graduate student classification to take selected courses, there are two non-degree options for post-BSN students in Teaching and Registered Nurse First Assist (RNFA)

Teaching Certificate for Post BSN Applicants-Additionally, applicants at the post-baccalaureate level may choose to seek certification to prepare for the faculty role.

Registered Nurse First Assist (RNFA) Certificate for Post-Baccalaureate Applicants- A Registered Nurse First Assistant (RNFA) is prepared to practice in a variety of acute or critical care settings. The RNFA, in collaboration with the surgeon, provides continuous and comprehensive patient care throughout the perioperative period.

M.S.N. Program Goals

The MSN program of study is designed to prepare nurses who: synthesize research, theoretical formulations, and principles of scientific inquiry to provide evidence-based practice; assume leadership in managing and evaluating continuous quality improvement processes; use information systems/technology to evaluate programs of care, outcomes of care and care systems; advocate and implement health care policies that improve access, equity, efficiency, and social justice in the delivery

of health care; design innovative educational programs for patients, nursing staff, and nursing students using teaching and learning principles; provide ethical, culturally sensitive care in an advanced nursing role independently and collaboratively with professionals from multiple disciplines; monitor the quality of one's own nursing practice based on professional practice standards and relevant statutes and regulations; and apply theories and principles of marketing, economics, consultation, management, and leadership to comprehensively perform an advanced nursing role.

M.S.N. Admission Requirements

Requirements for admission for the MSN degree include the following:

- BSN degree from a regionally accredited institution, equivalent to the one offered by the School of Nursing, UAB;
- Cumulative grade point average of at least 3.0 on a 4.0 scale or on the last 60 semester hours; (Graduates of baccalaureate degree programs in countries other than the United States must have their baccalaureate degree transcripts evaluated by the Educational Credential Evaluators, Inc. OR The World Education Services Organization);
- Combined score of 297 on verbal and quantitative sections of the GRE; or score of 410 on the MAT; or score of 480 on the GMAT; Test scores submitted to UAB from the GRE, GMAT, or MAT must not be over 5 years old. Applicants with a 3.2 GPA or better may waive the Test Score requirement if they meet the criteria, please see: **GRE/GMAT/MAT Waiver Process for degree seeking MSN students**;
- International students must achieve a TOEFL examination score of at least 550; and
- Three (3) letters of professional reference attesting to the applicant's potential for graduate study.

Master of Science in Nursing-Nurse Practitioner Core & Foundation Courses

Requirements	Hours
NUR 604 Leadership in Advanced Nursing Practice Roles	3
NUR 606 Translating Evidence into Practice	3
NUR 610 Health Care Systems for Advanced Nursing Practice	3
NUR 612 Advanced Pathophysiology	3
NUR 613 Pharmacology and Therapeutics	3
NUR 614 Assessment and Diagnostic Reasoning for Advanced Nursing Practice	3
Total Hours	18

Adult Gerontology Primary Care NP

Requirements	Hours
NAH 618L Focus on Advanced Nursing Practice Specialization	3
NAH 621 Advanced Adult Gerontology Nursing I	5
NAH 685L Practicum I: Adult/Gerontology Nurse Practitioner	3
NAH 622 Advanced Adult Gerontology Nursing II	4
NAH 686L Practicum II: Adult/Gerontology Nurse Practitioner	3
NAH 623 Advanced Adult Gerontology Nursing III	5
NAH 692L Residency: Adult/Gerontology Nurse Practitioner	4
Total Hours	27

Pediatric Acute Care NP

Requirements	Hours
NCC 622 Advanced Pediatric Nursing II - Acute Care	3
NCC 618L Focus on Advanced Nursing Practice Specialization	3
NCC 621 Advanced Pediatric Nursing I - Acute Care	4
NDP 625 Advanced Dual Option Pediatric Nurse Practitioner	2
NCC 685L Clinical Practicum I: Advanced Pediatric Nursing - Acute Care	3
NCC 686L Clinical Practicum II: Advanced Pediatric Nursing - Acute Care	3
NDP 692L Residency: Dual Option Pediatric Nurse Practitioner	4
Total Hours	22

Pediatrics Primary Care NP

Requirements	Hours
NPE 618L	2
NPE 618L Focus on Advanced Nursing Practice Specialization	
NPE 621 Nurse Practitioner Pediatric Primary Care I	5
NPE 685L Practicum I: Nurse Practitioner Pediatric Primary Care	3
NPE 622 Nurse Practitioner Pediatric Primary Care II	4
NPE 686L Practicum II: Nurse Practitioner Pediatric Primary Care	3
NPE 623 Nurse Practitioner Pediatric Primary Care III	5
NPE 692L Practicum III: Nurse Practitioner Pediatric Primary Care Residency	4
Total Hours	26

Dual Pediatric NP

Requirements	Hours
NDP 618L Focus on Advanced Nursing Practice Specialization	3
NPE 621 Nurse Practitioner Pediatric Primary Care I	5
NCC 621 Advanced Pediatric Nursing I - Acute Care	4
NPE 622 Nurse Practitioner Pediatric Primary Care II	4
NCC 622 Advanced Pediatric Nursing II - Acute Care	3
NPE 685L Practicum I: Nurse Practitioner Pediatric Primary Care	3
NPE 686L Practicum II: Nurse Practitioner Pediatric Primary Care	3
NCC 685L Clinical Practicum I: Advanced Pediatric Nursing - Acute Care	3
NCC 686L Clinical Practicum II: Advanced Pediatric Nursing - Acute Care	3
NPE 623 Nurse Practitioner Pediatric Primary Care III	4-5
NPE 692L Practicum III: Nurse Practitioner Pediatric Primary Care Residency	1-6
NCC 623 Advanced Pediatric Nursing III - Acute Care	5
NCC 692L Clinical Practicum III: Advanced Pediatric Nursing - Acute Care - Residency	4
Total Hours	45-51

Neonatal NP

Requirements	Hours
NNE 618L Focus on Advanced Nursing Practice Specialization	3
NNE 621 Advanced Neonatal Nursing I	3-5
NNE 684L Practicum I: Neonatal Nurse Practitioner	2-3
NNE 622 Advanced Neonatal Nursing II	4-5
NNE 685L Practicum II: Neonatal Nurse Practitioner	2-3
NNE 623 Advanced Neonatal Nursing III	4-5

NNE 692L Residency: Neonatal Nurse Practitioner	1-6
Total Hours	19-30

Family NP

Requirements	Hours
NFH 618L Focus on Advanced Nursing Practice Specialization	3
NFH 621 Family Nurse Practitioner I	3-5
NFH 622 Family Nurse Practitioner II	3-4
NFH 623 Family Nurse Practitioner III	5
NFH 685L Practicum I: Family Nurse Practitioner	3
NFH 686L Practicum II: Family Nurse Practitioner	3
NFH 692L Residency: Family Nurse Practitioner	3-6
Total Hours	23-29

Adult Gerontology Acute Care NP

Requirements	Hours
NCA 618L Focus on Advanced Nursing Practice Specialization	3
NCA 621 Adult Gerontology Acute Care Nursing Practice I	5
NCA 685L Adult Gerontology Acute Care Nursing: Practicum I	3
NCA 622 Adult Gerontology Acute Care Nursing Practice II	4
NCA 686L Adult Gero Acute Care Nursing: Practicum II	3
NCA 623 Adult Gerontology Acute Care Nursing Practice III	5
NCA 692L Residency: Adult Gerontology Acute Care Nursing	4
Total Hours	27

Adult Gerontology Acute Care NP with Registered Nurse First Assistant

Requirements	Hours
NCA 618L Focus on Advanced Nursing Practice Specialization	3
NCA 621 Adult Gerontology Acute Care Nursing Practice I	5
NCA 685L Adult Gerontology Acute Care Nursing: Practicum I	3
NCA 622 Adult Gerontology Acute Care Nursing Practice II	4
NCA 686L Adult Gero Acute Care Nursing: Practicum II	3
NCA 692L Residency: Adult Gerontology Acute Care Nursing	4
NCA 623 Adult Gerontology Acute Care Nursing Practice III	5
NFA 620 Surgical Techniques	3
NFA 621	5
NFA 621 Advanced Perioperative Nursing I	
NFA 622 Advanced Perioperative Nursing I: Practicum	1-3
Total Hours	36-38

Women's Health

Requirements	Hours
NWH 618L Focus on Advanced Nursing Practice Specialization	3
NWH 631 Women's Health for Advanced Nursing Practice I	5
NWH 685L Practicum I: Women's Health Care Nurse Practitioner	3
NWH 632 Women's Health for Advanced Nursing Practice II	4
NWH 686L Practicum II: Women's Health Care Nurse Practitioner	3
NWH 692L Residency: Women's Health Care Nurse Practitioner	4
Total Hours	22

Adult Gerontology Primary Care with Women's Health Sub-specialty

Requirements	Hours
NAH 618L Focus on Advanced Nursing Practice Specialization	3
NAH 621 Advanced Adult Gerontology Nursing I	5
NAH 685L Practicum I: Adult/Gerontology Nurse Practitioner	3
NAH 622 Advanced Adult Gerontology Nursing II	4
NAH 623 Advanced Adult Gerontology Nursing III	5
NAH 692L	2
NAH 692L Residency: Adult/Gerontology Nurse Practitioner	
NWH 631 Women's Health for Advanced Nursing Practice I	5
NWH 685L Practicum I: Women's Health Care Nurse Practitioner	3
NWH 632 Women's Health for Advanced Nursing Practice II	4
NWH 686L	2-3
NWH 686L Practicum II: Women's Health Care Nurse Practitioner	
NWH 692L	4-5
NWH 692L Residency: Women's Health Care Nurse Practitioner	
Total Hours	40-42

Psychiatric-Mental Health Primary Care

Requirements	Hours
NPN 618L Focus on Advanced Nursing Practice Specialization	3
NPN 621 Advanced Psychiatric Nursing I	5
NPN 685L Practicum I: Psychiatric Nurse Practitioner	3
NPN 622 Advanced Psychiatric Nursing II	5
NPN 686L Practicum II: Psychiatric Nurse Practitioner	3
NPN 623 Advanced Psychiatric Nursing III	4
NPN 692L Residency: Psychiatric Nurse Practitioner	4
Total Hours	27

Nursing Informatics

Requirements	Hours
NHSL 604 Developing the Advanced Nurse Leader	3
NHSL 606 Evidence-Based Translation and Management	3
NHSL 610 Health Care Systems for Advanced Leaders	3
NHSA 631 Advanced Quality and Patient Safety	3-4
NNI 631 Foundations of Nursing Informatics-Scope of Practice, Models, Standards, and Theories	3
NNI 632 Nursing Informatics Systems Analysis and Design	4
NNI 633 Informatics and Information Technology Review to Advance Care	3
NNI 685L Nursing Informatics: Practicum I	2
NNI 686L Nursing Informatics: Practicum II	2
HI 601 Databases and Data Modeling	3
HI 662 Healthcare Business Intelligence	3

Clinical Nurse Leader

Requirements	Hours
NCL 618L Focus on Advanced Nursing Practice Specialization	2
NCL 620 Systems in Population-based Care I	4
NCL 685L CNL Practicum I	2
NCL 692L CNL Capstone Practicum	5
NHSL 604 Developing the Advanced Nurse Leader	3
NHSL 606 Evidence-Based Translation and Management	3
NHSL 610 Health Care Systems for Advanced Leaders	3

NUR 612 Advanced Pathophysiology	3
NUR 613 Pharmacology and Therapeutics	3
NUR 614 Assessment and Diagnostic Reasoning for Advanced Nursing Practice	3
NHSA 616 Nursing Financial Management	4
NHSA 617L Nursing Financial Management Practicum	2-3
Total Hours	37-38

Nursing Health Systems Administration

Requirements	Hours
NHSA 616 Nursing Financial Management	4
NHSL 604 Developing the Advanced Nurse Leader	3
NHSL 606 Evidence-Based Translation and Management	3
NHSL 610 Health Care Systems for Advanced Leaders	3
NHSA 617L Nursing Financial Management Practicum	2
NHSA 618 Human Resource Management	3
NHSA 631 Advanced Quality and Patient Safety	4
NHSA 681L	4
NHSA 681L Advanced Quality and Patient Safety Practicum	
NHSA 632 Nursing and Health Systems Administration I	4
NHSA 682L Nursing and Health Systems Administration I Practicum	2
NHSA 633 Nursing and Health Systems Administration II	4
NHSA 683L Nursing and Health Systems Administration II Practicum	2
Total Hours	38

Additional Requirements

Candidates for the MSN degree must complete the following requirements: Completion of all coursework and clinical experiences based on the student's Program of Studies, with an overall GPA of 3.0 or better, and grades of B or better in all required courses in the School of Nursing.

Prospective students should use this checklist (<http://www.uab.edu/graduate/images/acrobat/checklist/nurseanesthesia.pdf>) to obtain specific admissions requirements on how to apply to Graduate School.

Degree Offered:	D.N.P.
Director (Nurse Anesthesia):	Dr. Susan P. McMullan
Phone:	(205) 934-6587
Email:	susanpmcm@uab.edu
Website:	www.uab.edu/na

Doctor of Nursing Practice in Nurse Anesthesia

A Nurse Anesthetist, or Certified Registered Nurse Anesthetist (CRNA), is a licensed advanced practice nurse. After completing extensive didactic and clinical education and training, CRNAs become nationally certified. CRNAs safely administer over 40 million anesthetics to patients each year in the United States. They practice in a variety of settings in the private and public sectors and in the U.S. military, including traditional hospital surgical suites and obstetrical delivery rooms, ambulatory surgery centers, pain clinics, and physicians' and dentist offices.

The UAB Nurse Anesthesia DNP Pathway has received a ten-year accreditation by the Council on Accreditation of Nurse Anesthesia Education programs (COA). The UAB Nurse Anesthesia Specialty Track has transitioned from a MSN to a DNP outcome degree.

Regional Clinical Sites

The Nurse Anesthesia DNP Pathway has eight components: a central component in Birmingham and seven regional components located in Alabama (Dothan, Florence, Huntsville, Mobile, Montgomery, Tuscaloosa, and Mississippi). The first semester is completely online. Semesters 2, 3, 4 will meet face-to-face in Birmingham. The remaining semesters are an integration of clinical and online didactic education. Regardless of component, students will be required to come to Birmingham for periodic intensive learning and examination. In order to obtain clinical case numbers students are also expected to travel to clinical sites.

Professional Program Admission Requirements

Applicants must be graduates from a regionally accredited registered nursing program with a baccalaureate degree in nursing. All coursework towards a BSN must be completed by the interview date prior to the start of the Nurse Anesthesia DNP pathway the following year. Applicants are required to provide proof of a valid professional RN license in the U.S. Only candidates with at least one-year experience as an RN in a critical care setting are considered for admission; two years are preferred. Critical care nurses are those caring for critically ill patients who require invasive monitoring, administration of vasoactive drugs, and mechanical ventilation. *Preferred Critical care units include:* CCU; CVICU; MICU; Neuro ICU; SICU; Burn/Trauma ICU; and Pediatric ICU. We **do not** consider PACU, Neonatal ICU, Cardiac Step Down, Bone Marrow Transplant, Telemetry, or Emergency Room as critical care experiences for our application requirements. If you have any questions about whether or not your critical care area is acceptable, please contact jlavier@uab.edu.

- A nursing degree (BSN or higher) from a regionally accredited institution, equivalent to the one offered by the School of Nursing at UAB
- Active, unencumbered Registered Nurse License in the state where you will be completing your clinical education
- An undergraduate grade point average (GPA) of at least 3.2 on a 4.0 scale
- A minimum grade point average of 3.0 on the science prerequisite courses, and a grade of 'C' or higher in all science pre-requisite courses
- (3) Letters of professional reference attesting to the applicant's potential for graduate study
- Standardized test score on the Graduate Record Examination (GRE). There is no minimum score, however all sections of the GRE must be completed prior to application (verbal reasoning, quantitative reasoning, and analytical writing). Submit to UAB (code 1856)
- A personal interview with the selection committee,
- If accepted, complete the UAB medical history questionnaire and physical, provide proof of required immunizations, and receive satisfactory screening by the UAB Medical Center Student Health Service, complete a background check, and urine drug screening, and
- ACLS/PALS certification by the July interview, additionally CCRN (optional) may also be submitted.

* There is no Waiver Process for the Nurse Anesthesia DNP pathway, A GRE exam is required.

Professional Program Prerequisites

(courses listed in semester credit hours):

Anatomy (3-4 semester credit hours)
 Physiology (3-4 semester credit hours)
 Microbiology (3-4 semester credit hours)
 College Chemistry (3-4 semester credit hours)
 Descriptive Statistics (3 semester credit hours)

Application Procedure

Applicants interested in the Nurse Anesthesia Program at University of Alabama at Birmingham (UAB) Nurse Anesthesia should apply through NursingCAS. NursingCAS is the online, centralized application service for nursing programs. Visit www.nursingcas.org (<http://www.nursingcas.org>) and click "Apply Here" to initiate your application.

Professional Program Application Deadline

May 1st: Admissions deadline

June: Notification of interview

July: Interviews --- Decision notification two weeks after interview

May: Students begin course work in the summer semester

UAB Nurse Anesthesia Program Supplemental Application
 (https://www.uab.edu/nursing/home/images/stories/info_sa/Nurse_Anesthesia_Program_Supplemental_Application_2014.pdf)

GPA Calculation Spreadsheet (MAC user please contact Ms. Stacey Smith (205) 934-7412, staceysmith@uab.edu)

Applicants are strongly encouraged to complete the GPA calculation spreadsheet and mail with your supplemental application.

Nurse Anesthesia Curriculum

The Nurse Anesthesia Program begins in the fall semester of each year. It comprises 67 semester hours of didactic instruction and 45 semester hours of clinical practicum and requires 27 months of full-time commitment. Students complete all foundation courses before beginning the clinical practicum, which starts after the first (ten) months of enrollment. The curriculum does not permit enrollment on a part-time basis.

Doctor of Nursing Practice-Nurse Anesthesia

Requirements		Hours
NA 720	Anesthesia Pharmacology I	3
NA 733	Informatics for Nurse Anesthetists	3
NUR 731	Philosophical, Theoretical, and Conceptual Foundations for Advanced Practice Nursing	3
NUR 740	Health Policy and Politics: Implications in Health Care	3
NA 702	Anatomy & Physiology for Nurse Anesthetists	6
NA 731	Biochemistry & Physics for Nurse Anesthetists	4
NUR 700	Clinical Data Management and Analysis	3
NUR 735	Population Health in Advanced Practice Nursing	3
NA 721	Anesthesia Pharmacology II	3

NA 770	Anesthesia Pathophysiology I	3
NA 740	Anesthesia Principles I	4
NUR 614	Assessment and Diagnostic Reasoning for Advanced Nursing Practice	3
NA 708L	Anesthesia Practicum I	2
NA 718L	Focus on Advanced Nursing Practice Specialization	2
NA 741	Anesthesia Principles II	3
NA 750	Regional Anesthesia	2
NA 771	Anesthesia Pathophysiology II	3
NUR 729	Evidence-Based Practice Design and Translation	3
NA 742	Anesthesia Principles III	3
NA 745	Professional Aspects	4
NA 709L	Anesthesia Practicum II	3
NUR 743	Evidence-Based Practice Strategies	3
NA 710L	Anesthesia Practicum III	5
NUR 742	Program Evaluation and Methods	3
NA 795	Critical Concepts I	3
NA 711L	Anesthesia Specialty Immersion I	5
NA 796	Critical Concepts II	3
NUR 739L	DNP Project Implementation and Evaluation	1-4
NA 712L	Anesthesia Specialty Immersion II	5
NUR 738L	DNP Project Development	2-3
NA 797	Critical Concepts III	3
NA 713L	Anesthesia Specialty Immersion III	5
NUR 701	Writing for Publication	3
Total Hours		107-111

Deadlines

Note: See summarized fact sheet for experience requirements.

Entry Date	Deadline	Notes
Summer	May 1	Admissions Deadline
	June	Notification of Interview
	July	Interviews _ Decision notification two weeks after interview
	May	Student begins course work in summer semester

Funding

The School of Nursing at UAB has excellent scholarship, traineeship, fellowship and loan programs in which many students participate. Please visit "funding" (<http://www.uab.edu/nursing/home/scholarships-financial-aid>) for more information.

Outcomes

- Synthesize scientific evidence for the development of clinical interventions for practice.
- Evaluate policy, healthcare delivery, and organizational systems for current and future health care needs.
- Translate scientific, theoretical, and ethical principles into healthcare for individuals, families, and populations.
- Incorporate knowledge of current and emerging health technologies to improve healthcare delivery and organizational systems.
- Advocate for social justice, equity, and ethical policies in healthcare.

- Demonstrate intra- and inter-professional collaboration to address health disparities and to improve the quality of healthcare across diverse populations and cultures.
- Assume complex leadership roles to advance clinical practice and healthcare delivery at the organizational and systems level and to improve health outcomes of individuals and populations.

Degree Offered:	D.N.P.
Director (D.N.P.):	Dr. Aimee Holland
Phone:	(205) 996-9824
E-mail:	aimeeholland@uab.edu

Doctor of Nursing Practice

D.N.P. Program Description

The DNP is a practice-focused terminal degree to prepare graduates to practice at the highest level in specialty practice or to assume leadership positions in healthcare. Graduates of the DNP program will focus on providing care to populations and communities with an emphasis on improving quality and access to under served, diverse populations. The three components of the DNP are advanced clinical specialty practice, leadership, and practice inquiry. Graduates will employ abilities and skills in these areas to advocate for reasonable, rational, and data-driven health regulations, standards, and evidence-based practices; sustain collaborative and strategic relationships, promote innovative, effective health care programs; and form partnerships with diverse groups to address health disparities. In addition, graduates will be prepared to assume clinical faculty positions to address the critical nursing faculty shortage.

For most students, the Post-Master's DNP curriculum will be a minimum of 34 credits, which includes the development of a practice or leadership focused project. This Scholarly Project is designed to synthesize scholarship in an advanced practice specialty or an area of healthcare leadership and serves as a capstone program experience. All courses are offered in a distance accessible format and students may develop the scholarly project under the direction of program faculty and onsite mentors. Applications will be accepted twice a year for the summer or fall term, to either a full or a part-time cohort. Students enrolled in the DNP program will be required to come on campus between the first and second year for a two to three day intensive experience.

D.N.P. Program Goals

The D.N.P. program of study is designed to prepare nurses who: evaluate policy, care delivery, and organizational systems for current and future health care needs; translate scientific, theoretical, and ethical principles into healthcare for individuals, families, and populations; incorporate knowledge of current and emerging health technologies to improve care delivery and organizational systems; advocate for social justice, equity, and ethical policies in healthcare; Demonstrate intra and inter-professional collaboration to address health disparities and to improve health care quality across diverse populations and cultures; assume complex leadership roles to advance clinical practice and healthcare delivery at the organizational and systems level and to improve health outcomes of individuals and populations, and assume complex leadership roles to advance clinical practice and healthcare delivery at the organizational and systems level and to improve health outcomes of individuals and populations.

D.N.P. Admission Requirements

Admission is competitive, based on an assessment of the ability of the applicant to complete the program of studies and on the appropriateness of the requested program of studies to the applicant's stated goals.

Because only a limited number of applicants can be accommodated in a given academic year, some well-qualified applicants may not be offered admission. In cases where there are more qualified applicants than slots available, the School of Nursing accepts the most qualified applicants.

Bachelor of Science in Nursing to Doctor in Nursing Practice Pathway

Admissions Requirements (excluding Nurse Anesthesia)

- A BSN from a regionally accredited institution, equivalent to the one offered by UAB School of Nursing.
- Possess an unencumbered nursing license to practice nursing in the state where you plan to conduct your clinical practicum.
- An undergraduate grade point average (GPA) of at least 3.2 on a 4.0 scale either cumulatively or on the last 60 semester credit hours. A 3.5 or higher GPA is recommended.
- (3) Letters of professional reference attesting to the applicant's potential for graduate study
- Some specialty tracks may require specific clinical practice experience prior to enrollment in a specialty courses.

For International Students:

- Prospective international students are asked to first contact International Recruitment and Student Services at iss@uab.edu, (205), 934-3328, FAX 934-8664 to determine eligibility in order to submit an application into any academic program listed below.
- All foreign transcripts evaluated by the Educational Credential Evaluators, Inc www.ece.org OR the World Education Services www.wes.org, sent from the evaluators directly to the School of Nursing
- A degree equivalent to a bachelor's degree from a regionally accredited educational institution in the United States
- A score of 500 or higher on the Test of English as a Foreign Language, TOEFL
- Standardized test score. A minimum combined score of 1000 on the verbal and quantitative sections of the Graduate Record Examination (GRE).
- Possess an unencumbered nursing license to practice nursing in the state where you plan to conduct your clinical practicum

Doctor of Nursing Practice

Requirements	Hours
NUR 700 Clinical Data Management and Analysis	3
NUR 701 Writing for Publication	3
NUR 729 Evidence-Based Practice Design and Translation	3
NUR 731 Philosophical, Theoretical, and Conceptual Foundations for Advanced Practice Nursing	3
NUR 733 Informatics for Advanced Practice Nursing	3
NUR 735 Population Health in Advanced Practice Nursing	3
NUR 737 Interdisciplinary Leadership and Role Development for Practice Excellence	3
NUR 738L Scholarly Project Development	3

NUR 739L Scholarly Practice Project ¹	1-7
NUR 740 Health Policy and Politics: Implications in Health Care	3
NUR 742 Program Evaluation and Methods	3
NUR 743 Evidence-Based Practice Strategies	3
Total Hours	34-40

¹ May be repeated, minimum 7 to graduate

Nurse Practitioner Concentration

Requirements	Hours
NUR 612 Advanced Pathophysiology	3
NUR 613 Pharmacology and Therapeutics	3
NUR 614 Assessment and Diagnostic Reasoning for Advanced Nursing Practice	3
NFH 618L Focus on Advanced Nursing Practice Specialization	3
NFH 621 Family Nurse Practitioner I	5
NFH 622 Family Nurse Practitioner II	4
NFH 685L Practicum I: Family Nurse Practitioner	3
NFH 623 Family Nurse Practitioner III	5
NFH 686L Practicum II: Family Nurse Practitioner	3
NFH 692L Residency: Family Nurse Practitioner	4
NUR 629: Advanced Practice Nursing Synthesis	2
Total Hours	38

Neonatal Nurse Practitioner Concentration

Requirements	Hours
NUR 612 Advanced Pathophysiology	3
NUR 613 Pharmacology and Therapeutics	3
NUR 614 Assessment and Diagnostic Reasoning for Advanced Nursing Practice	3
NNE 618L Focus on Advanced Nursing Practice Specialization	3
NNE 621 Advanced Neonatal Nursing I	5
NNE 684L Practicum I: Neonatal Nurse Practitioner	3
NNE 622 Advanced Neonatal Nursing II	4
NNE 685L Practicum II: Neonatal Nurse Practitioner	3
NNE 623 Advanced Neonatal Nursing III	5
NNE 692L Residency: Neonatal Nurse Practitioner	4
Total Hours	36

Adult Gerontology Acute Care Nurse Practitioner Concentration

Requirements	Hours
NUR 612 Advanced Pathophysiology	3
NUR 613 Pharmacology and Therapeutics	3
NUR 614 Assessment and Diagnostic Reasoning for Advanced Nursing Practice	3
NCA 618L Focus on Advanced Nursing Practice Specialization	3
NCA 621 Adult Gerontology Acute Care Nursing Practice I	5
NCA 685L Adult Gerontology Acute Care Nursing: Practicum I	3
NCA 622 Adult Gerontology Acute Care Nursing Practice II	4
NCA 686L Adult Gero Acute Care Nursing: Practicum II	3
NCA 623 Adult Gerontology Acute Care Nursing Practice III	5
NCA 692L Residency: Adult Gerontology Acute Care Nursing	4
Total Hours	36

Pediatric Primary Care Nurse Practitioner Concentration

Requirements	Hours
NUR 612 Advanced Pathophysiology	3
NUR 613 Pharmacology and Therapeutics	3
NUR 614 Assessment and Diagnostic Reasoning for Advanced Nursing Practice	3
NPE 618L Focus on Advanced Nursing Practice Specialization	3
NPE 621 Nurse Practitioner Pediatric Primary Care I	5
NPE 685L Practicum I: Nurse Practitioner Pediatric Primary Care	3
NPE 622 Nurse Practitioner Pediatric Primary Care II	4
NPE 686L Practicum II: Nurse Practitioner Pediatric Primary Care	3
NPE 623 Nurse Practitioner Pediatric Primary Care III	5
NPE 692L Practicum III: Nurse Practitioner Pediatric Primary Care Residency	4
Total Hours	36

Psychiatric/Mental Health Nurse Practitioner Concentration

Requirements	Hours
NUR 612 Advanced Pathophysiology	3
NUR 613 Pharmacology and Therapeutics	3
NUR 614 Assessment and Diagnostic Reasoning for Advanced Nursing Practice	3
NPN 618L Focus on Advanced Nursing Practice Specialization	3
NPN 621 Advanced Psychiatric Nursing I	5
NPN 685L Practicum I: Psychiatric Nurse Practitioner	3
NPN 622 Advanced Psychiatric Nursing II	5
NPN 686L Practicum II: Psychiatric Nurse Practitioner	3
NPN 623 Advanced Psychiatric Nursing III	4
NPN 692L Residency: Psychiatric Nurse Practitioner	4
Total Hours	36

Master of Science in Nursing to Doctor of Nursing Practice Pathway

Admissions Requirements

- A master's degree in an area of advanced nursing practice (nurse practitioner, clinical nurse specialist, nursing administration, or nurse anesthetist) from a regionally accredited institution, equivalent to that in the UAB School of Nursing. Students must hold an advanced practice certification or be eligible to sit for advanced certification and pass their specific certification exam prior to completing 12 credit hours of coursework. Until advanced certification is achieved, students will be considered as a conditional admit.
- A graduate grade point average of at least 3.0 overall (based on a 4.0 scale) or in the last 60 hours of earned credit.
- Three favorable completed Evaluation Forms from persons who have knowledge of the applicant's potential for success for graduate nursing studies and advanced-practice nursing.
- Current professional certification as an advanced practice nurse where applicable.
- Evidence of an unencumbered license as a (1) registered nurse, and (2) advanced nursing practice or eligibility in the state in which they plan to practice plus (3) CPR certification; all documents must be notarized if applicant is not a licensed nurse in Alabama.

- Personal goal statement that is congruent with the program goals (300 words or less)
- Resume or curriculum vitae.
- A personal interview by phone or in person with a School of Nursing faculty member or designee may be requested to verify application data

Degree Requirements

Requirements	Hours
NUR 700 Clinical Data Management and Analysis	3
NUR 701 Writing for Publication	3
NUR 729 Evidence-Based Practice Design and Translation	3
NUR 731 Philosophical, Theoretical, and Conceptual Foundations for Advanced Practice Nursing	3
NUR 733 Informatics for Advanced Practice Nursing	3
NUR 735 Population Health in Advanced Practice Nursing	3
NUR 737 Interdisciplinary Leadership and Role Development for Practice Excellence	3
NUR 738L Scholarly Project Development	3
NUR 739L Scholarly Practice Project ¹	1-7
NUR 740 Health Policy and Politics: Implications in Health Care	3
NUR 742 Program Evaluation and Methods	3
NUR 743 Evidence-Based Practice Strategies	3
Total Hours	34-40

¹ May be repeated, minimum 7 to graduate

Nurse Practitioner Concentration

Requirements	Hours
NHSA 616 Nursing Financial Management	4
NHSA 617L Nursing Financial Management Practicum	3
NHSA 631 Advanced Quality and Patient Safety	3
Total Hours	10

Additional Requirements

Candidates for the DNP degree must complete the following requirements: Completion of all coursework and clinical experiences based on the student's Program of Studies, with an overall GPA of 3.0 or better, and grades of B or better in all required courses in the School of Nursing.

Degree Offered:	Ph.D.
Director (Ph.D.)	Dr. Karen Heaton
Phone:	(205) 996-9467
E-mail:	khamp@uab.edu

Ph.D. Program Description

The Doctor of Philosophy in Nursing is designed to prepare professional nurses as scholars, leaders, and researchers who will make a substantive contribution to the body of knowledge for the discipline of nursing and thereby improve health outcomes for those who receive nursing care. The program of studies builds on preparation at the master's or baccalaureate level. Graduates are prepared for culturally effective leadership roles in research and science, education, health policy, and health care. Doctoral students have the opportunity to develop expertise and conduct research in a selected content area. In addition to structured coursework, the program builds upon a mentorship model which recognizes that

research skills are learned most effectively by working with a faculty research mentor who provides opportunities to practice the use of research techniques and the design and execution of original research within a focused program of research. In addition to core program course requirements, students complete at least 12 credits of required courses and electives in a selected content area. The PhD program was initiated in 1999. Initiated in 2000, the Post-Bachelor's PhD Option allows individuals with baccalaureate degrees in nursing to complete the PhD in nursing without first obtaining a master's degree.

Ph.D. Program Goals

The PhD curriculum prepares graduates to examine models, concepts and theories for their application in expanding the body of nursing and health care knowledge to: contribute to nursing science and health care through research that is disseminated in professional publications and presentations to the scientific communities and health care consumers; to conduct health care investigations based upon scientifically sound conceptual and methodological decisions about research designs, measures, and analytic methods; to reflect a consistent commitment to scientific integrity in the design, conduct, and dissemination of research; to initiate and collaborate in interdisciplinary research and scholarly endeavors that contribute to health outcomes in a culturally effective manner; and to assume leadership roles in research and scholarship.

Ph.D. Admission Requirements

- A Master of Science in Nursing (MSN) degree from an accredited institution in the United States, or approved by the Minister of Education for schools of nursing in foreign countries, equivalent to that in the UAB School of Nursing;
- A minimum grade point average of 3.0 overall (based on a 4.0 scale) on all graduate level coursework;
- Completion of GRE within the past 5 years;
- For applicants from non-English speaking countries: a satisfactory TOEFL score (minimum 550);
- Computer literacy and access is required, with proficiency in word processing and e-mail correspondence, as well as familiarity and experience with the Internet. It is recommended that each student have their own personal computer meeting the specifications of the School of Nursing. (Specifications are available from the School of Nursing website);
- Eligibility for licensure as a Registered Nurse in the United States;
- A written goal statement which evidences congruence between the applicant's research interests and School of Nursing faculty research;
- At least one sample of independent written work (in English) that demonstrates the applicant's scholarship potential. Representative examples include a paper, proposal, report, or publication;
- A current curriculum vitae;
- Three references from individuals with expertise to comment on the applicant's capability for research and scholarship (for example, University professors, employers); at least one of the references must be from a doctorally prepared nurse, and;
- A personal interview.

NOTE: For the Post-Baccalaureate PhD option, the corresponding requirements are:

- A Bachelor of Science in Nursing (BSN) degree from an accredited institution in the United States, or approved by the Minister of

Education for schools of nursing in foreign countries, equivalent to that in the UAB School of Nursing;

- A minimum grade point average of 3.0 overall (based on a 4.0 scale) on all undergraduate level coursework;
- Completion of GRE within the past 5 years;
- For applicants from non-English speaking countries: a satisfactory TOEFL score (minimum 550);
- Computer literacy and access is required, with proficiency in word processing and e-mail correspondence, as well as familiarity and experience with the Internet. It is recommended that each student have their own personal computer meeting the specifications of the School of Nursing. (Specifications are available from the School of Nursing website);
- Eligibility for licensure as a Registered Nurse in the United States;
- A written goal statement which evidences congruence between the applicant's research interests and School of Nursing faculty research;
- At least one sample of independent written work (in English) that demonstrates the applicant's scholarship potential. Representative examples include a paper, proposal, report, or publication;
- A current curriculum vitae;
- Three references from individuals with expertise to comment on the applicant's capability for research and scholarship (for example, University professors, employers); at least one of the references must be from a doctorally prepared nurse, and;
- A personal interview.

Ph.D. Degree Requirements

Candidates for the degree of Doctor of Philosophy in Nursing must complete the following requirements:

- Coursework and experiences based on the student's background and substantive area, with an overall GPA of 3.0 or better, and grades of B or better in all required courses on the approved program of studies;
- A comprehensive examination administered upon completion of an individualized program of studies; and
- A written dissertation demonstrating competence in research, individual inquiry, critical analysis using sophisticated statistical and/or qualitative techniques, and in-depth treatment of a health care problem in the selected content area. The investigation must make a genuine scientific contribution to knowledge, concepts, and theories in nursing. A final defense of the dissertation is required.

Postdoctoral Study

Postdoctoral studies in nursing are individually arranged based on a student's learning needs in specific areas of interest that match the strengths of the graduate faculty. The focus of postdoctoral study is on expanding and extending the student's knowledge base in nursing theory, practice, research, statistics and data management, and generally centers on a research effort of mutual interest to the student and faculty mentor.

School of Optometry

Dean: Kelly K. Nichols, OD, MPH, PhD

Founded in 1969, The UAB School of Optometry (UABSO) earned the notable distinction of being the first optometry school to be located on an academic medical center campus. The School's first Doctor of

Optometry (O.D.) degrees were awarded in 1973 and since that time, the School has grown to include graduate degrees in Vision Science, post-doctoral optometry residency education, and the highly-unique OD/MBA dual-degree program. With relatively small class sizes of less than 50 students, an integrated medical/professional program for 1st year students, and an esteemed reputation in vision science research, UABSO continually remains positioned among the top optometry schools in the nation.

Vision Science

Degree Offered:	PhD, MS, OD/MS
Program Director:	Michael Twa, OD, PhD
Program Manager:	Stefanie B. Varghese, PhD
Phone:	(205) 934-6743
E-mail:	sbvarghese@uab.edu
Website:	http://www.uab.edu/vsgp/

Program Information

Vision Science is a multidisciplinary field where basic scientists and clinicians focus on the discovery of new knowledge that will further our understanding of the eye and vision. This discovery includes virtually every scientific discipline where advances come from biologists, neuroscientists, optical engineers, epidemiologists, psychologists, optometrists, physicians and others.

The Vision Science Graduate Program at the University of Alabama at Birmingham provides comprehensive training for the next generation of leaders in vision science. Your decision to pursue graduate training in this program will place you at the center of one of the nation's top biomedical research institutions and will immerse you in collaborative multidisciplinary research environment that is today's model for biomedical research leadership. Moreover, our training environment will present opportunities for creative career paths such as dual degree programs with business, law and public health that will allow you to position yourself for a career as unique as your individual talents and interests.

Admission and Financial Aid

Applications for admission to the graduate program in vision science are reviewed by the Vision Science Graduate Program Admissions Committee. Qualified students admitted to the program may receive financial assistance in the form of annual stipends, tuition support, scholarships, and student health insurance.

Master of Science Degree

Two calendar years are generally required to complete the Master of Science degree (MS) in the Vision Science Graduate Program. Each candidate must complete a minimum of 30 hours of credit: 24 credit hours in vision science and 6 credit hours in related graduate courses. In addition, the candidate must successfully complete and defend a research thesis.

Admission Requirements:

- GRE Required (subject tests are optional)
- TOEFL or IELTS tests required for international students (see program website for minimum scores)
- Undergraduate GPA of 3.0 on a 4.0 scale (B average)

- Strong background in the biological, physical or health sciences
- Three letters of recommendation

Doctor of Optometry / Master of Science —Dual Degree

Selected students in the UAB optometry professional program are encouraged to combine the clinical doctorate degree with additional research training in Vision Science. Financial assistance is available for qualified students. Potential candidates should have completed an undergraduate degree in a biological, physical, or health science field.

Admission Requirements:

- See Master Degree Requirements
- OAT scores can be used in lieu of GRE requirement

Doctor of Philosophy Degree

Doctoral research training leading to the PhD degree in vision science is based upon completion of graduate course work, a qualifying examination, research accomplishments, and successful defense of a dissertation. There is considerable flexibility in the coursework for the PhD in vision science. Each student is required to take the first-year core curriculum for their respective track, as well as courses in statistics and the ethical conduct of research. Students then take three additional courses, selected by the student in consultation with their academic advisor, which can include a wide range of interdisciplinary topics. Other graduate level courses can be substituted so that students can take maximum advantage of offerings in other programs at UAB. Individuals with previous clinical training will have opportunities for further clinical development and research integration. Students are also required to gain teaching experience.

Admission Requirements:

- GRE Required (subject tests are optional)
- TOEFL and/or IELTS tests required for international students (see program website for minimum scores)
- Undergraduate GPA of 3.0 on a 4.0 scale (B average)
- Strong background in the biological, physical or health sciences
- Three letters of recommendation

Additional Information

Deadline for Entry Term(s):	Summer and Fall (No Spring admission)
Deadline for All Application Materials to be in the Graduate School Office:	January 15th
Number of Evaluation Forms Required:	Three
Entrance Tests:	GRE (TOEFL and TWE also required for international applicants whose native language is not English.) OAT is considered for combined degree programs, e.g. OD/ MS.
Web site:	http://www.uab.edu/vsgp/

For detailed information, contact the graduate program manager, Dr. Stefanie Varghese, UAB School of Optometry Vision Science

Graduate Program, HPB 516, 1720 2nd Ave S., Birmingham, AL 35294-4390 (office location: Henry Peters Building, Room 516, 1720 University Blvd.).
 Telephone 205-934-6743
 E-mail sbvarghese@uab.edu
 Web <http://www.uab.edu/vsgrp/>

School of Public Health

Dean of the School of Public Health: Dr. Paul C. Erwin, MD, DrPH

Associate Dean for Academic Affairs: Dr. Erika (Ela) Austin, PhD, MPH

Associate Dean for Diversity, Equity, and Inclusion: Dr. April Carson, PhD

Associate Dean for Public Health Practice: Dr. Lisa McCormick, DrPH

Associate Dean for Research, Paul Muntner, PhD
School of Public Health website: <https://www.soph.uab.edu/>
Contact Number: (205) 934-4993

About the School of Public Health

In 1964 President Lyndon Johnson said, "We have the power to shape the civilization that we want. But we need your will, your labor, your hearts, if we are to build that kind of society." He was, of course, speaking about the "Great Society" initiative that sought to eliminate the oppression of poverty for millions who wanted to share in the American dream. We have learned much in the intervening forty years - that good intentions and money don't often solve complex social and cultural dilemmas; that the technology genie will not go back into the bottle; that we are milliseconds from every nation, every person on the globe.

More than any other discipline, public health has the power to help shape civilization in the 21st century. The UAB School of Public Health offers you the opportunity to join a vibrant community of professionals and scholars whose global-class research and scholarship is exploring complex problems like HIV/AIDS, obesity, and drugs in creative and unusual ways. A graduate degree in public health gives you the ability to tackle head-on the most complicated and thorny issues of our times, the tools to create solutions for those issues, and a uniquely global perspective.

The challenges for the future of public health find an ideal home at UAB. The interests of our faculty and staff extend from community organization in the Black Belt regions of rural Alabama to understanding the dynamics of the HIV epidemic in Sub-Saharan Africa. Few universities offer the almost limitless interdisciplinary collaborative atmosphere available to students at the UAB School of Public Health.

The potential for our students to develop practical and meaningful internship experiences grows daily through partnerships with state and local government agencies, local businesses and industry, and a global network of governmental and non-governmental organizations. The

faculty and staff at the School are dedicated and deeply committed to educating and preparing the most well-educated and qualified public health graduates imaginable for the 21st century. We look forward to welcoming you as a student in the School of Public Health. Our dynamic, robust, and exciting programs are a great beginning for launching a truly satisfying career.

Admission Requirements

Our graduate programs in Biostatistics, Environmental Health Sciences, Epidemiology, Health Behavior, and Health Care Organization & Policy offer students intellectual tools to address complex problems with a global perspective. Whether you are looking for a highly-rated program that provides the opportunity to work next to leading researchers or a graduate student looking for information related to your studies, we have everything you need. Click the applicable link below for information related to your particular need.

The UAB Graduate School's standard fee is \$50 for domestic applicants and \$60 for international applicants.

The cost for a **SOPHAS application** is \$135 for the first school or program to which you apply. Any additional schools or programs to which you choose to apply will cost \$50 per designation, even if you submit those schools or programs later in the application cycle. Still have questions? Send an email to soph@uab.edu or contact us by phone, (205) 934-4993.

All students admitted through SOPHAS must also complete a supplemental application. See our **website** for further information on program availability, where to apply, and when to apply.

Accelerated Learning Opportunities

Public Health offers both **Fast-Track and Accelerated Bachelors/Masters (ABM)** (p. 11) options for high-achieving undergraduate students.

The following courses are approved for shared credit for students pursuing an ABM in Public Health:

Epidemiology concentration: BST 601, HCO 600, ENH 600, HB 600, EPI 610, EPI 626

Population Health concentration: BST 601, HCO 600, ENH 600, HB 600, EPI 600, PUH 601

All other concentrations: BST 601, HCO 600, ENH 600, HB 600, EPI 600

Maintaining Status in ABM

To maintain status in ABM, the student must:

- maintain a 3.25 GPA average in undergraduate courses
- receive a B (or better) in the MPH courses taken while still an undergraduate student
- maintain full-time student status at UAB

Early Acceptance

Students who were admitted to the **Early Acceptance Program** (p. 11) may enroll in the MPH program when eligible provided they retain a 3.5 UAB undergraduate GPA.

Additional Information

Deadline for All Applications (Both US and International)	www.soph.uab.edu/apply
	Fall Term - Soft Deadline April 1; final deadline vary by department
	Spring Term - November 1 (with the exception of Biostatistics, which only admits in the Fall).
	Summer Term – April 1 (with the exception of Biostatistics, which only admits in the Fall).
	Doctoral Programs: Varies by departments
Entrance Test:	www.soph.uab.edu/apply
International Transcripts:	International transcripts must be submitted to World Education Services (WES) or Educational Credential Evaluators (ECE) for an official course-by-course credential evaluation (document-by-document evaluations will not suffice).
Number of Evaluation Forms Required:	Three letters of recommendation from academic or professional references
Apply Webpage:	www.soph.uab.edu/apply

DEGREES OFFERED

Master of Public Health (M.P.H.)

Prospective students should click here (<http://www.soph.uab.edu/apply>) to obtain specific admission requirements on how to apply.

Environmental Health Concentrations:	Environmental and Occupational Health (also online)
	Fast Track Environmental and Occupational Health
	Accelerated Bachelors/Masters (ABM) Environmental and Occupational Health
	Accelerated Program Industrial Hygiene
	Industrial Hygiene (also online)
Epidemiology Concentrations:	Epidemiology (also online)
	Fast Track Epidemiology
	Accelerated Bachelors/Masters (ABM) Epidemiology
Health Behavior Concentrations:	Health Behavior (also online)
	Fast Track Health Behavior

	Accelerated Bachelors/Masters (ABM) Health Behavior
Health Care Organization and Policy Concentrations:	Health Care Organization (also online)
	Fast Track Health Care Organization
	Accelerated Bachelors/Masters (ABM) Health Care Organization
	Health Policy
	Accelerated Bachelors/Masters (ABM) Health Policy
	Maternal and Child Health Policy and Leadership (also online)
	Accelerated Bachelors/Masters (ABM) Maternal and Child Health Policy and Leadership
Public Health General Degree:	Population Health (also online)
	Accelerated Bachelors/Masters (ABM) Population Health
Public Health Coordinated Degree Programs:	MPH/Doctor of Medicine (UAB)
	MPH / Doctor of Dental Medicine
	MPH / Doctor of Optometry
	MPH / Doctor of Pharmacy (Auburn)
	MPH / Doctor of Veterinary Medicine (Auburn)
	MPH / Master of Business Administration
	MPH (Maternal & Child Health) / Master of Science in Nursing
	MPH (Health Behavior) / Master of Science in Nursing
	MPH / MS in Nutrition Sciences, Dietetic Internship/Clinical Track
	MPH / Juris Doctorate (Samford)
	MPH / Master in Public Administration
	MPH / Master in Social Work (with UA; also online)
	MPH / Master of Science in Physician Assistant Studies
	MPH / PhD Biomedical Sciences
	MPH / PhD Industrial and Systems Engineering (Auburn)
	MPH / PhD Psychology
	MPH / PhD Sociology
	MPH / Master of Science in Health Administration
Biostatistics Concentrations:	Clinical and Translational Science (BST)

Master of Science in Public Health (M.S.P.H.)

Prospective students should click here (<http://www.soph.uab.edu/apply>) to obtain specific admission requirements on how to apply.

Environmental Health Concentrations:	Environmental Health & Toxicology
Epidemiology Concentrations:	Clinical and Translational Science (EPI)
	Pharmacoepidemiology and Comparative Effectiveness Research
	Applied Epidemiology
Health Behavior Concentrations:	Clinical and Translational Science (HB)
Health Care Organization & Policy Concentrations:	Outcomes Research Online
Public Health MSPH Coordinated Programs:	MSPH/Doctor of Medicine (UAB)
	MSPH/Psychology (with UA and UAB)

Master of Science (M.S.)

Prospective students should click here (<http://www.soph.uab.edu/apply>) to obtain specific admission requirements on how to apply.

Biostatistics Concentration:	Biostatistics
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Doctor of Philosophy (Ph.D)

Prospective students should click here (<http://www.soph.uab.edu/apply>) to obtain specific admission requirements on how to apply.

Biostatistics Concentration:	Biostatistics
Environmental Health Sciences Concentration:	Environmental Health Sciences
Epidemiology Concentration:	Epidemiology
Health Behavior Concentration:	Health Education and Health Promotion

Doctor of Public Health (Dr.P.H.)

Prospective students should click here (<http://www.soph.uab.edu/apply>) to obtain specific admission requirements on how to apply.

Health Care Organization & Policy Concentrations:	Health Care Organization
	Maternal and Child Health Policy
	Outcomes Research
Biostatistics:	Biostatistics

For detailed information about the graduate programs offered, please consult the **School of Public Health website** (<http://www.uab.edu/PublicHealth>) or visit the UAB School of Public Health:

Ryals Public Health Building
Room 130, Office of Student and Academic Services
1665 University Boulevard
Birmingham, AL 35294-0022

Telephone: 205-934-4993

E-mail: soph@uab.edu

Website: www.uab.edu/PublicHealth

Facebook: www.facebook.com/UABSchoolofPublicHealth (<http://www.facebook.com/UABSchoolofPublicHealth>)

Interdisciplinary Programs

Coordinated Degrees with other Graduate Programs

We offer students a wide range of coordinated degree options (<https://www.soph.uab.edu/coordinated-degree-programs>). Students can combine a Public Health MPH with over 18 professional degrees such as business, law, engineering, medicine, nursing, pharmacy, dentistry, optometry, public administration or social work. Students are admitted separately to each program. Students must complete the MPH Core plus 10 credit hours of MPH focus courses for a total of 30 credit hours in addition to the other program's curriculum requirements. Twelve credit hours from the other curriculum are credited toward the MPH degree for a total of 42 MPH credit hours. We also have two coordinated Master of Science in Public Health (MSPH) Programs; MSPH / MD in Medicine and the MSPH / PhD in Psychology (with the University of Alabama).

Students may complete the MPH degree program totally on line, in class, or through a mix of on line and in class experiences. Out-of-state students taking online courses pay the same tuition rate as Alabama residents. The admissions processes are conducted separately, and admissions decisions are made independently by each school.

Program	Coordinator	Room	Phone Number
Coordinated Degree Programs	soph@uab.edu	RPHB 130	(205) 934-4993

Coordinated Degree Programs

- (DMD/MPH) Coordinated Doctor of Dental Medicine / Master of Public Health (p. 201)
- (DVM/MPH) Coordinated Doctor of Veterinary Medicine (Auburn) / Master of Public Health (p. 202)
- (JD/MPH) Coordinated Juris Doctor / Master of Public Health (p. 203)
- (MBA/MPH) Coordinated Master of Business Administration / Master of Public Health (p. 203)
- (MD/MPH) Coordinated Doctor of Medicine / Master of Public Health (p. 204)
- (MD/MSPH) Coordinated Doctor of Medicine / Master of Science in Public Health (p. 204)
- ((p. 205)MPA/MPH) Coordinated Master of Public Administration/ Master of Public Health (p. 205)
- (MSHA/MPH) Coordinated Master of Science in Health Administration/Master of Public Health (p. 205)
- (MSN/MPH) Coordinated Master of Science in Nursing and MPH in Health Behavior (p. 206)
- (MSN/MPH) Coordinated Master of Science in Nursing / Master of Public Health in Maternal & Child Health Policy & Leadership (p. 206)
- (MS in Nutrition Sciences/MPH) Coordinated Master of Science in Nutrition Sciences, Dietetic Internship / Clinical Track/Master of Public Health (p. 207)
- (OD/MPH) Coordinated Doctor of Optometry/Master of Public Health (p. 207)
- (MSPAS/MPH) Coordinated Master of Science in Physician Assistant Studies / Master of Public Health (p. 209)
- (MSW/MPH) Coordinated Master of Social Work / Master of Public Health (p. 210)

- (Pharm D/MPH) Coordinated Pharm D (Auburn University Harrison School of Pharmacy) / Master of Public Health (p. 211)
- (PhD/MPH) Coordinated PhD in Biomedical Science / Master of Public Health (p. 208)
- (PhD/MPH) Coordinated PhD Industrial and Systems Engineering (Auburn University School of Engineering) / Master of Public Health (p. 208)
- (PHD/MPH) Coordinated PhD in Psychology (with UAB and UA) or Sociology and MPH (p. 211)
- (PhD/MSPH) Coordinated Doctor of Philosophy (Psychology) and Masters of Science in Public Health (p. 210) (with the University of Alabama)

UAB has many degree programs (both on-campus and online) that can lead to professional licensure or certification (PLC). Licensure requirements vary from state to state and by professional organization.

UAB is working to develop an online, publically-accessible database, to assist in providing this state-by-state information. In the meantime, if you are interested in learning about potential professional licensure requirements in your state for a specific degree program, please contact the UAB State Authorization office at stateauth@uab.edu or call Dr. Lisa Reburn (205) 934-3258.

Coordinated Doctor of Dental Medicine / Master of Public Health Program

(DMD/MPH) Coordinated Doctor of Dental Medicine / Master of Public Health.

Students must be admitted to the UAB School of Dentistry before being considered for the Coordinated DMD/MPH Program. For more information about the Dentistry Program [click here](http://www.uab.edu/dentistry/home/students/future-students/dmd-program/193-admissions) (<http://www.uab.edu/dentistry/home/students/future-students/dmd-program/193-admissions>).

Program Description

This coordinated degree program is offered through the UAB School of Dentistry and the UAB School of Public Health. Students may focus their MPH in any one of four areas: (1) Environmental Health Science, (2) Epidemiology, (3) Health Behavior, (4) Health Care Organization and Policy or a combination (general MPH). MPH focus courses may be customized to the experience and needs of the student.

UAB's School of Dentistry has a rich history of healthcare innovation and a national reputation for excellence providing the community with skilled and knowledgeable dentists through accredited pre-doctoral and 8 accredited postdoctoral areas of study. The MPH degree prepares students for careers to improve the health and well being of individuals, families, communities and populations, locally and globally. The DMD/ MPH coordinated degree program broadens students' perspective concerning local and global population health and issues related to poverty and rural and intercity settings as well as the importance of access to care and prevention. The addition of an MPH degree to the DMD also expands career opportunities providing a foundation for positions in health education, research, government, international health as well as private industry.

Admissions

Students are admitted separately to the MPH and DMD programs. Upon acceptance to the DMD program, students will be accepted automatically to the MPH degree program. The MPH program may begin at any time; but, it is suggested beginning the summer prior to dental school matriculation or the summer immediately preceding the D1 year.

Schedule and Graduation

It is expected that both programs will be completed within five years, at which time both degrees will be awarded. In the event the student fails to complete the requirements for the DMD degree but wishes to obtain the MPH, his or her background and other credentials will be reviewed by the department of interest to the student and if an appropriate MPH degree program can be identified, additional degree requirements will be determined.

Coordinated Master of Public Health and Doctor of Medicine in Dentistry (MPH/ DMD) Program

This coordinated degree program is offered through the UAB School of Dentistry (<http://www.uab.edu/dentistry/home>) and the UAB School of Public Health (<http://www.soph.uab.edu/coordinated-degree-programs>). Students may focus their MPH in any one of four areas: (1) Environmental Health Science, (2) Epidemiology, (3) Health Behavior, (4) Health Care Organization and Policy or a combination (general MPH). MPH focus courses may be customized to the experience and needs of the student. Below is the MPH curriculum for this program, for information about the DMD curriculum please [click here](http://www.uab.edu/dentistry/home/students/future-students/dmd-program) (<http://www.uab.edu/dentistry/home/students/future-students/dmd-program>).

The DMD and MPH coordinated program may be completed within four years and students may complete the MPH degree program totally online, in class, or through a mix of online and in class experiences.

Requirements		Hours
Core Requirement (21 hours):		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3
EPI 610	Principles of Epidemiologic Research	4
HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 695	The Public Health Integrative Experience	3
Internship (3 hours):		
PUH 697	Practice Placement / Internship	3
MPH Focus Electives (6 hours):		
Minimum 6 credit hours of Public Health (BST, ENH, EPI, GHS, HB, HCO) 600-699 level		6
SOPH Coursework Total		30
DMD Course Options (12 hours):		
Select 12 hours of the approved elective courses below:		
DENT 1140	Evidence-Based Dentistry	3
DENT 3220	Community Dentistry	1
DENT 4510	Community Service Rotations D4	2
DENT 1290	Assessments Portfolio D1	3
DENT 2290	Portfolio Assessments D2	3
DENT 3290	Portfolio Assessments D3	3

DENT 4290	Portfolio Assessments D4	3
Total Hours		42

NOTE: Students must complete the MPH Core, internship and 6 credit hours of MPH focus courses for a total of 30 credit hours in addition to the required DMD curriculum requirements. Twelve credit hours from the DMD curriculum are credited toward the MPH degree for a total of **42 MPH credit hours**.

For additional information concerning the coordinated DMD/MPH program contact the School of Public Health at soph@uab.edu or Ken Tilashalski in the School of Dentistry at drt@uab.edu.

Coordinated Doctor of Veterinary Medicine (Auburn) / Master of Public Health Program

(MPH/DVM) Coordinated Doctor of Veterinary Medicine / Master of Public Health (Auburn)

Students must be admitted to the Auburn University's Veterinary Medicine program (<http://www.vetmed.auburn.edu>) before being considered for the Coordinated DVM/MPH Program. For more information about the DVM Program please contact the College of Veterinary Medicine at Auburn University; www.vetmed.auburn.edu (<http://www.vetmed.auburn.edu>), Stephanie Ostrowski, in the Auburn University College of Veterinary Medicine at sro0002@auburn.edu.

Program Description

The DVM/MPH coordinated dual degree program is offered through the Office of Research and Graduate Studies at the Auburn University College of Veterinary Medicine (AUCVM) and the UAB School of Public Health (SOPH). Students may focus their MPH in any one of four areas, including: (1) Environmental Health Science, (2) Epidemiology, (3) Health Behavior, (4) Health Care Organization and Policy, or a combination (general MPH). MPH focus courses may be customized to the experience and needs of the student.

Through its DVM degree, the AUCVM prepares individuals for careers of excellence in veterinary medicine, including private and public practice, industrial medicine, academics, and research. Through its MPH program, the SOPH prepares students for careers to improve the health and well being of individuals, families, communities and populations, locally and globally. These complementary coordinated degree programs provide students with a fuller and richer perspective of and appreciation for community and global health recognizing the intersection of human health, animal health and the environment. Addition of an MPH degree to the DVM broadens career opportunities, providing a foundation for positions in research, government, and international health as well as private industry.

To apply to the UAB School of Public Health MPH Program, interested students should submit their application by visiting the UAB Graduate School website (uab.edu/graduate) and click the 'Apply Now' button.

To View Application Requirements: www.soph.uab.edu/graduate/prospective/admissions/us

Coordinated Master of Public Health and Doctor of Veterinary Medicine (MPH/DVM) Program

The DVM/MPH coordinated dual degree program is offered through the Office of Research and Graduate Studies at the **Auburn University College of Veterinary Medicine** (<http://www.vetmed.auburn.edu/about>) (AUCVM) and the **UAB School of Public Health** (<http://www.soph.uab.edu/coordinated-degrees>) (SOPH). Students may focus their MPH in any one of four areas, including: (1) Environmental Health Science, (2) Epidemiology, (3) Health Behavior, (4) Health Care Organization and Policy, or a combination (general MPH). MPH focus courses may be customized to the experience and needs of the student.

Below is the MPH curriculum for this program, for information about the DVM curriculum please **click here** (<http://www.vetmed.auburn.edu/about>).

Students must complete the MPH Core (20 hours), internship (3 hours) and 7 credit hours of MPH focus courses for a total of 30 credit hours in addition to the required DVM curriculum requirements. Twelve credit hours from the DVM curriculum are credited toward the MPH degree for a total of 42 MPH credit hours. Students may complete the MPH degree program totally online, in class, or through a mix of online and in class experiences. Out-of state online students pay the same tuition rate as Alabama residents.

Requirements		Hours
MPH Core Requirements (20 hours):		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Introduction to Epidemiology	3
or EPI 610	Principles of Epidemiologic Research	
HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 695	The Public Health Integrative Experience	3
Internship (3 hours):		
PUH 697	Practice Placement / Internship (DVM/MPH focus)	3
MPH Focus Electives (7 hours):		
Minimum 7 credit hours of Public Health (BST, ENH, EPI, GHS, HB, HCO) 600-699 level		7
SOPH Coursework Total		30
Credits from DVM at Auburn University (12 hours):		
VMED 5502:	Epidemiology & Biostatistics	1
VMED 5840:	Wildlife Diseases	1
VMED 9030:	Epidemiology and Zoonoses	2
VMED 9040:	Food Safety	2
VMED 9190:	Introduction to Veterinary Pharmacology	1
VMED 9250:	Virology & Prions	2
VMED 9280:	Bacteriology & Mycology	3
Total Hours		42

Note: Students must complete the MPH Core plus 7 credit hours of MPH focus courses for a total of 30 credit hours in addition to the required DVM curriculum requirements. Twelve credit hours from the DVM curriculum are credited toward the MPH degree for a total of 42 MPH credit hours.

For additional information concerning the coordinated DVM/MPH program contact the School of Public Health at soph@uab.edu or Stephanie Ostrowski, in the Auburn University College of Veterinary Medicine at sro0002@auburn.edu.

Coordinated Juris Doctor / Master of Public Health Program

(JD/MPH) Coordinated Juris Doctor / Master of Public Health Program

The department offers a coordinated Master of Public Health and Juris doctor degree program in cooperation with the Cumberland School of Law at Samford University (<http://cumberland.samford.edu>), also located in Birmingham. The purpose of the program is to offer future attorneys exposure to the broad areas of public health.

Admission: Students enrolled in this program must be enrolled at the Cumberland School of Law. In order to be admitted to the coordinated programs, a student must have a GPA of 2.5 at the end of the first year of law school. A minimum law school GPA of 2.5 each semester and a minimum 3.0 GPA each term in public health are required for students to continue in the coordinated program. Interested students should contact the Office of Student and Academic Services at the School of Public Health for MPH application materials and Cumberland Law School for J.D. application materials.

Coordinated Master of Public Health and Juris Doctor (MPH/JD) Program

Students in this track must complete 48 credit hours. This includes the MPH Core, SOPH requirements, track requirements, electives and internship. A total of 90 credit hours of coursework are required for the coordinated JD/MPH. The coordinated JD/MPH degree can be completed in 2 academic years (including 2 summers) of full-time study. Normally, 42 credit hours are required for the MPH degree, however, because of the coordinated nature of the degree, 13 credit hours from the JD curriculum are credited to the MPH and 12 hours from the MPH curriculum are credited to the JD. Students may complete the MPH totally online, in class, or through a mix of online and in class experiences. Out-of-state online students pay the same tuition rate as Alabama residents.

Requirements		Hours
MPH Core Requirements (20 hours):		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Introduction to Epidemiology	3
HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 695	The Public Health Integrative Experience	3
Department Track Requirements (12 hours):		
HCO 604	Health Economics and Public Health Policy	3
HCO 607	Public Health Law	3
HCO 618	Management Concepts in Public Health Programs	3
HCO 620	Health Insurance & Managed Care	3
Internship (3 hours):		

HCO 697	Internship	3
Transfer of credit for the following Samford Law School courses (13 hours):		13
Law 502:	Torts	4
Law 506:	Contracts I	3
Law 507:	Contracts II	2
Law 526:	Business Organizations	4
Total Credit Hours Earned for Degree:		48

Coordinated Master of Business Administration / Master of Public Health Program

Coordinated Master of Public Health and Master of Business Administration (MPH/MBA) Program

This coordinated Master of Business Administration and Master of Public Health degree program is offered through the UAB Collat School of Business (<http://www.uab.edu/business/home>) and the UAB School of Public Health. Students may focus their MPH in any one of four areas: (1) Environmental Health Science, (2) Epidemiology, (3) Health Behavior, (4) Health Care Organization and Policy or a combination (general MPH). MPH focus courses may be customized to the experience and needs of the student.

The coordinated MBA/MPH program results in two advanced degrees providing students with skills necessary for a broad range of positions in health care management, entrepreneurship, and leadership. MPH coursework typically includes courses in the core public health disciplines as well as health economics, finance, accounting, management, strategic planning, health insurance, and health policy.

Curriculum

A total of 60 credit hours of coursework are required for the coordinated MBA/MPH. Courses include the Public Health Core plus 7 hours of Public Health focus courses as well 10 MBA courses. Normally, 42 credit hours are required for the MPH and 36 credit hours for the MBA; however, because of the coordinated nature of the degree 12 credit hours from the MBA curriculum are credited to the MPH and six hours from the MPH are credited to the MBA. Students may complete either degree programs totally online, in class, or through a mix of online and in class experiences. Out-of state online students pay the same tuition rate as Alabama residents.

Requirements		Hours
MPH Core Requirements (20 hours):		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Introduction to Epidemiology	3
HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 695	The Public Health Integrative Experience	3
Internship:		
PUH 697	Practice Placement / Internship	3
MPH Focus Electives (7 hours):		

Minimum 7 credit hours of Public Health (BST, ENH, EPI, GHS, HB, HCO) 600-699 level 7

SOPH Coursework Total (30 hours):

Shared Hours from MBA Program Curriculum (12 hrs):

MBA 619	Information Technology and Business Strategy	3
MBA 631	Management and Organizations	3
MBA 642	Economics for Managers	3
MBA 651	Marketing Strategy	3

Remaining MBA Program Requirements (18 hours):

MBA 601	Accounting and Finance for Managers	3
MBA 608	Strategic Cost Analysis and Decision Making	3
MBA 621	Topics in Corporate Finance	3
MBA 634	Strategic Management	3
MBA 637	Operations and Supply Chain Management	3
MBA 662	Quantitative Analysis for Business Managers	3

Total Hours for both MPH/MBA Degrees: 60

Coordinated Doctor of Medicine / Master of Public Health Program

(MD/MPH) Coordinated Doctor of Medicine/Master of Public Health

Program Description

This coordinated degree program is offered through the UAB School of Medicine and the UAB School of Public Health. Students may focus their MPH in any one of four areas: (1) Environmental Health Science, (2) Epidemiology, (3) Health Behavior, (4) Health Care Organization and Policy, or a combination (general MPH). MPH focus courses may be customized to the experience and needs of the student.

This complementary MD/MPH coordinated degree program provide students with a fuller and richer perspective of community and global health issues including the epidemiology of disease, health behavior, the impact of environmental and occupational factors on patient health, disease progression, management of disease states, access to care and health policy as well as social, legal and ethical issues. Addition of an MPH degree broadens graduates career opportunities providing a foundation for positions in research, government, international health as well as private industry.

Coordinated Master of Public Health and Doctor of Medicine (MPH/MD) Program

Students may choose between two program formats: a four-year program or a five-year program.

- The four-year program requires students to complete MPH coursework while also completing medical school coursework. Additionally, students in the four-year program begin taking courses the summer before they begin medical school.
- The five-year program requires students to take a one-year leave of absence from medical school to concentrate on MPH coursework.

Students may complete the MPH degree program totally online, in class, or through a mix of online and in class experiences.

Below are the course required for the MPH degree, for information about the MD curriculum please click here (<http://www.uab.edu/medicine/home/future-students>).

Requirements		Hours
MPH Core Requirement (20 hours):		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Introduction to Epidemiology	3
	or EPI 610 Principles of Epidemiologic Research	
HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 695	The Public Health Integrative Experience	3
PUH Electives (7 hours):		7
Internship:		
PUH 697	Practice Placement / Internship	3
Credit from MD Curriculum		12
Total Hours		42

Note: Students must complete the MPH Core plus 7 credit hours of MPH focus courses for a total of 30 credit hours in addition to the required MD curriculum requirements. Twelve credit hours from the MD curriculum are credited toward the MPH degree for a total of **42 MPH credit hours**.

For additional information concerning the coordinated MD/MPH program contact the School of Public Health at soph@uab.edu.

Coordinated Doctor of Medicine / Master of Science in Public Health Program

Coordinated Master of Public Health and Doctor of Medicine (MPH/MD) Program

Students may choose between two program formats: a four-year program or a five-year program.

- The four-year program requires students to complete MPH coursework while also completing medical school coursework. Additionally, students in the four-year program begin taking courses the summer before they begin medical school.
- The five-year program requires students to take a one-year leave of absence from medical school to concentrate on MPH coursework.

Students may complete the MPH degree program totally online, in class, or through a mix of online and in class experiences.

Below are the course required for the MPH degree, for information about the MD curriculum please click here (<http://www.uab.edu/medicine/home/future-students>).

Requirements		Hours
MPH Core Requirement (20 hours):		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3

EPI 600	Introduction to Epidemiology	3
or EPI 610	Principles of Epidemiologic Research	
HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 695	The Public Health Integrative Experience	3
PUH Electives (7 hours):		7
Internship:		
PUH 697	Practice Placement / Internship	3
Credit from MD Curriculum		12
Total Hours		42

Note: Students must complete the MPH Core plus 7 credit hours of MPH focus courses for a total of 30 credit hours in addition to the required MD curriculum requirements. Twelve credit hours from the MD curriculum are credited toward the MPH degree for a total of **42 MPH credit hours**.

For additional information concerning the coordinated MD/MPH program contact the School of Public Health at soph@uab.edu.

Coordinated Master of Public Administration/Master of Public Health Program

Coordinated Master of Public Administration/Master of Public Health (MPA/MPH) Program

The MPH/MPA degree program (<http://www.soph.uab.edu/coordinated-degrees>) provides students with the knowledge base of public health and the skills required to work effectively in a responsible, administrative position in the public sector. Through this coordinated degree program, students in the MPH program can satisfy some of their requirements through courses in the MPA program and vice versa.

Admission: Students entering this program must meet the minimum requirements for admission into the School of Public Health. The student must apply to and be admitted to both programs. The graduate School should be contacted for MPA application materials and the School of Public Health should be contacted for MPH application materials.

Curriculum

The MPA/MPH program requires the satisfactory completion of 65 credit hours. Students must complete both MPA and MPH core requirements. Students may choose either of two program options - health policy analysis or management. It is anticipated that a full-time student can complete the dual curriculum in 2 years. Part-time students may take up to 5 years to complete their studies. This is a coordinated dual degree track and, as such, graduation from one program is contingent upon completion of all requirements for graduation from the other program. Students may complete the MPH degree program totally online, in class, or through a mix of online and in class experiences.

Requirements		Hours
MPH Core Requirements (20 hours):		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3

EPI 600	Introduction to Epidemiology	3
HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 695	The Public Health Integrative Experience	3
MPA Core Requirements (30 hours):		
MPA 600	Administrative Ethics	3
MPA 601	The Public Policymaking Process	3
MPA 602	Scope of Public Administration	3
MPA 603	Public & Nonprofit Budgeting	3
MPA 604	Human Resources Management	3
MPA 605	Information Management for Government	3
MPA 606	Foundations of PA Research	3
MBA 673	Planning and Pitching a New Business Concept	3
MPA 674	GIS for Managers	3
MPA 697	Graduate Learning Portfolio	3
MPH Concentration Elective (12 hours): <small>Select 4 courses</small>		12
HCO 604	Health Economics and Public Health Policy	
HCO 607	Public Health Law	
HCO 609	Needs Assessment and Program Planning, Implementation, and Evaluation	
HCO 615	Finance for Health Professionals	
HCO 612	Strategic Management in Health Programs	
or HCO 616	Management Concepts in Public Health Programs	
HCO 620	Health Insurance & Managed Care	
HCO 670	Social and Ethical Issues in Public Health	
Internship (3 hours):		
HCO 697	Internship	3
Total Hours		65

Coordinated Master of Science in Health Administration/Master of Public Health Program

Coordinated Master of Public Health and Master of Science in Health Administration (MPH/MSHA) Program

The coordinated Master of Science in Health Administration and Master of Public Health degree program is offered through the UAB School of Health Professions (<http://www.uab.edu/shp/home/degrees-certificates/grad-professional-degrees>) and the UAB School of Public Health (<http://www.soph.uab.edu>). Students may focus their MPH in any one of four areas: (1) Environmental Health Science, (2) Epidemiology, (3) Health Behavior, (4) Health Care Organization and Policy or may select a combination of courses from different areas (general MPH). MPH focus courses may be customized to the experience and needs of the student.

The coordinated MSHA/MPH program results in two advanced degrees providing students with management and leadership skills necessary for a broad range of administrative positions in health services organizations. The addition of an MPH to the MSHA degree provides students with a fuller and richer perspective of population and global health issues including the epidemiology of disease, health behavior, the impact of environmental and occupational factors on patient health, disease progression, management of disease states, drug and insurance policy

issues, patient access to health care, as well as social, legal and ethical issues. In addition the MPH degree broadens career opportunities, providing a foundation for positions in research, government, and international health as well as private industry.

Curriculum

A total of 92 credit hours of coursework are required for the coordinated MSPH/MPH. Courses typically include the Public Health Core plus 6 hours of Public Health focus course as well as the required HA courses. Normally, 42 credit hours are required for the MPH and 71 credit hours for the MSHA; however, because of the coordinated nature of the degrees, 12 credit hours from the HA curriculum are credited to the MPH and 9 hours from the MPH curriculum are credited to the MSHA. Students may complete the MPH program totally online, in class, or through a mix of online and in class experiences.

Requirements	Hours
MPH Core Requirement: (24 hours)	
BST 601 Biostatistics	4
ENH 600 Fundamentals of Environmental Health Science	3
EPI 610 Principles of Epidemiologic Research	4
HB 600 Social and Behavioral Sciences in Public Health	3
HCO 600 Management and Policy in Public Health Systems and Services	4
PUH 695 The Public Health Integrative Experience	3
PUH 697 Practice Placement / Internship	3
MPH Elective Courses - From Any PUH Department:	Minimum 6 hours
SOPH Coursework Total:	30
Shared Hours with MSHA Program: (12 hours)	
HA 605 Health Policy and Politics in the U.S.	3
HA 645 Health Economics	3
HA 612 Essentials of Health and Human Disease	3
HA 613 Health Law	3
Shared Hours/MPH Total:	42

Coordinated Master of Science in Nursing and MPH in Health Behavior Program

Coordinated Master of Science in Nursing / Master of Public Health in Health Behavior (MSN/MPH) Program

The coordinated MPH in Health Behavior/MSN degree (<http://www.soph.uab.edu/hb/degree-programs>) is designed to address health behavior content and methods needed by advanced practice nurses. This program of study prepares graduates to participate in the development, implementation, and evaluation of innovative health promotion and disease prevention programs and policies. Graduates may assume a variety of positions in nursing, health behavior, and/or a combination of the two, including leadership roles.

Curriculum

Students must complete a minimum of 44 semester hours of credit for the MPH degree, which includes six credit hours of required Nursing course work. Twenty credits in the School of Public Health meet the requirements for core courses in the Master of Public Health program and

provide a strong knowledge base in epidemiology, biostatistics, health behavior, environmental health sciences and health care organization and policy. Eighteen additional credits meet the requirements for the Health Behavior track in the School of Public Health. The coordinated MPH/MSN degrees can be completed in two years or six consecutive terms if the student registers for full-time study beginning in the fall term. If a coordinated degree student drops out of the MSN program, he/she must apply for transfer to the MPH Health Behavior track and follow the requirements for that program.

Requirements	Hours
MPH Core Requirements (20 hours):	
BST 601 Biostatistics	4
ENH 600 Fundamentals of Environmental Health Science	3
EPI 600 Introduction to Epidemiology	3
HB 600 Social and Behavioral Sciences in Public Health	3
HCO 600 Management and Policy in Public Health Systems and Services	4
PUH 695 The Public Health Integrative Experience	3
HB Focus Courses (18 hours):	
HB 624 Advanced Social and Behavioral Science Theory	3
HB 636 Developing Interventions to Promote Public Health	3
HB 641 Research Methods in Behavioral Science	3
HB 643 Health Program Evaluation	3
HB 697 Internship	3
Select 3 hours from 600-level or higher (HB) courses	3
SOPH Coursework Total	38
Shared Hours from Coordinated Program (6 hours):	
NUR 604 Leadership in Advanced Nursing Practice Roles	3
NUR 606 Translating Evidence into Practice	3
Total credit hours to complete the degree:	44

Coordinated Master of Science in Nursing / Master of Public Health in Maternal & Child Health Policy

Coordinated Master of Science in Nursing / Master of Public Concentration in Health in Maternal & Child Health Policy & Leadership

The coordinated MPH/MSN degree (<http://www.soph.uab.edu/hcop/degree-programs>) is designed to address the dynamic health care needs of women and children. This program prepares nurse practitioners to participate in the development, implementation, and evaluation of innovative maternal and child health (MCH) programs and policies. This dual degree builds on the synergy generated through two complementary curriculum tracks. In this educational experience, advanced clinical skill is combined with expertise in program planning and evaluation.

Admissions: Students are admitted separately to the MPH and MSN degree programs and must meet admission requirements in both the School of Public Health and the School of Nursing at UAB.

Curriculum

Students in this track must complete 44 credit hours. This includes the MPH Core, SOPH requirements, track requirements, electives and internship. The coordinated MPH/MSN degree can be completed in

2-3 years of full-time study. Normally, a minimum of 44 credit hours are required for the MPH; however, because of the coordinated nature of the degree, 6 credit hours from the MSN curriculum are credited to the MPH degree. Students may complete the MPH totally online, in class, or through a mix of online and in class experiences.

Requirements		Hours
MPH Core Requirements (20 hours)		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Introduction to Epidemiology	3
HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 695	The Public Health Integrative Experience	3
MPH Focus Courses (15 hours):		
HCO 604	Health Economics and Public Health Policy	3
HCO 605	Foundations of Maternal and Child Health: Programs and Policies for Women, Children, and Families	3
HCO 609	Needs Assessment and Program Planning, Implementation, and Evaluation	3
HCO 618	Management Concepts in Public Health Programs	3
HCO 625	Advanced Leadership and Practice in MCH Part I - Introduction to Leadership	1
HCO 626	Adv Leadership and Practice in MCH Module II - Collaborative Leadership and Advocacy	1
HCO 627	ADV Leadership and Practice in MCH Module III - Into the Streets: Lead/Field Experience	1
Internship (3 hours):		
HCO 697	Internship	3
Electives shared with the School of Nursing (6 hours):		
NUR 606	Translating Evidence into Practice	3
NUR 610	Health Care Systems for Advanced Nursing Practice	3
Total Hours		44

Coordinated MS in Nutrition Sciences, Dietetic Internship / Clinical Track/Master of Public Health

Master of Public Health and Master of Science in Nutrition Sciences Coordinated Program

This coordinated degree program is offered through the **UAB School of Health Professions, Department of Nutrition Sciences** (<http://www.uab.edu/shp/nutrition/education/dietetic-internship>) and the UAB School of Public Health. Students may focus their MPH in any one of four areas: (1) Environmental Health Science, (2) Epidemiology, (3) Health Behavior, (4) Health Care Organization and Policy or a combination (general MPH). MPH focus courses may be customized to the experience and needs of the student.

Drawing upon its distinguished history and a multidisciplinary team of physician-scientists, PhD scientists, registered/licensed dietitians, and nurses working together in patient care, research, and education programs; the MS in Nutrition Sciences, Dietetic Internship/Clinical Track offers an accelerated Master of Science degree from the Department

of Nutrition Sciences that enables students to sit for the national exam to become a Registered Dietitian Nutritionist (RDN). This accredited program is offered on-campus or off-campus and it combines supervised clinical practice with online graduate coursework. The MPH at the UAB School of Public Health prepares students for careers to improve the health and well being of individuals, families, communities and populations, locally and globally. This complementary MS/MPH dual coordinated degree program provides students with a fuller and richer perspective of community and global health issues including the epidemiology of disease, health behavior, the impact of environmental and occupational factors on patient health, disease progression, management of disease states, insurance policy issues, patient access to care, as well as social, legal and ethical issues.

Requirements		Hours
MPH Core Requirements (23 hours):		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Introduction to Epidemiology	3
HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 695	The Public Health Integrative Experience	3
PUH 697	Practice Placement / Internship	3
MPH Focus Electives (7 hours):		
Minimum 7 credit hours of Public Health (BST, ENH, EPI, GHS, HB, HCO) 600-699 level		7
Shared Hours from NTR Program Curriculum (12 hours):		
NTR 621	Applied Statistics to Nutrition Sciences I	3
NTR 690	Seminar	2
NTR 637	Applied Research in Nutrition Sciences	3
NTR 500	Communications in Nutrition	1
NTR 601	Advanced Medical Nutrition	3
Total Hours Earned:		42

Students must complete the MPH Core plus 7 credit hours of MPH focus courses for a total of 30 credit hours in addition to the required MS in Nutrition curriculum requirements. Twelve credit hours from the MS in Nutrition curriculum are credited toward the MPH degree for a total of 42 MPH credit hours. Students may complete the MPH degree program totally online, in class, or through a mix of online and in class experiences.

Coordinated Doctor of Optometry/ Master of Public Health Program

Coordinated Master of Public Health and Doctor of Optometry (MPH/OD) Program

This coordinated degree program is offered through the **UAB School of Optometry** (<http://www.uab.edu/optometry/home>) and the UAB School of Public Health. Students may focus their MPH in any one of four areas: (1) Environmental Health Science, (2) Epidemiology, (3) Health Behavior, (4) Health Care Organization and Policy or a combination (general MPH). MPH focus courses may be customized to the experience and needs of the student.

Curriculum

Students must complete the MPH Core plus 6 credit hours of MPH focus courses for a total of 30 credit hours in addition to the required OD curriculum requirements. Twelve credit hours from the OD curriculum are credited toward the MPH degree for a total of 42 MPH credit hours. Students may complete the MPH degree program totally online, in class, or through a mix of online and in class experiences.

Requirements		Hours
MPH Core Requirements (21 hours):		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3
EPI 610	Principles of Epidemiologic Research	4
HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 695	The Public Health Integrative Experience	3
Internship:		
PUH 697	Practice Placement / Internship	3
Public Health Electives:		
Credit from OD Curriculum (12 hours):		
OPT 223	Clinical Ophthalmic Optics	1
OPT 324	Business Aspects of Optometry	2
CLN 222	Community Eye Care II	2
CLN 233	Community Eye Care II	2
Total Hours:		42

Coordinated PhD Industrial and Systems Engineering(Auburn) / Master of Public Health Program

Coordinated Master of Public Health and PhD in Industrial and Systems Engineering (MPH/PHD) Program

This coordinated degree program is offered through the Auburn University School of Engineering (<http://eng.auburn.edu>) and the UAB School of Public Health (<http://www.uab.edu/PublicHealth>). Students focus their MPH in Environmental Health Science. The UAB School of Public Health has partnered with the Auburn School of Engineering's Industrial and Systems Engineering (<http://eng.auburn.edu/insy>) program to provide the opportunity for students in the Auburn University Environmental Engineering Doctoral Program to pursue public health education during their training in engineering in a flexible format that accommodates their academic schedule while assuring critical instruction in the core areas of public health and in specific competency areas considered essential to environmental engineers with public health training.

Curriculum

Students must complete the MPH Core plus 7 credit hours of MPH focus courses for a total of 30 credit hours in addition to the required PhD curriculum requirements. Twelve credit hours from the PhD curriculum are credited toward the MPH degree for a total of 42 MPH credit hours. Students may complete the MPH degree program totally online, in class, or through a mix of online and in class experiences.

Requirements		Hours
MPH Core Requirements: (23 hours)		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Introduction to Epidemiology	3
HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 697	Practice Placement / Internship	3
PUH 695	The Public Health Integrative Experience	3
ENH Departmental Courses: (7 credits) <small>Minimum of 7 hours</small>		
ENH 612	Assessing & Managing Environmental Risks	3
ENH 621	Fundamentals of Industrial Hygiene	3
ENH 691	Current Topics in Environmental Health and Occupational Health and Safety	1
ENH 650	Essentials of Environmental and Occupational Toxicology and Diseases	3
Total MPH Coursework:		30
Credit from Auburn's Industrial Engineering Curriculum: (12 hours) <small>Select 4 courses from approved list</small>		
INSY 5010/6010	– Safety Engineering I	3
INSY 7026	– Safety Engineering II	3
INSY 7050	– Industrial Hygiene and Environmental Hazards	3
INSY 7060	- Ergonomics I	3
INSY 7070	- Ergonomics II	3
INSY 7086	– Human Factors in Engineering Design	3

Coordinated PhD in Biomedical Science / Master of Public Health Program

PhD/MPH Coordinated PhD in Biomedical Science / Master of Public Health Program Description

This coordinated degree program is offered through the UAB Graduate Biomedical Sciences (GBS) and the UAB School of Public Health. Students may focus their MPH in Environmental Health Science or Epidemiology. MPH focus courses may be customized to the experience and needs of the student.

A mission of UAB is to be a research university and academic health center that discovers, teaches and applies knowledge for the intellectual, cultural, social and economic benefit of Birmingham, the State and beyond. The MPH at the UAB School of Public Health prepares students for careers to improve the health and well being of individuals, families, communities and populations, locally and globally. Therefore, Biomedical Sciences and Public Health have aligned their educational strength in the Ph.D. degree in Biomedical Sciences with a Master's Degree in Public Health, to offer a truly interdisciplinary approach to learning. In response to an NIH study on Graduate Education and Career Opportunities, we are seeking graduate students with an entrepreneurial attitude and a strong will to succeed in an ever-changing scientific landscape.

Coordinated Master of Public Health and PHD Biomedical Sciences (MPH/PHD) Program

This coordinated degree program is offered through the UAB Graduate Biomedical Sciences (GBS) (<https://www.uab.edu/gbs/home>) and the UAB School of Public Health (<http://www.soph.uab.edu/coordinated-degree-programs>). A mission of UAB is to be a research university and academic health center that discovers, teaches and applies knowledge for the intellectual, cultural, social and economic benefit of Birmingham, the State and beyond. The MPH at the UAB School of Public Health prepares students for careers to improve the health and well being of individuals, families, communities and populations, locally and globally. Therefore, Biomedical Sciences and Public Health have aligned their educational strength in the Ph.D. degree in Biomedical Sciences with a Master's Degree in Public Health, to offer a truly interdisciplinary approach to learning. In response to an NIH study on Graduate Education and Career Opportunities, we are seeking graduate students with an entrepreneurial attitude and a strong will to succeed in an ever-changing scientific landscape.

Curriculum

Students must complete the MPH Core plus 7 credit hours of MPH elective courses for a total of 30 credit hours in addition to the required GBS curriculum requirements. Twelve credit hours from the GBS curriculum are credited toward the MPH degree for a total of 42 MPH credit hours. Students may complete the MPH degree program totally online, in class, or through a mix of online and in class experiences.

Requirements		Hours
MPH Core Requirement: (23 hours)		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Introduction to Epidemiology	3
HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 697	Practice Placement / Internship	3
PUH 695	The Public Health Integrative Experience	3
PUH Electives: (7 hours)		
SOPH Elective		3
SOPH Elective		3
SOPH Elective		1
MPH Coursework Total:		30
Biomedical Electives		12
GBSC 731	Intro to Biostats	2
GRD 717	Principles of Scientific Integrity	3
GBSC 726	Science Communication & Review	2
GBS 798	Non-Dissertation Research	5
Total Hours		42

Coordinated Master of Science in Physician Assistant Studies / Master of Public Health Program

Coordinated Master of Public Health and Master of Science in Physician Assistant Studies Program

The coordinated Master of Science in Physician Assistant Studies (<https://www.uab.edu/shp/cds/physician-assistant>) and Master of Public Health (<http://www.soph.uab.edu/graduate>) (MSPAS/MPH) degree program, offered through the UAB School of Health Professions (<http://www.uab.edu/shp/home>) and UAB School of Public Health (<http://www.uab.edu/PublicHealth>), provides students with important skills for dealing with population health issues. Students may focus their MPH in any one of four areas: (1) Environmental Health Science, (2) Epidemiology, (3) Health Behavior, (4) Health Care Organization and Policy or a combination (general MPH). MPH focus courses may be customized to the experience and needs of the student.

The coordinated graduate degree program provides opportunities for interdisciplinary collaboration and a public health practice experience with rural primary care clinical community partners. This innovative program enhances physician assistant education with integrated training in public health and primary care and thereby provides students with the information and skills needed to monitor and assess community health, develop and analyze programs and policies, coordinate and integrate care, and utilize appropriate population health measures in quality improvement strategies.

Curriculum

Students must complete the MPH Core plus 7 credit hours of MPH focus courses for a total of 30 credit hours in addition to the required MSPAS curriculum requirements. Twelve credit hours from the MSPAS curriculum are credited toward the MPH degree for a total of 42 MPH credit hours. Students may complete the MPH degree program totally online, in class, or through a mix of online and in class experiences.

Requirements		Hours
MPH Core Requirements: (23 hours)		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Introduction to Epidemiology	3
HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 695	The Public Health Integrative Experience	3
PUH 697	Practice Placement / Internship	3
MPH Elective Courses - From Any Department: (7 hours)		
SOPH Electives:		3
SOPH Electives:		3
SOPH Electives:		1
SOPH Coursework Credit:		30
Credits from PA Curriculum: (12 hours)		
PA 617	Applied Behavioral Medicine	3
PA 618	Risk Management	1
PA 619	Fundamentals of Clinical Research	3
PA 620	Analysis of Professional Literature	2

HCM 530	Health Care Delivery and Reimbursement	3
Total Credit Hours:		42

Coordinated MSW/MPH in Maternal & Child Health Policy & Leadership

Coordinated Master of Public Health MPH/ Master in Social Work

The MPH/MSW degree program (<http://www.soph.uab.edu/coordinated-degrees>) is coordinated between the School of Social Work at the University of Alabama (<http://socialwork.ua.edu>) (MSW) and the UAB School of Public Health. Students may focus their MPH in any one of four areas: (1) Environmental Health Science, (2) Epidemiology, (3) Health Behavior, (4) Health Care Organization and Policy or a combination (general MPH). MPH focus courses may be customized to the experience and needs of the student.

Curriculum

Students in this track must complete 42 credit hours. This includes the MPH Core, SOPH requirements, track requirements, electives and internship. A total of 90 credit hours of coursework are required for the coordinated MSW/MPH. The coordinated MPH/MSW degree can be completed in 3 academic years of full-time study. Normally, 42 credit hours are required for the MPH degree; however, because of the coordinated nature of the degree, 3 credit hours from the MSW curriculum are credited to the MPH and 12 hours from the MPH curriculum are credited to the MSW. Students may complete the MPH totally online, in class, or through a mix of online and in class experiences. Out-of-state online students pay the same tuition rate as Alabama residents.

Requirements	Hours
MPH Core Requirements (20 hours):	
BST 601 Biostatistics	4
ENH 600 Fundamentals of Environmental Health Science	3
EPI 600 Introduction to Epidemiology	3
HB 600 Social and Behavioral Sciences in Public Health	3
HCO 600 Management and Policy in Public Health Systems and Services	4
PUH 695 The Public Health Integrative Experience	3
Internship (3 hours):	
PUH 697 Practice Placement / Internship	3
Required Course (3 hours):	
GRD 727 Writing & Reviewing Research	3
MPH Focus Electives (4 hours):	
Minimum 4 credit hours of Public Health (BST, ENH, EPI, GHS, HB, HCO) 600-699 level	4
SOPH Coursework Total	Minimum 30 hours
Hours from Coordinated Program at UA Social Work (12 hours):	
SW 500: Social Welfare Policy	3
SW 570: Research-informed Practice	3
SW 510: Human Behavior and Social Environments I	3
SW 542: Social Work Practice with Groups	3
Total Credit Hours for MPH:	42

Coordinated Doctor of Philosophy (Psychology) and Masters of Science in Public Health

Coordinated Master of Science in Public Health / Doctor of Philosophy (MSPH/ PhD) Program

The department offers coordinated Master of Science in Public Health (<http://www.soph.uab.edu/hcop/degree-programs>) and PhD degrees in cooperation with the Department of Psychology at the University of Alabama at Birmingham or at the University of Alabama (<https://psychology.ua.edu>) (Tuscaloosa).

Curriculum

The MSPH degree requires a minimum of 43 hours. Students in this coordinated program will be waived from the biostatistics requirement upon documentation of successful completion of Advanced Statistics I and II in the PhD program. Students may emphasize health policy issues or outcomes research issues through 6 hours of approved electives. In addition, all students must complete a 9 credit hour research project. This is a coordinated dual degree track and, as such, graduation from one program is contingent on completion of all requirements for graduation from the other program.

Students receiving a MSPH are required to complete a 37 hour online course entitled "Overview of Public Health" by the end of their second semester. Students with prior public health education (coursework in each of the public health core disciplines) may be waived from this requirement by permission of the Associate Dean.

Requirements	Hours
MSPH Core Requirements (10 hours):	
BST 611 Intermediate Statistical Analysis I	3
BST 612 Intermediate Statistical Analysis II	3
EPI 610 Principles of Epidemiologic Research	4
PhD Track (18 hours):	
HCO 604 Health Economics and Public Health Policy	3
HCO 621 Clinical Decision Making and Cost-Effectiveness Analysis	3
HCO 623Q Pharmacoeconomics and Regulation Online	3
HCO 670 Social and Ethical Issues in Public Health	3
HCO 677 Patient-Based Outcomes Measurement	3
HCO 691 Policy Analysis: Modeling & Simulation	3
Electives (6 hours):	
Masters-Level Research (9 hours):	
HCO 698 Master's Level Directed Research Health Care Organization and Policy	1-9
Total Hours	43

Coordinated Pharm D (Auburn University Harrison School of Pharmacy) / Master of Public Health

Coordinated Master of Public Health and Doctor of Pharmacy (MPH/PharmD) Program

This coordinated degree program is offered through the UAB School of Public Health (<http://www.soph.uab.edu>) and the Auburn University Harrison School of Pharmacy (<http://www.auburn.edu/academic/pharmacy/graduate>). Students may focus their MPH in any one of four areas: (1) Environmental Health Science, (2) Epidemiology, (3) Health Behavior, (4) Health Care Organization and Policy or a combination (general MPH). MPH focus courses may be customized to the experience and needs of the student.

The Auburn Doctor of Pharmacy (Pharm D) (<http://www.auburn.edu/academic/pharmacy/graduate>) degree program is a four-year course of study that requires the completion of the pre-pharmacy curriculum prior to enrollment and includes course work in biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; pharmacy practice; and pharmacy practice experience. The MPH degree prepares students for careers to improve the health and well being of individuals, families, communities and populations, locally and globally. These complementary MPH/Pharm D dual coordinated degree programs provide students with a fuller and richer perspective of community and global health issues including the epidemiology of disease, health behavior, the impact of environmental and occupational factors on patient health, disease progression, management of disease states, drug and insurance policy issues, patient access to drug therapy, as well as pharmaceutical social, legal and ethical issues.

Curriculum

Students must complete the MPH Core plus 7 credit hours of MPH focus courses for a total of 30 credit hours in addition to the required Pharm D curriculum requirements. Twelve credit hours from the Pharm D curriculum are credited toward the MPH degree for a total of 42 MPH credit hours. Students may complete the MPH degree program totally online, in class, or through a mix of online and in class experiences.

Requirements		Hours
MPH Core Requirements: (23 hours)		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Introduction to Epidemiology	3
HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 695	The Public Health Integrative Experience	3
PUH 697	Practice Placement / Internship	3
MPH Elective Courses - From Any Department: (7 hours)		
SOPH Elective		3
SOPH Elective		3
SOPH Elective		1
SOPH Coursework Total:		30
Shared Credits from Pharmacy Curriculum: (12 hours)		

PYPD 9610: Community Pharmacy Care	5
PYPD 9660: Health System Practice	5
PYPD 9320/9326: Longitudinal Experience	2
Total Credit Hours:	42

Coordinated PhD in Psychology (HBPY) or Sociology (HSOC) and MPH Program

Coordinated Master in Public Health / Psychology (MPH/PhD) Program

This dual degree program is offered in cooperation with the UAB Departments of Psychology and Sociology (<http://www.uab.edu/cas/sociology/graduate-programs>); and the University of Alabama (Tuscaloosa) Department of Psychology (<http://psychology.ua.edu/graduate-studies>). This program enables students to obtain an MPH degree in Health Behavior simultaneously with a PhD in Psychology or Sociology. This program of study prepares graduates to participate in the development, implementation, and evaluation of innovative health promotion and disease prevention programs and policies. This dual degree program builds on the synergy generated through two complementary curriculum tracks.

Curriculum

The MPH degree requires a minimum of 44 credit hours depending on the PhD concentration. Because this is a coordinated dual degree track, graduation from the MPH program is contingent on completion of all requirements for graduation from the PhD program. If a coordinated degree student drops out of the PhD program, he/she must apply for transfer to the MPH Health Behavior track and follow the requirements for that program.

Coursework

Requirements		Hours
MPH Core Requirement (20 hours):		
PY 716	Introduction to Statistics and Measurement	3
PY 716L	Lab for Introduction to Statistics and Measurement	1
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Introduction to Epidemiology	3
HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 695	The Public Health Integrative Experience	3
Department Track Requirement (12 hours):		12
HB 624	Advanced Social and Behavioral Science Theory	
HB 636	Developing Interventions to Promote Public Health	
HB 641	Research Methods in Behavioral Science	
HB 643	Health Program Evaluation	
Internship (3 hours):		
HB 697	Internship	3
Behavioral Science Electives (9 hours):		
Select 9 hours of 600-level or higher (HB or PY) courses		9
Total Credit Hours:		44

Coordinated Master in Public Health / Sociology (MPH/PhD) Program

This dual degree program is offered in cooperation with the UAB Departments of Psychology and Sociology (<http://www.uab.edu/cas/sociology/graduate-programs>); and the University of Alabama (Tuscaloosa) Department of Psychology (<http://psychology.ua.edu/graduate-studies>). This program enables students to obtain an MPH degree in Health Behavior simultaneously with a PhD in Sociology. This program of study prepares graduates to participate in the development, implementation, and evaluation of innovative health promotion and disease prevention programs and policies. This dual degree program builds on the synergy generated through two complementary curriculum tracks.

Curriculum

The MPH degree requires a minimum of 43 credit hours depending on the PhD concentration. Because this is a coordinated dual degree track, graduation from the MPH program is contingent on completion of all requirements for graduation from the PhD program. If a coordinated degree student drops out of the PhD program, he/she must apply for transfer to the MPH Health Behavior track and follow the requirements for that program.

Requirements	Hours
MPH Core Requirements (19 hours):	
SOC 703 Regression Analysis	3
ENH 600 Fundamentals of Environmental Health Science	3
EPI 600 Introduction to Epidemiology	3
HB 600 Social and Behavioral Sciences in Public Health	3
HCO 600 Management and Policy in Public Health Systems and Services	4
PUH 695 The Public Health Integrative Experience	3
Department Track Requirements (12 hours):	
HB 624 Advanced Social and Behavioral Science Theory	3
HB 636 Developing Interventions to Promote Public Health	3
HB 643 Health Program Evaluation	3
SOC 705 Advanced Research Methods	3
Internship:	
HB 697 Internship	3
Health Behavior/Sociology Electives (9 hours minimum): <small>Two courses can be from Sociology & must be approved as a behavioral science elective</small>	9
Total Credit Hours:	43

Biostatistics

Prospective students should visit <http://www.soph.uab.edu/apply> to obtain specific admissions requirements on how to apply.

Degree Offered:	M.S., M.S.P.H., Dr.P.H., Ph.D.
Department Chair:	Lloyd J. Edwards, PhD
Phone:	(205) 934-4905
E-mail:	bstgrad@uab.edu
Website:	www.soph.uab.edu/bst
Department Contact:	Della Daniel
Department Contact Email:	ddaniel@uab.edu

The Department of Biostatistics at the University of Alabama at Birmingham (UAB) is one of five departments in the School of Public Health: Biostatistics, Environmental Health Science, Epidemiology, Health Behavior, and Health Care Organization and Policy.

Dr. Lloyd Edwards is the Chair of the department, Dr. Jeff M Szychowski is the Director of Graduate Studies, and Ms. Della Daniel is the department liaison to the graduate program. The department currently has 18 faculty members and includes concentrations in research methods, statistical genetics and clinical trials. Members of the department conduct research in statistical methodology and applications, as well as in fundamental problems of modeling in biological systems. Much of the department's research is collaborative in nature involving projects from basic science, genetics, clinical medicine, public health, and other health-related areas, both within and outside of UAB. Grant support for faculty in the department fall into four broad areas: 1) applied grants involving the application of statistical methods to health-related issues, 2) statistical coordinating centers for large multi-center randomized clinical trials, 3) methodological grants advancing statistical techniques, and 4) training grants for preparing the next generation of statisticians.

Degree Programs

The Department offers programs leading to the Doctor of Philosophy (PhD), Doctor of Public Health (DrPH), Master of Science (MS), and a Master of Science in Public Health (MSPH).

Biostatistics Degree Competencies
- [click here \(http://www.soph.uab.edu/BST_competencies\)](http://www.soph.uab.edu/BST_competencies)

Admissions

Entry Term	Deadline
Master Program Deadline:	www.soph.uab.edu/apply
PhD Program Deadline:	May 1 (U.S.), April 1 (International)
Number of Evaluation Forms Required:	Three
Entrance Tests: GRE	www.soph.uab.edu/apply
TOEFL:	TOEFL is required for international applicants whose native language is not English.
GPA:	3.0
International Transcripts:	International transcripts must be submitted to World Education Services (WES) or Educational Credential Evaluators (ECE) for an official course-by-course credential evaluation (document-by-document evaluations will not suffice).
SOPH Admissions:	www.soph.uab.edu/apply

UAB has many degree programs (both on-campus and online) that can lead to professional licensure or certification (PLC). Licensure requirements vary from state to state and by professional organization. UAB is working to develop an online, publically-accessible database, to assist in providing this state-by-state information. In the meantime, if you are interested in learning about potential professional licensure requirements in your state for a specific degree program, please contact the UAB State Authorization office at stateauth@uab.edu or call Dr. Lisa Reburn (205) 934-3258.

Master of Science in Biostatistics

The **Department of Biostatistics** (<http://www.soph.uab.edu/bst/degree-programs>) offers an MS degree in Biostatistics. This program provides a balance between theory and application, the perspective being the role of statistics and modeling in scientific research. The objective is to produce research-oriented scientists who anticipate a career performing data management and statistical analysis. Further, the MS program is the appropriate program to prepare students to enter the PhD program.

For admission to the program applicants should have a strong academic record and meet the minimum requirements for admission to the **School of Public Health**. (<http://www.soph.uab.edu/graduate/prospective>) In addition, the applicant's prior collegiate curriculum must include a 3-semester sequence of calculus or equivalent and linear algebra.

Proficiency in computing is preferred, as are additional advanced mathematics courses, e.g., differential equations, advanced calculus including special functions, and complex analysis. Some background in the natural sciences would be helpful. The Department of Biostatistics admits MS students in the fall term each year. Interested students should apply online through the **UAB Graduate School**.

All students are required to complete a self-paced online course entitled "Overview of Public Health" by the end of their second semester.

Students with prior public health education (coursework in each of the public health core disciplines) or experience (5 years in public health) may be waived from this requirement by permission of the Associate Dean.

Requirements	Hours
MS Required Courses:	
BST 621 Statistical Methods I	3
BST 622 Statistical Methods II	3
BST 623 General Linear Models	3
BST 626 Data Management and Reporting with SAS	3
BST 631 Statistical Theory I	4
BST 632 Statistical Theory II	4
BST 655 Categorical Data Analysis	3
BST 691 Pre-Doctoral Seminar Series ¹	1
BST 691 Pre-Doctoral Seminar Series	1
BST 691 Pre-Doctoral Seminar Series	1
BST 691 Pre-Doctoral Seminar Series	1
Biostatistics Electives (Minimum 6 credit hours):	
BST 665 Survival Analysis (Highly Recommended)	3
BST Courses	3
Required Outside Electives (Minimum 7 graduate credit hours of electives):	
EPI 610 Principles of Epidemiologic Research	4
Other Elective	3

Other Related Courses including BST 698 (Minimum of 6 credit hours):

BST 698	Non Thesis Research	6
Total Hours:		46

¹ BST 691 - Minimum 4 hours required.

Master of Science in Public Health (MSPH) with a concentration in Clinical and Translational Science (CTSB) Biostatistics

Master of Science in Public Health with a concentration in Clinical and Translational Science (<http://www.soph.uab.edu/bst/degree-programs>) (CTSB) is an applied statistics degree with a focus on Public Health. This program is open to all qualified applicants with relevant undergraduate, masters, medical, or health science professional degree. For fellows and faculty members interested in developing skills required for clinical research, this program is an ideal post-medical or other health science degree training program. It is anticipated that this academic training will supplement extensive training in the content area in which the student is trained, and senior mentoring in the politics and policies of development and management. A graduate of this program will have the academic training to develop and lead independent research programs and projects.

For admission to the MSPH program applicants should have a strong academic record and meet the minimum requirements to the School of Public Health. (<http://www.soph.uab.edu/graduate/prospective>) In addition, the applicant's undergraduate curriculum must include a 2-semester sequence of calculus or equivalent, linear algebra, and proficiency in computing. The Department of Biostatistics admits MSPH students in the fall term each year. Interested students should apply online through the **UAB Graduate School**.

Curriculum

The MSPH in Clinical and Translational Science consists of a minimum of 41 credit hours. Of these, 20 hours are required, including 15 hours of specific biostatistics courses and 5 hours of specific epidemiology courses. Students then select at least 9 hours from a list of approved Masters Research Electives, complete 3 hours of focus specific electives in biostatistics, and take at least 9 hours of directed (698 level) masters research to fulfill the MSPH requirement for conducting a research project.

All students are required to complete a 37 hour, self-paced online course entitled "Overview of Public Health" by the end of their second semester. Students with prior public health education (BS in Public Health or MPH) or experience (5 years in public health) may be waived from this requirement by permission of the Associate Dean.

Requirements	Hours
MSPH Core Requirement (20 hours):	
BST 621 Statistical Methods I	3
BST 622 Statistical Methods II	3
BST 623 General Linear Models	3
BST 625 Design/Conduct Clinical Trials	3
BST 655 Categorical Data Analysis	3
EPI 607 Fundamentals of Clinical Research	3
EPI 680 Topics in Clinical Research	2
Masters Research Selectives (Minimum of 9 credit hours):	
	9

BST 613	Intermediate Statistical Analysis III	
BST 626	Data Management and Reporting with SAS	
ENH 650	Essentials of Environmental and Occupational Toxicology and Diseases	
EPI 625	Quantitative Methods in Epidemiology	
EPI 703	Grant Proposal Writing	
HB 624	Advanced Social and Behavioral Science Theory	
HCO 677	Patient-Based Outcomes Measurement	
Biostatistics Selectives (Minimum 3 hours of regular courses of 623 or higher level):		
BST Course		3
Masters Project Research (9 hours of supervised research in clinical setting):		
BST 698	Non Thesis Research	9
Total Hours		41

Doctor of Philosophy in Biostatistics

The Department of Biostatistics (<http://www.soph.uab.edu/bst/degree-programs>) offers a PhD degree in biostatistics. This program provides a balance between theory and application, the perspective being the role of statistics and modeling in scientific research. The objective is to produce research-oriented scientists who can advance statistical and modeling theory and can interact effectively with scientists in other disciplines to advance knowledge in those fields.

For admission to the program applicants should have a strong academic record and meet the minimum requirements for admission to the School of Public Health. (<http://www.soph.uab.edu/graduate/prospective>) In addition, the applicant's prior collegiate curriculum must include a 3-semester sequence of calculus or equivalent and linear algebra.

Proficiency in computing is preferred, as are additional advanced mathematics courses, e.g., differential equations, advanced calculus including special functions, and complex analysis. Some background in the natural sciences would be helpful. In most cases, a prior MS in biostatistics, statistics, or related field are required for admission to the PhD program. Students with a bachelor's degree are encouraged to pursue a MS degree in Biostatistics before applying to the PhD program. The Department of Biostatistics admits PHD students in the fall term each year. Interested students should apply online through the UAB Graduate School (https://uabirmingham.force.com/graduate/TX_SiteLogin?startURL=%2Fgraduate%2FTargetX_Portal__PB).

Curriculum

To earn the PhD degree in Biostatistics students must complete a minimum of 88 total credit hours of academic course work. Of these, 45 hours are required core courses and 3 hours are required Graduate School courses.

Students then select a minimum 9 credit hours of regular Biostatistics Elective courses of 624 or higher level; a minimum 7 graduate credit hours of outside electives must be taken from a non-quantitative field (i.e. Biology, Public Health or Medicine) with advisor's approval and in some cases, also approval of instructor; and at least 24 credit hours of other related courses including dissertation research.

All students are required to complete a 37 hour, self-paced online course entitled "Overview of Public Health" by the end of their second semester. Students with prior public health education (coursework in each of the public health core disciplines) or experience (5 years in public health) may be waived from this requirement by permission of the Associate Dean.

Requirements		Hours
Required Biostatistics Courses (45 hours):		
BST 621	Statistical Methods I	3
BST 622	Statistical Methods II	3
BST 623	General Linear Models	3
BST 626	Data Management and Reporting with SAS	3
BST 631	Statistical Theory I	4
BST 632	Statistical Theory II	4
BST 655	Categorical Data Analysis	3
BST 665	Survival Analysis	3
BST 691	Pre-Doctoral Seminar Series ²	1
BST 691	Pre-Doctoral Seminar Series	1
BST 691	Pre-Doctoral Seminar Series	1
BST 691	Pre-Doctoral Seminar Series	1
BST 691	Pre-Doctoral Seminar Series	1
BST 691	Pre-Doctoral Seminar Series	1
BST 691	Pre-Doctoral Seminar Series	1
BST 723	Theory of Linear Models	3
BST 735	Advanced Inference	4
BST 760	Generalized Linear and Mixed Models	3
BST 765	Advanced Computational Methods	3
Graduate School Requirement (3 hours): ¹		
GRD 717	Principles of Scientific Integrity	3
Biostatistics Electives (minimum 9 hours of 700 level courses):		
BST courses		9
Required Public Health/Medical/Biological Electives (minimum 7 credit hours):		
EPI 610	Principles of Epidemiologic Research	4
Elective		3
Other Related Courses including Research in Statistics (BST 698/798):		
BST 798	Non-Dissertation Research	1-12
Other Related Courses including Dissertation Research (BST 799) ³		
BST 799	Dissertation Research	1-12
Minimum Credit Hours:		88

- ¹ At least one (1) course related to research ethics and scientific integrity. Does not count toward the required 24 credit hours of didactic course work.
- ² BST 691 - minimum 6 hours required
- ³ Two semesters in candidacy and either (1) 24 credit hours of BST 799 or (2) 12 credit hours of BST 799 and 12 credit hours of research-based coursework (approved by Program Director)

Environmental Health Sciences

Degree Offered:	M.P.H., M.S.P.H., Ph.D.
Interim Chair:	Peter Ginter, PhD
Phone:	(205) 934-6080
Website:	www.soph.uab.edu/ehs
Department Contact:	Julie Brown, M.S.
Department Contact Email:	jbrown@uab.edu

Program Information and Objectives

Environmental Health looks at different factors in our environment and tries to understand their role in the health of individuals and populations. This concentration addresses the environmental risk factors - such as smoke, water, and airborne pollutants - pose to certain populations and

their health. Students who concentrate in Environmental Health are well versed in the variety of approaches used to assess risk levels associated with the environment and public health.

The objectives of the program leading to a PhD in Environmental Health Sciences are to prepare students for scientific careers in academia, industry, government, and non-governmental organizations.

A combination of didactic, laboratory experience, and/or field-based training will be provided to achieve the specific goals for each student. This degree is granted on the basis of distinctive academic achievement, scholarly proficiency, and original research. The Department offers training in Environmental Health Sciences Research, and Industrial Hygiene.

Doctoral Degree:

- Environmental Health Sciences

Master Degrees:

- MPH in Environmental and Occupational Health - (also offered fully online)
- MPH Fast Track Environmental and Occupational Health (5th Year Program)
- MPH in Industrial Hygiene
- MPH in the Accelerated Program in Industrial Hygiene
- MSPH in Environmental Health Toxicology

Environmental Health Sciences Degree Competencies - Click Here (http://www.soph.uab.edu/enh_competencies)

Admission

Applicants should have a bachelor's or higher degree in one of the natural sciences, medical sciences, or engineering fields from an accredited college or university. Regardless of degree, this should include courses in biology; general, organic, and physical chemistry; physics; and mathematics through calculus. Applicants interested in specializing in Environmental Toxicology are encouraged to have completed courses in biochemistry and physiology. Industrial Hygiene applicants are expected to have completed Industrial Hygiene courses in an accredited Industrial Hygiene program or the equivalent, or have significant experience in the practice of Industrial Hygiene. Applicants who do not have adequate preparation in these areas are expected to complete remedial training as part of their didactic requirements.

Master Program Deadline:	www.soph.uab.edu/apply
PhD Program Deadline:	July 1 (U.S.), April 1 (International)
GPA	3.0
Number of Evaluation Forms:	Three
Entrance Tests: GRE	www.soph.uab.edu/apply
TOEFL	TOEFL is required for international applicants whose native language is not English.
SOPH Admissions:	www.soph.uab.edu/apply

UAB has many degree programs (both on-campus and online) that can lead to professional licensure or certification (PLC). Licensure requirements vary from state to state and by professional organization. UAB is working to develop an online, publically-accessible database, to assist in providing this state-by-state information. In the meantime, if you are interested in learning about potential professional licensure requirements in your state for a specific degree program, please contact the UAB State Authorization office at stateauth@uab.edu or call Dr. Lisa Reburn (205) 934-3258.

Master of Public Health with a Concentration in Environmental and Occupational Health

Including the MPH Fast Track Program, Accelerated Bachelors/Masters(ABM) and Online Degree Program

Curriculum

In addition to the MPH core requirements, students take 20 hours of department track and elective courses and a 3 hour internship for a minimum of 43 credit hours.

Requirements	Hours
Core Requirements: (20 hours)	
BST 601 Biostatistics	4
ENH 600 Fundamentals of Environmental Health Science	3
EPI 600 Introduction to Epidemiology	3
HB 600 Social and Behavioral Sciences in Public Health	3
HCO 600 Management and Policy in Public Health Systems and Services	4
PUH 695 The Public Health Integrative Experience	3
Department Track Requirements: (14 hours)	
ENH 612 Assessing & Managing Environmental Risks	3
ENH 615 Environmental Justice and Ethics	3
ENH 650 Essentials of Environmental and Occupational Toxicology and Diseases	3
ENH 660 Fundamentals of Air and Water Pollution	3
ENH 691 Current Topics in Environmental Health and Occupational Health and Safety	1
ENH 691 Current Topics in Environmental Health and Occupational Health and Safety	1
Department Electives: (6 hours)	
ENH Electives	6
Internship (3 credits):	
ENH 697 Internship	3
Total Credit Hours:	43

Master of Public Health with a Concentration in Industrial Hygiene

Including the Online Degree Program

This MPH in Industrial Hygiene (<http://www.soph.uab.edu/ehs/degree-programs>) track is designed to provide an intensive educational experience for students who have a strong commitment to occupational and industrial health and safety and hazardous substances. It aims to develop the students' understanding of the interrelationships between the basic sciences and the causes and prevention of occupational related diseases. The MPH in industrial hygiene combines didactic research instruction and applied research experience for students with or without previous work experience. Graduates of the program will be capable of

developing systematic approaches to identifying and controlling problems in industrial hygiene, designing and implementing research programs to measure the level of work exposure to hazardous agents, and instituting necessary control measures. The industrial hygiene program works with the Deep South Center for Occupational Health and Safety, one of 16 Education and Research Centers partially supported by the National Institute for Occupational Safety and Health (NIOSH). Calculus, although not required, is highly recommended.

Curriculum:

In addition to the MPH core requirements, students take 29 hours of Industrial Hygiene, an 3 hour internship and 3 hours of departmental electives for a minimum of 55 credit hours. Internships are generally paid positions in industry. More than 60 industries nationwide have participated in this program. If a student is a trainee of the Deep South Center ERC and receives NIOSH funding they will be required to take additional courses and conduct a masters research project.

Requirements	Hours
MPH Core Requirement (20 hours):	
BST 601 Biostatistics	4
ENH 600 Fundamentals of Environmental Health Science	3
EPI 600 Introduction to Epidemiology	3
HB 600 Social and Behavioral Sciences in Public Health	3
HCO 600 Management and Policy in Public Health Systems and Services	4
PUH 695 The Public Health Integrative Experience	3
Departmental Track Requirement (29 hours):	
ENH 612 Assessing & Managing Environmental Risks	3
ENH 621 Fundamentals of Industrial Hygiene	3
ENH 624 Control of Occupational Hazards	2
ENH 625 Industrial Hygiene Case Studies	2
ENH 626 Physical Agents	2
ENH 650 Essentials of Environmental and Occupational Toxicology and Diseases	3
ENH 661L Environmental Sampling and Analysis Laboratory	3
ENH 670 Fundamentals of Occupational Safety	3
ENH 680 Interdisciplinary Field Studies	1
ENH 681 Interdisciplinary Worksite Evaluations	2
ENH 691 Current Topics in Environmental Health and Occupational Health and Safety ^{minimum 2 hours}	1
ENH 698 Masters Directed Research	3
Internship (3 hours):	
ENH 697 Internship	3
Departmental Elective:	Minimum 3 hours
Total Credit Hours:	55

MPH in Accelerated Program in Industrial Hygiene

The MPH in Accelerated Program in Industrial Hygiene (<http://www.soph.uab.edu/ehs/degree-programs>) is designed specifically for and limited to graduates of undergraduate Industrial Hygiene programs financially supported by the National Institute for Occupational Safety and Health (NIOSH). Graduates of these programs have already received basic courses from NIOSH, peer-reviewed and approved Industrial

Hygiene curricula, and are qualified to practice Industrial Hygiene. The Accelerated Program in Industrial Hygiene will broaden the student's public health knowledge and skills while also preparing students to take leadership roles in Industrial Hygiene.

Curriculum

In addition to the MPH core requirements, students take 13 hours of Industrial Hygiene and 3 hours elective courses and a 3 hour internship for a total minimum of 42 credit hours. Internships are generally paid positions in industry. More than 60 industries nationwide have participated in this program. If a student is a trainee of the Deep South Center ERC and receives NIOSH funding they will be required to take additional courses and conduct a masters research project.

Requirements	Hours
MPH Core Requirement (20 hours):	
BST 601 Biostatistics	4
ENH 600 Fundamentals of Environmental Health Science	3
EPI 600 Introduction to Epidemiology	3
HB 600 Social and Behavioral Sciences in Public Health	3
HCO 600 Management and Policy in Public Health Systems and Services	4
PUH 695 The Public Health Integrative Experience	3
Departmental Track Requirement (13 hours):	
ENH 612 Assessing & Managing Environmental Risks	3
ENH 625 Industrial Hygiene Case Studies	2
ENH 650 Essentials of Environmental and Occupational Toxicology and Diseases	3
ENH 680 Interdisciplinary Field Studies	1
ENH 681 Interdisciplinary Worksite Evaluations	2
ENH 691 Current Topics in Environmental Health and Occupational Health and Safety ^{Minimum of 2 hours}	1
Department Research (3 hours):	
ENH 698 Masters Directed Research	3
Department Electives (3 hours):	
Select 3 hours of 600-level or higher (ENH) course	3
Internship (3 hours)	
ENH 697 Internship	3
Total Credit Hours:	42

Master of Science in Public Health with a Concentration in Environmental Health Toxicology

Environmental health professionals must be able to recognize, evaluate, and control environmental risk factors that may lead to disease. The **Master of Science in Public Health program in Environmental Health & Toxicology** (<http://www.soph.uab.edu/ehs/degree-programs>) is designed to provide an intensive educational and research experience.

This includes the design and carry out of research to assess the probability that environmental stressors present a risk to humans, and to define safe limits for human exposures. The research aspect of this curriculum is conducted under the requirements of the UAB Graduate School, and includes: formation of a research committee, presentation of

a research proposal, conducting of the research, preparation of a formal thesis, and presentation and defense of the thesis.

Curriculum:

In addition to the MSPH core requirements, students take 26 hours of courses and electives, current topics, and research hours for a minimum of 39 credit hours.

All MSPH students are required to complete a 37 hour, self-paced online course entitled "Overview of Public Health" by the end of their second semester. Students with prior public health education (BS in Public Health, MPH) or experience (5 years in public health) may be waived from this requirement by permission of the Associate Dean.

Requirements	Hours
MSPH Core Requirements (13 hours):	
BST 611 Intermediate Statistical Analysis I	3
BST 612 Intermediate Statistical Analysis II	3
ENH 600 Fundamentals of Environmental Health Science	3
EPI 610 Principles of Epidemiologic Research	4
Department Track Requirements (6 hours):	
ENH 612 Assessing & Managing Environmental Risks	3
ENH 650 Essentials of Environmental and Occupational Toxicology and Diseases	3
Environmental Health Elective (3 hours):	Minimum 3 hours
Masters Directed Research (minimum 6 hours):	
ENH 698 Masters Directed Research	1-9
Masters Project Research (minimum 7 hours once admitted to candidacy):	
ENH 699 Masters Level Project Research	7-9
Seminar / Journal Club (minimum 4 hours):	
ENH 691 Current Topics in Environmental Health and Occupational Health and Safety	1
Minimum Credit Hours:	39

Doctor of Philosophy in the Department of Environmental Health Sciences

The PhD in the Department of Environmental Health Sciences (<http://www.soph.uab.edu/ehs/degree-programs>) is an academic research degree. The doctoral program prepares scientists for careers in research, environmental program management, risk assessment and policy. Didactic training and research in the identification, evaluation, and control of hazards to human health are emphasized in this program. Students may concentrate on a wide variety of areas including exposure assessment, toxicology, environmental chemistry, air and water pollution, risk assessment and management. In addition to understanding the advanced concepts of environmental health sciences, graduates of this program are expected to develop skills that will enable them to identify and define questions of environmental health importance, design research studies to address these questions, and to complete a program of research that demonstrates abilities as an independent investigator. Graduates are qualified to assume upper-level positions in the public or private sector in research, management, teaching, or consulting.

Curriculum

PhD students are expected to complete courses in 4 areas. The department track requirements, electives, seminar and journal club hours, and research. Other courses preparatory to dissertation research will

be determined by the academic advisor or dissertation committee in consultation with the student.

Students who are admitted to the PhD program with a BA or BS, or those with a master's degree from a different specialty, will be required to complete a minimum of 72 hours. Students entering with a related master's degree will follow the schedule requiring 59 credit hours. The admissions committee will decide which schedule the student is required to follow. These are also the minimum number of required hours: additional coursework that the dissertation committee deems necessary, or additional research hours needed to complete the dissertation, may increase the total number of credit hours.

All PhD students are required to complete a 37 hour, self-paced online course entitled "Overview of Public Health" by the end of their second semester. Students with prior public health education (coursework in each of the public health core disciplines) or experience (5 years in public health) may be waived from this requirement by permission of the Associate Dean.

PhD curriculum for students with a relevant masters degree.

Requirements	Hours
Department Track Requirement (21 hours):	
ENH 700 Scientific Basis of Environmental Health	3
ENH 752 Biochemical and Molecular Toxicology	3
ENH 770 Advanced Topics in Environmental Disasters in PUH	3
BST 611 Intermediate Statistical Analysis I	3
EPI 616 Environmental Epidemiology	3
GRD 717 Principles of Scientific Integrity	3
HCO 635 Writing Grants and Programming Awards in Public Health	3
Electives (6 hours):	
Select 6 hours from 600-level or higher (ENH) courses.	6
Journal Club (3 hours); Department Seminar (2 hours)	
ENH 781 Journal Club <small>minimum 3 hours</small>	1
ENH 790 Seminar: Current Topics in ENH Sciences Research <small>minimum 2 hours</small>	1
Directed Research (3 hours):	
ENH 798 Doctoral Level Directed Res <small>Minimum 3 hours</small>	1-9
Dissertation Research (minimum 24 hours, atleast 2 semester of candidacy):	
ENH 799 Dissertation Research <small>Minimum 24 hours</small>	1-9
Minimum Credit Hours Earned for Degree:	59

PhD curriculum for students without a masters degree or relevant masters degree.

Requirements	Hours
Department Track Requirement (21 hours):	
ENH 700 Scientific Basis of Environmental Health	3
ENH 752 Biochemical and Molecular Toxicology	3
ENH 770 Advanced Topics in Environmental Disasters in PUH	3
BST 611 Intermediate Statistical Analysis I	3
EPI 616 Environmental Epidemiology	3
GRD 717 Principles of Scientific Integrity	3
HCO 635 Writing Grants and Programming Awards in Public Health	3
Electives (15 hours):	

Select 15 hours from 600-level or higher (ENH) courses.	15
Journal Club (3 hours) and Department Seminar (2 hours):	
ENH 781 Journal Club <small>minimum 3 hours</small>	1
ENH 790 Seminar: Current Topics in ENH Sciences Research <small>minimum 2 hours</small>	1
Directed Research (7 hours):	
ENH 798 Doctoral Level Directed Res <small>minimum 7 hours</small>	1-9
Dissertation Research (minimum 24 hours, at least 2 semesters of candidacy):	
ENH 799 Dissertation Research <small>minimum 24 hours</small>	1-9
Minimum Credit Hours Earned for Degree:	72

Epidemiology

Prospective students should visit <http://www.soph.uab.edu/apply> to obtain specific admissions requirements on how to apply.

Degree Offered:	Ph.D., M.P.H., M.S.P.H.
Chair:	Cora E. Lewis, MD, MSPH
Phone:	(205) 975-7699
Website:	www.soph.uab.edu/epi
Department Student Contact:	Kimberly Hawkins King
Department Student Contact E-mail:	hawkinsk@uab.edu

What is Epidemiology?

Epidemiology is the study of trends, patterns, and causes related to disease in populations. Students who concentrate in epidemiology are interested in how diseases spread among given populations. Epidemiologists create complex analytical models to help us understand the causes of and solutions to these diseases more clearly.

Graduates of the UAB Epidemiology program have found employment in academia, research organizations and foundations, industry, public and private health services delivery organizations, and international agencies. Many of our doctoral graduates have faculty positions.

Degree Programs

- Master of Public Health in Epidemiology (also offered Online)
- MPH Fast Track (5th Year Program)
- Master of Science in Public Health in Applied Epidemiology
- Master of Science in Public Health in Clinical and Translational Science
- Master of Science in Public Health in Pharmacoepidemiology and Comparative Effectiveness Research
- Doctor of Philosophy in Epidemiology

Epidemiology Degree Competencies - Click Here (http://www.soph.uab.edu/epi_competencies)

Admission Requirements

Applicants must meet the requirements for admission to the UAB School of Public Health and must demonstrate their aptitude for biological

sciences and mathematics by virtue of their college transcripts and GRE scores.

Entry Term	Deadline
Master Program Deadline:	www.soph.uab.edu/apply
PhD Program Deadline:	May 15
GPA:	3.0
Number of Letters of Recommendation Required:	Three
Entrance Tests: GRE	www.soph.uab.edu/apply
TOEFL:	TOEFL is required for international applicants whose native language is not English.

SOPH Admissions: www.soph.uab.edu/apply

UAB has many degree programs (both on-campus and online) that can lead to professional licensure or certification (PLC). Licensure requirements vary from state to state and by professional organization. UAB is working to develop an online, publically-accessible database, to assist in providing this state-by-state information. In the meantime, if you are interested in learning about potential professional licensure requirements in your state for a specific degree program, please contact the UAB State Authorization office at stateauth@uab.edu or call Dr. Lisa Reburn (205) 934-3258.

Master of Public Health with a Concentration in Epidemiology

Including the Fast Track Program, Accelerated Bachelors/Masters (ABM) and Online Degree Program

This MPH in Epidemiology program (<http://www.soph.uab.edu/epi/degree-programs>) is intended for persons who anticipate careers in public health practice. In addition, students who wish to enter doctoral-level training should consider majoring in epidemiology at the master's level. Graduates of the MPH in Epidemiology may assume faculty or research positions in academia or management positions in government or industry if they have other professional degrees (e.g., MD, DDS) as well. Graduates of the program without professional credentials generally assume mid-level positions in academia, industry or government. The MPH in Epidemiology in-person program typically takes 4 semesters or 16 months of full-time coursework to complete. Part-time coursework generally takes students at least 6-8 semesters to complete.

Curriculum

For full-time students in our MPH program, and for those students who opt to complete our accelerated graduation plan...all core courses can be completed within the first two semesters of enrollment except for PUH 695: Integrative Experience, which MUST be taken in the last semester of enrollment or graduation term (with the exception of graduation in the Summer term, when students would register for PUH 695 in the Spring term). For in-person on campus MPH students, BST 601, EPI 610, EPI 626 and HCO 600 can be taken in the first Fall term of enrollment for a total of 13 credit hours. EPI 625, ENH 600, and HB 600 (with an optional elective) can be taken in the first Spring term of enrollment. MPH students are eligible to register for the required Internship course (EPI 697) as early as their first Summer term of enrollment, or when all core classes have been completed. Students then have the option to choose to register for our 4 credit hour elective course selecting from Epidemiology of Chronic Diseases or Epidemiology of Infectious

Diseases. Students are finally required to register for 9 credit hours of electives with the selection from a list of the most popular Epidemiology elective classes. If students opt to register for both EPI of Chronic Diseases (4 hours) and EPI of Infectious Diseases (4 hours), one of the 4 credit hour classes will be able to be counted towards the 9 credit hours of elective coursework requirement.

Requirements		Hours
MPH Core Requirements		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3
EPI 610	Principles of Epidemiologic Research	4
EPI 625	Quantitative Methods in Epidemiology	3
HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 695	The Public Health Integrative Experience	3
Epidemiology Methods Track Requirements		
EPI 626	Introduction to Data Analysis with SAS	2
EPI 627	Data Analysis and Presentation of Epidemiologic Studies	3
Internship		
EPI 697	Internship	3
Required EPI Electives (4 hours) Choose one (1) of the following:		
EPI 602	Epidemiology of Chronic Diseases	4
EPI 605	Epidemiology of Infectious Diseases	4
Electives (Choose from following courses) <small>Minimum of 6 hours</small>		
EPI 603	Injury-Epidemiologic Principles and Prevention Strategies	3
EPI 607Q	Fundamentals of Clinical Research Online	3
EPI 609	Introduction to Pharmacoepidemiology and Drug Safety	3
EPI 614	Epidemiologic Methods Applied to Comparative Effectiveness Research	3
EPI 616	Environmental Epidemiology	3
EPI 618	Fieldwork in Public Health	2
EPI 621	HIV/AIDS and STDs	3
EPI 635	Genetics in Public Health	2
EPI 695	Epidemiology Seminar	1
EPI 698	Master's Level Directed Research Epidemiology	1-9
BST 613	Intermediate Statistical Analysis III	3
BST 619	Data Collection and Management	3
BST 626	Data Management and Reporting with SAS	3
Minimum Credit Hours Required		42

Master of Science in Public Health with a Concentration in Applied Epidemiology

The MSPH with a concentration in Applied Epidemiology program (<http://www.soph.uab.edu/epi/degree-programs>) is an academic research degree designed for students who wish to receive education and training in epidemiologic research methods. Completion of didactic course work and a thesis research project and final defense are required. This degree can be completed in as little as 4 semesters or 16 months of full-time course work.

Curriculum

A total of 42 credit hours must be earned to receive the MSPH in Applied Epidemiology degree. Of these 42 total hours, 22 hours are taken to complete the core requirements (6 semester hours of masters level

project research EPI 698 and 3 semester hours with one semester in candidacy of EPI 699 masters level project research is included in the 22 core credit hours). Students then complete 11 hours of Applied EPI concentration courses, 4 hours of a required EPI elective classes. Students choose either Epidemiology of Chronic Diseases or Epidemiology of Infectious Diseases to fulfill the required elective 4 hour course. Students then take 5 hours of track-specific relevant elective credits. Students must consult with their academic advisor for approval of track-specific relevant elective credits. During the last term of enrollment or final graduation term, the student is required to complete his/her final thesis project defense and presentation. A final publishable paper is required for graduation.

All MSPH students are required to complete a self-paced online course entitled "Overview of Public Health" by the end of their second semester of enrollment. Students with prior public health education (coursework in each of the public health core disciplines) or experience (5 years in public health) may be waived from this requirement by permission of the Associate Dean.

Requirements		Hours
MSPH Core Requirement		
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
EPI 610	Principles of Epidemiologic Research	4
EPI 625	Quantitative Methods in Epidemiology	3
Masters Level Directed Research Requirement (Maximum 9 hours)		
EPI 698	Master's Level Directed Research Epidemiology	1-9
Masters Level Project Research Requirement (Maximum 9 hours) ¹		
EPI 699	Master's Level Project Research Epidemiology	1-9
Applied Epidemiology Track Requirements (11 hours)		
BST 625	Design/Conduct Clinical Trials	3
EPI 626	Introduction to Data Analysis with SAS	2
EPI 627	Data Analysis and Presentation of Epidemiologic Studies	3
GRD 717	Principles of Scientific Integrity	3
Required EPI Electives (4 hours): <small>Choose from the following 2 courses.</small>		
EPI 602	Epidemiology of Chronic Diseases	4
or EPI 605	Epidemiology of Infectious Diseases	
Track Specific Electives (5 hours):		
EPI 603	Injury-Epidemiologic Principles and Prevention Strategies	
EPI 607Q	Fundamentals of Clinical Research Online	
EPI 609	Introduction to Pharmacoepidemiology and Drug Safety	
EPI 614	Epidemiologic Methods Applied to Comparative Effectiveness Research	
EPI 616	Environmental Epidemiology	
EPI 618	Fieldwork in Public Health	
EPI 621	HIV/AIDS and STDs	
EPI 635	Genetics in Public Health	
EPI 695	Epidemiology Seminar	
BST 613	Intermediate Statistical Analysis III	
BST 619	Data Collection and Management	
Minimum Credit Hours Required:		42

¹ EPI 699 Masters Level Project Research must be taken after admission to candidacy.

Master of Science in Public Health in Pharmacoepidemiology and Comparative Effectiveness Research

The MSPH in Pharmacoepidemiology and Comparative Effectiveness Research program (<http://www.soph.uab.edu/epi/degree-programs>) is an academic research degree that is designed to provide students with special training in Epidemiology research methods as applied to Pharmacoepidemiology and Comparative Effectiveness Research. This MSPH concentration will present introductory and advanced topics relevant to the field of Pharmacoepidemiology and will include material on information sources used for research in these fields, sources of bias, study designs, analytical approaches, issues of interpretation of research results, and relevant policy and regulatory activities. All trainees will complete a final thesis defense and presentation during their last term of enrollment or graduation term, that typically will be in the form of one or more papers suitable for publication and addressing a topic in Pharmacoepidemiology and Comparative Effectiveness Research. A number of databases are available for trainee projects.

Course Requirements

A total of 43 credit hours must be earned to receive the MSPH in Pharmacoepidemiology and Comparative Effectiveness Research. Of these 43 total hours, 22 hours are taken to complete the Core requirement (6 semester hours of required masters level project research EPI 698 and 3 semester hours of masters level project research with at least one (1) semester in candidacy for EPI 699 credits). Students then complete 14 hours of PCER Concentration courses, 4 hours of the elective course requirement selecting from either Epidemiology of Chronic Diseases or Epidemiology of Infectious Diseases, and 3 hours of track-specific relevant electives (with the advisor's approval). During the last term of enrollment or final term of graduation, the student is required to complete his/her final thesis paper and defense presentation. The paper is expected to be published through the UAB Graduate School's publication process.

All MSPH students are required to complete a self-paced online course entitled "Overview of Public Health" by the end of their second semester. Students with prior public health education (coursework in each of the public health core disciplines) or experience (5 years in public health) may be waived from this requirement by permission of the Associate Dean.

Requirements	Hours
MSPH Core Requirement (22 Hours)	
BST 611 Intermediate Statistical Analysis I	3
BST 612 Intermediate Statistical Analysis II	3
EPI 610 Principles of Epidemiologic Research	4
EPI 625 Quantitative Methods in Epidemiology	3
Masters Level Research Requirement (Maximum 9 hours)	
EPI 698 Master's Level Directed Research Epidemiology	1-9
Masters Level Project Research Requirements (Maximum 9 hours)	
EPI 699 Master's Level Project Research Epidemiology ¹	1-9
PCER Track Requirements (14 hours)	
EPI 609 Introduction to Pharmacoepidemiology and Drug Safety	3
EPI 614 Epidemiologic Methods Applied to Comparative Effectiveness Research	3
EPI 626 Introduction to Data Analysis with SAS	2
EPI 627 Data Analysis and Presentation of Epidemiologic Studies	3

GRD 717	Principles of Scientific Integrity	3
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Required Epidemiology Elective (4 hours) Choose one (1) from the following:

EPI 602	Epidemiology of Chronic Diseases	4
EPI 605	Epidemiology of Infectious Diseases	4

Track-Specific Relevant Electives (3 hours):

EPI 603	Injury-Epidemiologic Principles and Prevention Strategies	
EPI 607Q	Fundamentals of Clinical Research Online	
EPI 616	Environmental Epidemiology	
EPI 618	Fieldwork in Public Health	
EPI 621	HIV/AIDS and STDs	
EPI 635	Genetics in Public Health	
EPI 695	Epidemiology Seminar	
BST 613	Intermediate Statistical Analysis III	
BST 619	Data Collection and Management	
BST 625	Design/Conduct Clinical Trials	
BST 626	Data Management and Reporting with SAS	

Minimum Credit Hours Required: 43

- ¹ EPI 699: Masters Level Project Research must be taken after admission to candidacy.

Master of Science with a Concentration in Public Health in Clinical & Translational Science Epidemiology

The MSPH with a Concentration in Clinical and Translational Science (<http://www.soph.uab.edu/epi/degree-programs>) program is a post-medical or other health science degree training program, aimed primarily at residents in training, fellows, and faculty members interested in developing skills required for clinical research. It is anticipated that this academic training will supplement extensive training in the content area in which the student is trained, and senior mentoring in the politics and policies of project development and management. A graduate of this program will have the academic training to develop and lead independent research programs and projects. The program consists of a core set of courses common to all students, plus research elective and focus elective courses that reflect the academic interest of the student. At this time, the program can accommodate students with specific interest in Biostatistics, Epidemiology, and Health Behavior. As a result, there will be some variation in the specific knowledge and skills acquired by each graduate. However, the primary learning objectives will apply to all students, irrespective of departmental affiliation.

Curriculum

The MSPH with a Concentration in Clinical and Translational Science (<http://www.soph.uab.edu/epi/degree-programs>) consists of a minimum of 42 semester hours. Of these, 22 core hours are required, including 6 hours of specific Biostatistics courses and 6 hours of Masters Level Directed Research (EPI 698). Students also completed 3 hours and one semester in candidacy of EPI 699 Masters Level Project Research. Also, 13 hours of Clinical Research concentration courses and 4 hours of either Epidemiology of Chronic Diseases or Epidemiology of Infectious diseases to fulfill the elective required course. Finally 3 hours of Track-Specific relevant elective credit hours are also required. The MSPH program requires a thesis research project, paper, and final defense. The final defense presentation is completed during the last enrollment term or graduation term. The final paper is required to be published.

The publication process is through the UAB Graduate School. Generally students in this MSPH program take 18-24 months to complete the coursework, but this is dependent upon the student's clinical work and/or medical rotation schedule.

All MSPH students are required to complete a self-paced online course entitled "Overview of Public Health" by the end of their second semester. Students with prior public health education (coursework in each of the public health core disciplines) or experience (5 years in public health) may be waived from this requirement by permission of the Associate Dean.

Requirements	Hours
MSPH Core Requirement	
BST 611 Intermediate Statistical Analysis I	3
BST 612 Intermediate Statistical Analysis II	3
EPI 610 Principles of Epidemiologic Research	4
EPI 625 Quantitative Methods in Epidemiology	3
Masters Level Directed Research (Maximum 9 hours)	
EPI 698 Master's Level Directed Research Epidemiology	1-9
Masters Level Project Research Requirements (Maximum 9 hours)	
EPI 699 Master's Level Project Research Epidemiology	1-9
Clinical Research Track Requirement (13 hours):	
EPI 607 Fundamentals of Clinical Research or BST 625 Design/Conduct Clinical Trials	
EPI 626 Introduction to Data Analysis with SAS	
EPI 627 Data Analysis and Presentation of Epidemiologic Studies	
EPI 680 Topics in Clinical Research	
GRD 717 Principles of Scientific Integrity	
Required Epidemiology Elective (4 hours) Choose one (1) of the following:	4
EPI 602 Epidemiology of Chronic Diseases or EPI 605 Epidemiology of Infectious Diseases	4
Track Specific Electives (3 hours):	3
EPI 603 Injury-Epidemiologic Principles and Prevention Strategies	
EPI 609 Introduction to Pharmacoepidemiology and Drug Safety	
EPI 614 Epidemiologic Methods Applied to Comparative Effectiveness Research	
EPI 616 Environmental Epidemiology	
EPI 618 Fieldwork in Public Health	
EPI 621 HIV/AIDS and STDs	
EPI 635 Genetics in Public Health	
EPI 698 Master's Level Directed Research Epidemiology	
BST 613 Intermediate Statistical Analysis III	
BST 619 Data Collection and Management	
BST 626 Data Management and Reporting with SAS	
Minimum Credit Hours Required	42

Doctor of Philosophy in Epidemiology

The PhD in Epidemiology (<http://www.soph.uab.edu/epi/degree-programs>) emphasizes epidemiologic study design and data analysis. The program is designed to prepare exceptionally qualified individuals for a career of research and teaching. Admission is competitive. Applicants should have earned a Master of Public Health (MPH), Master of Science in Public Health (MSPH), Master of Science (MS) degree or equivalent, with a strong background in epidemiology and statistics. Students who complete the degree will master the skills required for conducting

independent research in epidemiology, with a firm background in epidemiology, biostatistics, and information management. Specific areas of concentration include chronic diseases, infectious diseases, molecular epidemiology, and injury epidemiologic methods. Further details about the PhD-EPI program may be obtained by contacting the Program Director, Dr. Emily Levitan at elevitan@uab.edu. You may also contact the Coordinator of Graduate Academic Programs, Kimberly Hawkins King at hawkinsk@uab.edu, or (205) 975-9749. For funding questions regarding our PhD program please contact Dr. Levitan or you may also contact her program assistant Kate Sreenan at ksreenan@uab.edu or (205) 934-7184.

Curriculum

To earn the PhD degree in Epidemiology students must complete a minimum of 60 total credit hours of academic course work. Of this 60 credit hour minimum, 18 semester hours are required and include Biostatistics and Epidemiology courses. 24 semester hours must be earned in doctoral level didactic Epidemiology courses and/or advanced Biostatistics courses. GRD 717 Principles of Scientific Integrity is also a required course that students take in the program. Students must also complete at least 12 semester hours of directed research (EPI 798) and 12 semester hours of dissertation research (EPI 799). Additionally, students must complete at least two semesters in candidacy (of EPI 799) before being allowed to graduate.

All PhD students are required to complete a self-paced online course entitled "Overview of Public Health" by the end of their second semester. Students with prior public health education (coursework in each of the public health core disciplines) or experience (5 years in public health) may be waived from this requirement by permission of the Associate Dean.

Requirements	Hours
Required Courses (18 hours):	
BST 621 Statistical Methods I	3
BST 622 Statistical Methods II	3
EPI 703 Grant Proposal Writing	3
EPI 704 Advanced Epidemiologic Methods	3
EPI 710 Analysis of Case Control Studies	3
EPI 720 Analysis of Follow-Up Studies	3
Research Ethics Requirement: ¹	
GRD 717 Principles of Scientific Integrity	3
One Additional Doctoral Level Epidemiology Course - Select from the following:	
EPI 713 Cancer Epidemiology and Control	3
EPI 721 HIV/AIDS and STDs	3
EPI 731 Genetic Epidemiology & 731L and Genetic Epidemiology Lab	4
EPI 781 Special Topics in Epidemiology Research	3
EPI 788 Principles and Methods in Molecular Epidemiology	4
At least two (2) advanced level Biostatistics courses: ²	
BST 623 General Linear Models	3
BST 640 Nonparametric Methods	3
BST 655 Categorical Data Analysis	3
BST 660 Applied Multivariate Analysis	3
BST 661 Structural Equation Modelling	3
BST 665 Survival Analysis	3
BST 670 Sampling Methods	3
BST 671 Meta-Analysis	3

BST 723	Theory of Linear Models	3
BST 735	Advanced Inference	4
BST 740	Bayesian Analysis	3
BST 750	Stochastic Modeling	3
BST 760	Generalized Linear and Mixed Models	3

At least one (1) doctoral level course in an area of medicine or in one of the major areas of PH other than EPI and BST must be taken.

Other courses are available with advisor's approval.

HB 714	Survey Research Methods	3
HCO 711	Child Health and Development: Womb to Young to Adulthood	3
GBS 721	Genetic Epidemiology	2
GBS 727	Advanced Human Genomics	3
GBS 757	Biology of Disease	3
GBSC 715	Molecular Basis of Disease	3

Required Doctoral Seminar:

EPI 790	Doctoral Seminar in Epidemiology ^{Must be taken at least twice (2 times)}	2
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Doctoral Level Research (minimum 24 hours):

EPI 798	Doctoral Level Directed Research Epidemiology ³	1-9
EPI 799	Dissertation Research ⁴	1-9

Optional Elective: to complete total hours required for degree.

HCO 670	Social and Ethical Issues in Public Health	3
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Minimum Credit Hours: 60

- One (1) course related to research ethics and scientific integrity (Does not count toward the required 24 credit hours of didactic course work.)
- Other courses may be available in Biostatistics, with your advisor's approval. Please check the course catalog.
- EPI 798: Doctoral-Level Directed Research - Register prior to admission to candidacy; Must have at least 12 hours.
- EPI 799: Dissertation Research - Register after admission to candidacy; Must have at least 12 hours and at least 2 semesters.

Health Behavior

Prospective students should visit <http://www.soph.uab.edu/apply> to obtain specific admissions requirements on how to apply.

Degrees Offered:	M.P.H., M.S.P.H., Ph.D.
Department Chair:	Kevin Fontaine, Ph.D.
Phone:	(205) 934-6020
Department Contact:	Julie Brown, M.S.
Department Contact E-mail:	jebrown@uab.edu
Website:	http://www.soph.uab.edu/hb

Program Information and Objectives

The Department of Health Behavior aims to train health promotion specialists/behavioral scientists to conduct research, develop and evaluate programs, implement and disseminate programs and integrate ethical, cultural and social justice topics as they address the public's health.

Health Behavior MPH and PhD students learn to use theories and methods from the social and behavioral sciences to develop programs that encourage healthy behaviors. They learn state-of-the-art techniques and methods for research and program evaluation. Doctoral students

study these topics in depth as they apply their knowledge and skills to conducting research and writing funding proposals and manuscripts. Our research covers obesity prevention including lifestyle interventions, family and adolescent health issues, prevention and control of addictive behaviors, sexual health risks including HIV/AIDS prevention and treatment, community based health promotion, health communication, and dissemination and implementation science.

Degree Programs

- MPH Health Behavior - also offered fully online
- MPH Fast Track (5th Year Program)
- Coordinated MPH/PhD in Health Behavior and Psychology or Sociology
- Coordinated MPH/MSN in Health Behavior
- MSPH Clinical Research
- Ph.D. Health Education & Health Promotion

Health Behavior Degree Competencies - [Click Here](http://www.soph.uab.edu/hb_competencies) (http://www.soph.uab.edu/hb_competencies)

Admissions Information

Master Program Deadline:	www.soph.uab.edu/apply
PhD Program Deadline:	July 1
GPA	3.0
Number of Letters of Recommendation Required:	Three
Entrance Tests: GRE	www.soph.uab.edu/apply
TOEFL	TOEFL is required for international applicants whose native language is not English.
SOPH Admissions:	www.soph.uab.edu/apply
Comments	For additional information please contact Julie Brown, M.S. (jebrown@uab.edu, phone: 205-975-8075)

UAB has many degree programs (both on-campus and online) that can lead to professional licensure or certification (PLC). Licensure requirements vary from state to state and by professional organization. UAB is working to develop an online, publically-accessible database, to assist in providing this state-by-state information. In the meantime, if you are interested in learning about potential professional licensure requirements in your state for a specific degree program, please contact the UAB State Authorization office at stateauth@uab.edu or call Dr. Lisa Reburn (205) 934-3258.

Master of Public Health with a Concentration in Health Behavior

Including the Fast-Track and Accelerated Bachelors/Masters (ABM), and Online Degree Program

The MPH degree in Health Behavior (<http://www.soph.uab.edu/hb/degree-programs>) addresses the behavioral, social, and cultural factors related to individual and population health and health disparities. Students in our program are able to apply social and behavioral science theories to public health problems, develop evidence-based health promotion interventions and disease prevention programs, and apply principles of evaluating health promotion interventions and disease prevention programs. We emphasize the importance of community based participatory research and the application findings through a variety of behavioral and social science health promotion strategies. Classes are designed to be engaging, interactive, and relevant to current health behavior issues. Graduates of our health behavior program are well positioned for opportunities in local, state, and federal agencies, non-profit/community based organizations, private research foundations, as well as the academic setting.

Curriculum: In addition to the MPH core requirements, students take 12 hours of health behavior track courses, a 3 hour internship and 9 hours of electives.

Requirements	Hours
MPH Core Requirements (20 hours):	
BST 601 Biostatistics	4
ENH 600 Fundamentals of Environmental Health Science	3
EPI 600 Introduction to Epidemiology	3
HB 600 Social and Behavioral Sciences in Public Health	3
HCO 600 Management and Policy in Public Health Systems and Services	4
PUH 695 The Public Health Integrative Experience	3
Departmental Track Requirements (12 hours):	
HB 624 Advanced Social and Behavioral Science Theory	3
HB 636 Developing Interventions to Promote Public Health	3
HB 641 Research Methods in Behavioral Science	3
HB 643 Health Program Evaluation	3
Internship (3 hours):	
HB 697 Internship	3
Social & Behavioral Science Electives (9 hours):	
Select 9 hours of 600-level or higher (HB) courses.	9
Total Hours	44

MSPH with a Concentration in Clinical and Translational Science Health Behavior.

In response to interest in medical and other health science schools in developing the clinical research skills of faculty members and fellows, the Schools of Medicine and Public Health have combined efforts to create a training program for young faculty members and fellows from a variety of disciplines.

This program is a post-medical or other health science degree training program, aimed primarily at fellows and faculty members interested in developing skills required for clinical research. It is anticipated that this academic training will supplement extensive training in the content area in which the enrollee is trained, and senior mentoring in the politics and policies of project development and management. A graduate of this program will have the academic training to develop and lead independent research programs and projects. The program consists of a core set of courses common to all students, plus research elective and focus elective

courses that reflect the academic interest of the student. Graduates will be able to do the following upon completion of the program:

- Design, conduct, and evaluate clinical research studies;
- Understand issues of data collection and study management;
- Follow appropriate policies and procedures relating to the utilization of human subjects in clinical research;
- Demonstrate an understanding of the ethics of research on human subjects;
- Prepare competitive applications for extramural research funding;
- Prepare manuscripts for publication in the scientific literature; and
- Critically evaluate published research.

Curriculum

The MSPH in Clinical Research (<http://www.soph.uab.edu/hb/degree-programs>) consists of a minimum of 42 credit hours. Of these, 15 hours are required, including 9 hours of specific biostatistics courses and 6 hours of specific epidemiology courses. Students then select at least 6 credit hours from a list of approved Masters Research electives, complete 12 hours of focus specific electives in **Health Behavior** (<http://www.soph.uab.edu/hb/degree-programs>), and take at least 9 hours of Masters Level Directed Research to fulfill the MSPH requirement for conducting a research project.

Students receiving a MSPH are required to complete a 3 hour Online course entitled "Overview of Public Health" by the end of their second semester. Students with prior public health education (coursework in each of the public health core disciplines) may be waived from this requirement by permission of the Associate Dean.

Requirements	Hours
MSPH Required Core Courses (15 hours):	
BST 611 Intermediate Statistical Analysis I	3
BST 612 Intermediate Statistical Analysis II	3
BST 625 Design/Conduct Clinical Trials	3
EPI 610 Principles of Epidemiologic Research	4
EPI 680 Topics in Clinical Research	2
Health Behavior Requirements (12 hours):	
HB 624 Advanced Social and Behavioral Science Theory	3
HB 636 Developing Interventions to Promote Public Health	3
HB 641 Research Methods in Behavioral Science	3
HB 643 Health Program Evaluation	3
Masters Level Research (9 hours):	
HB 681 MSPH Directed Research I	3
HB 682 MSPH Directed Research II	3
HB 683 MSPH Directed Research III	3
Masters Research Electives (6 hours): 6 hours should be selected by faculty advisor and student to complete total hours required for degree	
BST 613 Intermediate Statistical Analysis III	3
BST 626 Data Management and Reporting with SAS & 626L and Data Management and Reporting with SAS Laboratory	3
ENH 650 Essentials of Environmental and Occupational Toxicology and Diseases	3
EPI 625 Quantitative Methods in Epidemiology	3
EPI 703 Grant Proposal Writing	3
EPI 704 Advanced Epidemiologic Methods	3

HCO 677	Patient-Based Outcomes Measurement	3
Total Hours		42

Doctor of Philosophy in Health Education and Health Promotion

The PhD program in health education/promotion (<http://www.soph.uab.edu/hb/degree-programs>) provides students with instruction and research experience to become scientists and practitioners in health education and health promotion. The program combines the resources of academic units from the University of Alabama at Birmingham (UAB School of Public Health, Department of Health Behavior, UAB School of Education, Department of Human Studies), and the University of Alabama (UA) College of Human Environmental Sciences, Department of Health Science.

Health Behavior doctoral students learn to use theories and methods from the social and behavioral sciences to develop programs that encourage healthy behaviors. They learn state-of-the-art techniques and methods for research and program evaluation. Students study these topics in depth as they apply their knowledge and skills to conducting research and writing proposals and manuscripts. They have opportunities to become involved in faculty research projects on a broad range of health issues such as behavioral interventions, family and adolescent health issues, obesity prevention, prevention and control of addictive behaviors, sexual health risks including HIV/AIDS prevention and treatment, community based health promotion, health communication, program evaluation, and translation of research findings.

Curriculum

The PhD program requires completion of a minimum of 73 hours of graduate credit, satisfactory performance on the qualifying exam, and completion of a doctoral dissertation. All PhD students must meet the graduation requirements of their department and the UAB Graduate School.

All PhD students are required to complete a self-paced online course entitled "Overview of Public Health" by the end of their second semester. Students with prior public health education (coursework in each of the public health core disciplines) or experience (5 years in public health) may be waived from this requirement by permission of the Associate Dean.

Requirements		Hours
Department Requirement (18 hours): ¹		
HB 724	Advanced Social and Behavioral Science Theory	3
HB 741	Advanced Research Methods in the Behavioral Sciences	3
HB 736	Advanced Research Intervention Design	3
HB 737	Advanced Intervention Implementation and Evaluation	3
HB 703	Writing for the Behavioral Sciences	3
GRD 717	Principles of Scientific Integrity	3
Joint Courses (3 hours): ²		
HB 770	Doctoral Studies Seminar	1
HB 770	Doctoral Studies Seminar	1
HB 770	Doctoral Studies Seminar	1
Health Education / Health Promotions Advanced Research & Statistical Methods (13 hours; during first 6 semesters):		
EPI 610	Principles of Epidemiologic Research	4
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3

Qualitative or Mixed Methods Research	3
Health Education / Health Promotions Electives	Minimum 9 hours
Health Education / Health Promotions Evaluation / Research Methods/Stats:	Minimum 6 hours
Health Education / Health Promotions Directed Research	Minimum 12 hours
HB 798/ HE 702	Doctoral-Level Directed Res
Qualifying Exam	Must complete 75% of didactic coursework
Dissertation Proposal	
Health Education / Health Promotions Dissertation Research: at least 2 semesters of candidacy	Minimum 12 hours
HB/HE 799	Doctoral Dissertation Research
Dissertation Defense	
Minimum Credit Hours Earned for Degree:	73

- Sequenced Courses offered every other year taken in this order: HB 724, 741 (fall), 736 (spring) & HB 737 (following fall).
- Joint Courses include Doctoral Seminar, Health Education / Health Promotions Electives, Advanced Research & Stats Methods Courses, Evaluation/Research Methods/Stats Electives, Directed and Dissertation Research hours

Health Care Organization and Policy

Requirement	Fulfilled By:
Degree Offered:	M.P.H., M.S.P.H., Dr.PH.
Interim Chair:	Martha S. Wingate, DrPH, MPH
Phone:	(205) 934-3939
Website:	http://www.soph.uab.edu/hcop
Department Contact:	Brenda Campbell
Department Contact Email:	bcampbel@uab.edu

Health Care Organization and Policy (Dr.P.H., M.P.H, M.S.P.H.)

Overview:

Programs in Health Care Organization and Policy provide training and education at the master's and doctoral level. At the master's level, programs are available for those desiring a career in the analysis of health services policy or in the management of public health services resources. At the doctoral level, our program offers rigorous training in research methods and evidence-based public health practice suitable for careers in public health leadership, or academic settings.

Our programs require mastering major concepts of health economics, public health management and planning, health policy, outcomes research, and health services evaluation. Master of Public Health (M.P.H.) degrees are offered in health policy, health care organization, Maternal and Child Health policy and leadership, outcomes research, as well as coordinated degree options in business, optometry, public administration and juris doctorate. The department's Doctor of Public Health (DrPH) degree has concentrations in Public Health Management or Maternal and Child Health Policy.

The department offers the following Masters Program options:

- MPH in Health Care Organization (also offered Online)
- MPH Fast Track (5th Year Program)
- MPH in Health Policy
- MPH in Maternal and Child Health Policy and Leadership (also offered Online)
- MSPH in Outcomes Research Online
- Coordinated MPH-JD in Public Health and Juris Doctor
- Coordinated MPH-MPA in Public Health and Public Administration
- Coordinated MSPH-PhD in Public Health and Psychology
- Coordinated MPH-MSN in Maternal and Child Health Policy

Doctor of Public Health in Health Care Organization and Policy (DrPH)

The DrPH degree is the highest professional degree in public health. The DrPH Program in HCOP develops leaders and research faculty who have proficiency in data analysis, management, critical thinking, teaching, and translating research into policy and practice. Students will be exposed to complex practical problems facing public health practitioners and policy-makers. This program, housed within the Department of HCOP has three concentrations:

1. Health Care Organization
2. Maternal and Child Health Policy
3. Outcomes Research

Health Care Organization and Policy Degree Competencies - Click Here (http://www.soph.uab.edu/hcop_competencies)

Admissions

Requirement	Fulfilled By:
Master Program Deadline:	www.soph.uab.edu/apply
DrPH Program Deadline:	April 1
GPA:	3.0
Number of Evaluation Forms Required:	Three
Entrance Tests: GRE	www.soph.uab.edu/apply
SOPH Admissions:	www.soph.uab.edu/apply

UAB has many degree programs (both on-campus and online) that can lead to professional licensure or certification (PLC). Licensure requirements vary from state to state and by professional organization. UAB is working to develop an online, publically-accessible database, to assist in providing this state-by-state information. In the meantime, if you are interested in learning about potential professional licensure requirements in your state for a specific degree program, please contact the UAB State Authorization office at stateauth@uab.edu or call Dr. Lisa Reburn (205) 934-3258.

Master in Public Health with a Concentration in Health Care Organization

Including the Fast-Track and Accelerated Bachelors/Masters (ABM) and Online Degree Program

This program is designed for individuals who are planning on management-focused careers in public health. Perhaps you aspire to be the Executive Director of a non-profit charitable organization or a senior-level manager in a health department or federal agency. Perhaps you are a physician, nurse, pharmacist, or other clinician who wants to move from direct patient care into a supervisory position with a broad focus on the health of a community. Students in this program are introduced to the public health system and the fundamental skills necessary for practice in the public health sector and managing health care organizations.

Required coursework includes basic management disciplines and selected content in economics, finance, marketing, law, and health insurance.

Curriculum

Students in this track must complete 44 credit hours. This includes the MPH Core, SOPH requirements, Departmental track requirements, electives and internship. Full-time students generally complete this degree in 2 years or less (4-5 semesters). Part-time students may take up to 5 years.

Requirements	Hours
Core Requirements (20 hours):	
BST 601 Biostatistics	4
ENH 600 Fundamentals of Environmental Health Science	3
EPI 600 Introduction to Epidemiology	3
HB 600 Social and Behavioral Sciences in Public Health	3
HCO 600 Management and Policy in Public Health Systems and Services	4
PUH 695 The Public Health Integrative Experience	3
Department Track Requirements (18 hours):	
HCO 604 Health Economics and Public Health Policy	3
HCO 609 Needs Assessment and Program Planning, Implementation, and Evaluation	3
HCO 615 Finance for Health Professionals	3
HCO 612 Strategic Management in Health Programs or HCO 618 Management Concepts in Public Health Programs	3
HCO 620 Health Insurance & Managed Care	3
HCO 670 Social and Ethical Issues in Public Health	3
Elective (3 hours):	3
Internship (3 hours):	
HCO 697 Internship	3
Total Credit Hours	44

Master of Public Health with a Concentration in Health Policy

Including the Accelerated Bachelors/Masters (ABM) Program

The MPH in Health Policy (<http://www.soph.uab.edu/hcop/degree-programs>) is designed to train policy analysts at the master's level to work in government agencies; voluntary health organizations; local, state, and federal legislative bodies; managed care organizations; private industry; and consulting firms. The quantitative policy analysis content

emphasizes skills appropriate to an active mid-level research career. The program is designed for the individual who wants to contribute to the public discussion of health issues and policy making. The focus of training here is to give you skills in statistical and economic analysis so that you can help senior investigators write reports that recommend changes in our healthcare systems or that evaluate how well the systems work.

Curriculum

Students in this track must complete 44 credit hours. This includes the MPH Core, SOPH requirements, Departmental track requirements, electives and internship. Full-time students generally complete this degree in 2 years or less (4-5 semesters). Part-time students may take up to 5 years.

Requirements		Hours
Core Requirements		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Introduction to Epidemiology	3
HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 695	The Public Health Integrative Experience	3
Department Track Requirements		
HCO 604	Health Economics and Public Health Policy	3
HCO 670	Social and Ethical Issues in Public Health	3
HCO 687	Empirical Methods for Health Research	3
HCO 691	Policy Analysis: Modeling & Simulation	3
BST 613	Intermediate Statistical Analysis III	3
Electives		6
Internship		
HCO 697	Internship	3
Total Hours		44

Master of Public Health with a Concentration in Maternal and Child Health Policy and Leadership

Including the Accelerated Bachelors/Masters (ABM), and Online Degree Program

The MPH programs in the Maternal and Child Health (<http://www.soph.uab.edu/hcop/degree-programs>) concentration are designed to educate individuals who will plan, administer, and evaluate programs in maternal and child health. The programs provide information about the special problems faced by women and children, including children with special health care needs, and their families. The programs develop and integrate skills from maternal and child health, health policy and leadership and demonstrate their application in problem solving and systems development.

Curriculum

Students in this track must complete 44 credit hours. This includes the MPH Core, SOPH requirements, Departmental track requirements, electives and internship. Full-time students generally complete this degree in 2 years or less (4-5 semesters). Part-time students may take up to 5 years.

Requirements		Hours
MPH Core Requirements (20 hours)		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Introduction to Epidemiology	3
HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 695	The Public Health Integrative Experience	3
Department Requirements (9 hours):		
HCO 604	Health Economics and Public Health Policy	3
HCO 609	Needs Assessment and Program Planning, Implementation, and Evaluation	3
HCO 618	Management Concepts in Public Health Programs	3
Concentration Requirements (6 hours):		
HCO 605	Foundations of Maternal and Child Health: Programs and Policies for Women, Children, and Families	3
HCO 625	Advanced Leadership and Practice in MCH Part I - Introduction to Leadership	1
HCO 626	Adv Leadership and Practice in MCH Module II - Collaborative Leadership and Advocacy	1
HCO 627	ADV Leadership and Practice in MCH Module III - Into the Streets: Lead/Field Experience	1
Internship (3 hours):		
HCO 697	Internship	3
Electives (6 hours):		
Select 6 hours from 600-level or higher (HCO) courses.		6
Total Credit Hours		44

(JD/MPH) Coordinated Juris Doctor / Master of Public Health Program

The department offers a coordinated Master of Public Health (<http://www.soph.uab.edu/coordinated-degrees>) and Juris Doctor degree program in cooperation with the Cumberland School of Law at Samford University (<http://cumberland.samford.edu>), also located in Birmingham. The purpose of the program is to offer future attorneys exposure to the broad areas of public health.

Curriculum

Students in this track must complete 48 credit hours. This includes the MPH Core, SOPH requirements, track requirements, electives and internship. A total of 90 credit hours of coursework are required for the coordinated JD/MPH. The coordinated JD/MPH degree can be completed in 2 academic years (including 2 summers) of full-time study. Normally, 42 credit hours are required for the MPH degree, however, because of the coordinated nature of the degree, 13 credit hours from the JD curriculum are credited to the MPH and 12 hours from the MPH curriculum are credited to the JD. Students may complete the MPH totally online, in class, or through a mix of online and in class experiences. Out-of-state online students pay the same tuition rate as Alabama residents.

Requirements		Hours
Core Requirements:		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Introduction to Epidemiology	3
HB 600	Social and Behavioral Sciences in Public Health	3

HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 695	The Public Health Integrative Experience	3
Department Track Requirements (9 hours):		
HCO 604	Health Economics and Public Health Policy	3
HCO 618	Management Concepts in Public Health Programs	3
HCO 620	Health Insurance & Managed Care	3
Internship:		
HCO 697	Internship	3
Elective (3 hours):		
HCO 607	Public Health Law (or approved elective by advisor)	3
Transfer of credit for the following Samford Law School courses:		
Law 502: Torts		4
Law 506: Contracts I		3
Law 507: Contracts II		2
Law 526: Business Organizations		4
Total Credit Hours		48

Coordinated Master of Public Administration/Master of Public Health (MPA/MPH) Program

The MPH/MPA degree program (<http://www.soph.uab.edu/coordinated-degrees>) provides students with the knowledge base of public health and the skills required to work effectively in a responsible, administrative position in the public sector. Through this coordinated degree program, students in the MPH program can satisfy some of their requirements through courses in the MPA program and vice versa.

Admission: Students entering this program must meet the minimum requirements for admission into the School of Public Health. The student must apply to and be admitted to both programs. The graduate School should be contacted for MPA application materials and the School of Public Health should be contacted for MPH application materials.

Curriculum

The MPA/MPH program requires the satisfactory completion of 65 credit hours. Students must complete both MPA and MPH core requirements. Students may choose either of two program options - health policy analysis or management. It is anticipated that a full-time student can complete the dual curriculum in 2 years. Part-time students may take up to 5 years to complete their studies. This is a coordinated dual degree track and, as such, graduation from one program is contingent upon completion of all requirements for graduation from the other program. Students may complete the MPH degree program totally online, in class, or through a mix of online and in class experiences.

Requirements		Hours
MPH Core Requirements (20 hours):		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Introduction to Epidemiology	3
HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 695	The Public Health Integrative Experience	3
MPA Core Requirements (30 hours):		
MPA 600	Administrative Ethics	3

MPA 601	The Public Policymaking Process	3
MPA 602	Scope of Public Administration	3
MPA 603	Public & Nonprofit Budgeting	3
MPA 604	Human Resources Management	3
MPA 605	Information Management for Government	3
MPA 606	Foundations of PA Research	3
MBA 673	Planning and Pitching a New Business Concept	3
MPA 674	GIS for Managers	3
MPA 697	Graduate Learning Portfolio	3
MPH Concentration Elective (12 hours): <small>Select 4 courses</small>		12
HCO 604	Health Economics and Public Health Policy	
HCO 607	Public Health Law	
HCO 609	Needs Assessment and Program Planning, Implementation, and Evaluation	
HCO 615	Finance for Health Professionals	
HCO 612	Strategic Management in Health Programs or HCO 618 Management Concepts in Public Health Programs	
HCO 620	Health Insurance & Managed Care	
HCO 670	Social and Ethical Issues in Public Health	
Internship (3 hours):		
HCO 697	Internship	3
Total Hours		65

Coordinated Master of Science in Nursing / Master of Public Concentration in Health in Maternal & Child Health Policy & Leadership

The coordinated MPH/MSN degree (<http://www.soph.uab.edu/hcop/> degree-programs) is designed to address the dynamic health care needs of women and children. This program prepares nurse practitioners to participate in the development, implementation, and evaluation of innovative maternal and child health (MCH) programs and policies. This dual degree builds on the synergy generated through two complementary curriculum tracks. In this educational experience, advanced clinical skill is combined with expertise in program planning and evaluation.

Admissions: Students are admitted separately to the MPH and MSN degree programs and must meet admission requirements in both the School of Public Health and the School of Nursing at UAB.

Curriculum

Students in this track must complete 44 credit hours. This includes the MPH Core, SOPH requirements, track requirements, electives and internship. The coordinated MPH/MSN degree can be completed in 2-3 years of full-time study. Normally, a minimum of 44 credit hours are required for the MPH; however, because of the coordinated nature of the degree, 6 credit hours from the MSN curriculum are credited to the MPH degree. Students may complete the MPH totally online, in class, or through a mix of online and in class experiences.

Requirements		Hours
MPH Core Requirements (20 hours)		
BST 601	Biostatistics	4
ENH 600	Fundamentals of Environmental Health Science	3
EPI 600	Introduction to Epidemiology	3

HB 600	Social and Behavioral Sciences in Public Health	3
HCO 600	Management and Policy in Public Health Systems and Services	4
PUH 695	The Public Health Integrative Experience	3
MPH Focus Courses (15 hours):		
HCO 604	Health Economics and Public Health Policy	3
HCO 605	Foundations of Maternal and Child Health: Programs and Policies for Women, Children, and Families	3
HCO 609	Needs Assessment and Program Planning, Implementation, and Evaluation	3
HCO 618	Management Concepts in Public Health Programs	3
HCO 625	Advanced Leadership and Practice in MCH Part I - Introduction to Leadership	1
HCO 626	Adv Leadership and Practice in MCH Module II - Collaborative Leadership and Advocacy	1
HCO 627	ADV Leadership and Practice in MCH Module III - Into the Streets: Lead/Field Experience	1
Internship (3 hours):		
HCO 697	Internship	3
Electives shared with the School of Nursing (6 hours):		
NUR 606	Translating Evidence into Practice	3
NUR 610	Health Care Systems for Advanced Nursing Practice	3
Total Hours		44

Master of Science in Public Health with a Concentration in Outcomes Research Online

The health care field is placing increasing emphasis on the identification and measurement of clinical decision-making and cost/utility analysis. Continuing pressure for the development and measurement of both efficient and effective protocols and health care policies is the driving force underlying this emphasis. Increasingly, employers are seeking qualified analysts to study treatment effectiveness. This program is designed for individuals who want to evaluate the effectiveness and cost-effectiveness of specific health care treatments. You may be a physician who plans on a career in clinical research and wants to determine not only that a treatment works but that it is better than some alternatives after taking into account both cost and a patient's own treatment preferences. You may also be a non-clinician who likes solving complicated modeling problems that may involve simulation or clinical process modeling. Graduates of this track will work in clinical settings, government agencies, managed care organizations, insurance companies, health associations, pharmaceutical firms, and consulting firms analyzing cost effectiveness, utilization, and treatment effectiveness.

Curriculum

Students in this track must complete 43 credit hours. This includes the MSPH Core, Outcomes Research track requirements, electives and project research. Full-time students generally complete this degree in 2 years or less (4-5 semesters). Part-time students may take up to 5 years.

All students are required to complete a self-paced online course entitled "Overview of Public Health" by the end of their second semester. Students with prior public health education (coursework in each of the public health core disciplines) or experience (5 years in public health)

may be waived from this requirement by permission of the Associate Dean.

Requirements		Hours
MSPH Core Requirements		
BST 611Q	Intermediate Statistical Analysis I Online	3
BST 612Q	Intermediate Statistical Analysis II Online	3
EPI 610Q	Principles of Epidemiologic Research Online	4
Outcomes Research Track (18 hours):		
HCO 604Q	Health Economics and Public Health Policy Online	3
HCO 621Q	Clinical Decision Making and Cost-Effectiveness Analysis Online	3
HCO 623Q	Pharmacoeconomics and Regulation Online	3
HCO 670Q	Social & Ethical Issues in Public Health Online	3
HCO 677Q	Patient-Based/Centered Outcomes Research Online	3
HCO 691Q	Policy Analysis Modeling and Simulation Online	3
Electives (6 hours):		6
Masters-Level Research (9 credit):		9
HCO 698	Master's Level Directed Research Health Care Organization and Policy	1-9
Total Hours		43

Coordinated Master of Science in Public Health / Doctor of Philosophy (MSPH/ PhD) Program

The department offers coordinated Master of Science in Public Health (<http://www.soph.uab.edu/hcop/degree-programs>) and PhD degrees in cooperation with the Department of Psychology at the University of Alabama at Birmingham or at the University of Alabama (<https://psychology.ua.edu>) (Tuscaloosa).

Curriculum

The MSPH degree requires a minimum of 43 hours. Students in this coordinated program will be waived from the biostatistics requirement upon documentation of successful completion of Advanced Statistics I and II in the PhD program. Students may emphasize health policy issues or outcomes research issues through 6 hours of approved electives. In addition, all students must complete a 9 credit hour research project. This is a coordinated dual degree track and, as such, graduation from one program is contingent on completion of all requirements for graduation from the other program.

Students receiving a MSPH are required to complete a 37 hour online course entitled "Overview of Public Health" by the end of their second semester. Students with prior public health education (coursework in each of the public health core disciplines) may be waived from this requirement by permission of the Associate Dean.

Requirements		Hours
MSPH Core Requirements (10 hours):		
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3
EPI 610	Principles of Epidemiologic Research	4
PhD Track (18 hours):		
HCO 604	Health Economics and Public Health Policy	3
HCO 621	Clinical Decision Making and Cost-Effectiveness Analysis	3
HCO 623Q	Pharmacoeconomics and Regulation Online	3
HCO 670	Social and Ethical Issues in Public Health	3

HCO 677	Patient-Based Outcomes Measurement	3
HCO 691	Policy Analysis: Modeling & Simulation	3
Electives (6 hours):		
Masters-Level Research (9 hours):		
HCO 698	Master's Level Directed Research Health Care Organization and Policy	1-9
Total Hours		43

Doctor of Public Health with a Concentration in Health Care Organization and Policy

The DrPH degree is the highest professional degree in public health. The DrPH program in the department of Health Care Organization and Policy (<http://www.soph.uab.edu/hcop/degree-programs>) develops leaders and research faculty who have proficiency in data analysis, management, critical thinking, teaching, and translating research into policy and practice. Students will be exposed to complex practical problems facing public health practitioners and policy-makers. This program, housed within the Department of HCOP has three concentrations (1) **Health Care Organization and Policy**, (2) Maternal and Child Health Policy, and (3) Outcomes Research.

Curriculum

Students without an MPH (or other master's degree) must complete the master of public health prerequisite classes (HCO 600, EPI 600, ENH 600, HB 600, BST 601) prior to matriculation in the DrPH program. Students with non-MPH master's degrees (i.e., MS, MSPH, MHA, etc.), may take the concentration core courses in conjunction with any prerequisites they need. Those with a non-MPH master's degree will waive PUH 695.

A minimum of 42 credit hours, exclusive of HCO courses 793 and 796-799, are required to complete the degree. Students will complete at least 12 credit hours of analytical or methodological courses; 6 hours of DrPH core course, 12 hours of HCOP concentration courses, 12 hours of any 700-level electives (as approved by advisor). Students must also complete the doctoral seminars (HCO 796) comprehensive examination (HCO 797), practicum (HCO 793), dissertation proposal/Proposal development (HCO 798), and dissertation research (HCO 799).

Students in the **Health Care Organization and Policy concentration** will be required to meet concentration specific prerequisites (or their equivalent as determined by the program director and advisor). **These credits do not count towards the total degree hours:**

- HCO 604: Health Economics and Public Health Policy
- HCO 607: Public Health Law
- HCO 609: Needs Assessment and Program Planning
- HCO 670: Social & Ethical Issues in Public Health
- HCO 720: Health Insurance & Managed Care

Requirements	Hours	
HCO DrPH Core Requirements (6 hours):		
HCO 716	Advanced Leadership and Practice Seminar	3
HCO 717	Seminar in Public Health Policy	3
HCOP Concentration Core (12 hours):		
HCO 706	Strategic Mgmt Theory/Research	3
HCO 715	Finance for Health Professionals	3

HCO 718	Mgt Concepts in Pub Hlth Progs	3
HCO 735	Writing Grants and Programming Awards in Public Health	3

Methods Core (12 hours):

HCO 728	Qualitative and Mixed Methods Research in Public Health	3
HCO 781	Research Methods and Study Design	3
HCO 787	Empirical Methods for Health Research	3
Additional 700 Level Methods Elective		3

Electives (Select 12 hours of approved 700-level courses):

12

Doctoral Seminar (2 hours):

HCO 796	Doctoral Seminar ^{minimum 2 hours}	1
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DrPH Practicum and Research (18 hours): ²

HCO 793	DrPH Practicum	6
HCO 797	Directed Readings	3
HCO 798	Doctoral Level Directed Research Health Care Organization and Policy	3
HCO 799	Dissertation Research HCOP	6

Minimum Course Credit Hours: ¹

42

¹ All DrPH students must complete a minimum requirement of 42 hours. Successful completion of the DrPH program also includes HCO 793, HCO 796, HCO 797, HCO 798 and HCO 799 with varied credit hours as approved by advisor or program director.

² DrPH Practicum, Directed Readings, Dissertation Protocol Development & Research, minimum 18 hours.

Doctor of Public Health with a Concentration in Maternal and Child Health Policy

The DrPH degree is the highest professional degree in public health. The DrPH program in the department of Health Care Organization and Policy (<http://www.soph.uab.edu/hcop/degree-programs>) develops leaders and research faculty who have proficiency in data analysis, management, critical thinking, teaching, and translating research into policy and practice. Students will be exposed to complex practical problems facing public health practitioners and policy-makers. This program, housed within the Department of HCOP has three concentrations (1) Health Care Organization and Policy, (2) **Maternal and Child Health Policy**, and (3) Outcomes Research.

Curriculum

Students without an MPH (or other master's degree) must complete the master of public health prerequisite classes (HCO 600, EPI 600, ENH 600, HB 600, BST 601) prior to matriculation in the DrPH program. Students with non-MPH master's degrees (i.e., MS, MSPH, MHA, etc.), may take the concentration core courses in conjunction with any prerequisites they need. Those with a non-MPH master's degree will waive PUH 695.

A minimum of 42 credit hours, exclusive of HCO courses 793 and 796-799, are required to complete the degree. Students will complete at least 12 credit hours of analytical or methodological courses; 6 hours of DrPH core course, 12 hours of HCOP concentration courses, 12 hours of any 700-level electives (as approved by advisor). Students must also complete the doctoral seminars (HCO 796) comprehensive

examination (HCO 797), practicum (HCO 793), dissertation proposal/ Proposal development (HCO 798), and dissertation research (HCO 799).

Students in the **Maternal and Child Health Policy concentration** will be required to meet concentration-specific prerequisites (or their equivalent as determined by the program director and advisor). **These credits do not count towards the total degree hours:**

- HCO 604: Health Economics and Public Health Policy
- HCO 605: Foundations of MCH: Programs and Policies for Women, Children and Families
- HCO 609: Needs Assessment and Program Planning
- HCO 625: Adv Leadership in MCH Part I: Introduction to Leadership
- HCO 626: Adv Leadership in MCH Part II: Collab Ldrshp & Advocacy
- HCO 670: Social & Ethical Issues in Public Health

Requirements		Hours
HCO DrPH Core (6 hours):		
HCO 716	Advanced Leadership and Practice Seminar	3
HCO 717	Seminar in Public Health Policy	3
Concentration Core (12 hours):		
HCO 714	Life Course Seminar	3
HCO 718	Mgt Concepts in Pub Hlth Progs	3
HCO 720	Health Insurance and Managed Care	3
HCO 735	Writing Grants and Programming Awards in Public Health	3
Methods Core (12 hours):		
HCO 728	Qualitative and Mixed Methods Research in Public Health	3
HCO 781	Research Methods ans Study Design	3
HCO 787	Empirical Methods for Health Research	3
Additional 700 Level Methods Elective		3
Electives (12 hours of additional 700 level electives):		12
Doctoral Seminar (2 hours):		
HCO 796	Doctoral Seminar <small>minimum 2 hours</small>	1
DrPH Practicum & Research (18 hours): ³		
HCO 793	DrPH Practicum	6
HCO 797	Directed Readings	3
HCO 798	Doctoral Level Directed Research Health Care Organization and Policy	3
HCO 799	Dissertation Research HCOP	6
Minimum Course Credit Hours: ²		42

¹ Must be 700 level & may be selected from anywhere within the university with advisor approval.

² All DrPH students must complete a minimum requirement of 42 hours. Successful completion of the DrPH program also includes HCO 793, HCO 796, HCO 797, HCO 798 and HCO 799 with varied credit hours as approved by advisor or program director.

³ DrPH Practicum, Directed Readings, Dissertation Protocol Development & Research, minimum 18 hours.

Doctor of Public Health with a Concentration in Outcomes Research

The DrPH degree is the highest professional degree in public health. The DrPH program in the department of Health Care Organization and Policy (<http://www.soph.uab.edu/hcop/degree-programs>) develops leaders and research faculty who have proficiency in data analysis, management,

critical thinking, teaching, and translating research into policy and practice. Students will be exposed to complex practical problems facing public health practitioners and policy-makers. This program, housed within the Department of HCOP has three concentrations (1) Health Care Organization and Policy, (2) Maternal and Child Health Policy, and (3) **Outcomes Research.**

Curriculum

Students without an MPH (or other master's degree) must complete the master of public health prerequisite classes (HCO 600, EPI 600, ENH 600, HB 600, BST 601) prior to matriculation in the DrPH program. Students with non-MPH master's degrees (i.e, MS, MSPH, MHA, etc.), may take the concentration core courses in conjunction with any prerequisites they need. Those with a non-MPH master's degree will waive PUH 695.

A minimum of 42 credit hours, exclusive of HCO courses 793 and 796-799, are required to complete the degree. Students will complete at least 12 credit hours of analytical or methodological courses; 6 hours of DrPH core course, 12 hours of HCOP concentration courses, 12 hours of any 700-level electives (as approved by advisor). Students must also complete the doctoral seminars (HCO 796) comprehensive examination (HCO 797), practicum (HCO 793), dissertation proposal/ Proposal development (HCO 798), and dissertation research (HCO 799).

Students in the **Outcomes Research concentration** will be required to meet concentration-specific prerequisites (or their equivalent as determined by the program director and advisor). These credits do not count towards the total degree hours:

- HCO 604: Health Economics and Public Health Policy
- HCO 670: Social & Ethical Issues in Public Health
- HCO 720: Health Insurance & Managed Care

Requirements		Hours
HCO DrPH Core (6 hours):		
HCO 716	Advanced Leadership and Practice Seminar	3
HCO 717	Seminar in Public Health Policy	3
Concentration Core (12 hours):		
HCO 635	Writing Grants and Programming Awards in Public Health	3
HCO 721	Clinical Decision Making and Cost Effectiveness Analysis	3
HCO 777	Patient-Based Outcomes Measures	3
HCO 791	Policy Analysis: Modeling & Simulation	3
Methods Core (12 hours):		
HCO 728	Qualitative and Mixed Methods Research in Public Health	3
HCO 781	Research Methods ans Study Design	3
HCO 787	Empirical Methods for Health Research	3
Additional 700 Level Methods Elective		3
Select 12 hours of any 700-level electives: ¹		
Doctoral Seminar (2 hours):		
HCO 796	Doctoral Seminar <small>minimum of 2 hours</small>	1
DrPH Practicum & Research (minimum 18 hours): ³		
HCO 793	DrPH Practicum	6
HCO 797	Directed Readings	3
HCO 798	Doctoral Level Directed Research Health Care Organization and Policy	3

HCO 799	Dissertation Research HCOP	6
Minimum Course Credit Hours: ²		42

- ¹ Must be 700 level & may be selected from anywhere within the university with advisor approval.
- ² All DrPH students must complete a minimum requirement of 42 hours. Successful completion of the DrPH program also includes HCO 793, HCO 796, HCO 797, HCO 798 and HCO 799 with varied credit hours as approved by advisor or program director.
- ³ DrPH Practicum, Directed Readings, Dissertation Protocol Development & Research, minimum 18 hours.

The Graduate School

Today's researchers, scientists, and new professionals face an increasingly competitive world. This is true not only in their fields of study, but in the "survival skills," or areas of professional presenting, university teaching, writing and publishing, interdisciplinary collaboration, and the winning of grants and fellowships. Indeed, many leading institutions view these communication abilities as prerequisites for career advancement. This is why the **UAB Graduate School's Professional Development Program** offers ongoing support for graduate students, post-doctoral fellows, faculty, and staff who want to take advantage of the school's resources to enhance their skills. The **Professional Development Program** offers graduate credit courses, seminars, day-long workshops, and free mini-workshops in a variety of areas, such as

- Mentoring & Leadership - *Certificate available*
- Teaching at the College Level - *Certificates available*
- Research Communication - *Certificate available*
- Critical Thinking
- Presentation and Discussion Skills
- Diversity and Inclusion
- Responsible Conduct of Research
- Job Search

Check out the Current Class Schedule for a list of available offerings, or visit the Professional Development website (<http://www.uab.edu/graduate/graduate-school-quicklinks/professional-development-program/>) for detailed information on our free mini-workshops.

Graduate School Professional Development Program

[graduate/profdev](http://www.uab.edu/graduate/profdev)

Program director:	Dr. Kellie Carter
Phone:	(205) 975-8724
Email:	profdev@uab.edu
Website:	https://www.uab.edu/graduate/professional-development-certificate

Program Information

Professional Development Program courses, seminars and workshops are offered to improve the academic and professional communication skills of graduate students, postdoctoral fellows, faculty, and staff with the goals of supporting scholarship, research integrity, productivity, effective

communication, mentoring and leadership, college teaching, and the development and refinement of professional skills.

Those interested in pursuing the following graduate-level certificates through the Professional Development Program will need to follow the instructions located on the Professional Development website, <https://www.uab.edu/graduate/professional-development-certificate>

Graduate Certificate in Mentoring & Leadership (15 credit hours)

The **UAB Graduate Certificate in Mentoring & Leadership** is Category A certificate designed to provide instruction in mentoring and leadership theory and practice, while the student develops mentoring and leadership philosophies and a mentoring and leadership portfolio. Upon completion, the **Mentoring & Leadership Certificate** will appear on official UAB transcripts. For more information regarding the course requirements, visit <https://www.uab.edu/graduate/mentoring-and-leadership>.

Graduate Certificates in College Teaching at the CIRTLL Associate (5 hours) CIRTLL Practitioner Level (15 hours); and CIRTLL Scholar Level (21 hours)

UAB Graduate School offers certificates in College Teaching through CIRTLL Center for the Integration of Research, Teaching, and Learning. CIRTLL is a nation-wide consortium of universities training future faculty in the sciences. Graduate students and Postdocs at UAB can take advantage of CIRTLL courses both at UAB and through the national network (<https://www.cirtll.net/>) to earn 3 levels of Certificates in College Teaching, which build upon each other

- **CIRTLL Associate** This Category B foundation certificate introduces participants to effective, evidence-based teaching methods, how to write a Teaching Philosophy statement and build a professional Teaching Portfolio for the job search.
- **CIRTLL Practitioner** This Category A certificate builds upon the foundation of the CIRTLL Associate and comprises a total of 15 credit hours of graduate coursework including: Training in active, student-centered pedagogies of engagement; a Practicum experience in which participants are paired with expert teaching faculty; and an introduction to Teaching-As-Research. Participants choose from a wide variety of electives to complete the 15 credits. Upon completion, **CIRTLL Practitioner Certificate** will appear on official UAB transcripts.
- **CIRTLL Scholar** This Category A certificate builds upon the practical experience of the CIRTLL Practitioner and comprises a total of 21 credit hours of graduate coursework. Under the guidance of a faculty mentor, participants develop and implement a Teaching-As-Research project, gather data, and present the results of their research. CIRTLL Scholars have the opportunity to produce posters and develop manuscripts for publication. Upon completion, **CIRTLL Scholar Certificate** will appear on official UAB transcripts.

Graduate Certificate in Research Communication (12 hours)

The **UAB Graduate Certificate in Research Communication** is a collaborative effort with the College of Arts & Sciences and the Collat School of Business. This Category B certificate will help graduate students, post-doctoral fellows, faculty, and employees in science fields learn how to effectively communicate their research to other scientists and non-scientists alike. The curriculum is designed to diversify scientists' skill sets, which makes them better job candidates once they begin the

search. For more information regarding course requirements, visit <http://www.uab.edu/graduate/news-and-events/671-researchcommintro>

Admission to the Certificate Programs (<https://www.uab.edu/graduate/professional-development-certificate>)

Registration (<https://www.uab.edu/graduate/registration>)

Graduate Certificate in Mentoring and Leadership

Requirements	Hours
GRD 719 Introduction to Mentoring & Leadership	3
GRD 735 Leadership 101	1
GRD 713 Mentoring 101	1
Choose ten (10) credit hours from the following electives:	10
GRD 701 Presentation and Discussion Skills	
GRD 705 Teaching at the College Level and Beyond	
GRD 706 Grants and Fellowships 101	
GRD 707 Presenting Effectively	
GRD 708 Writing Successfully	
GRD 715 Preparing TAs to Be Effective Teachers	
GRD 727 Writing & Reviewing Research	
GRD 728 Professional Writing & Publishing	
GRD 730 Developing and Managing Your Professional Image	
GRD 733 Managing & Leading Teams	
GRD 734 Ethical Leadership Development	
GRD 744 Leadership Survival Skills	
GRD 745 Communication and Diversity Leadership	
GRD 746 Critical Decisions in Mentoring & Leadership	
GRD 747 Navigating the Job Market	
GRD 748 Faculty Mentoring in Higher Education	
GRD 749 Improvisational Techniques to Improve Leadership, Teaching, and Research Communication	
Total Hours	15

Graduate Certificate in College Teaching - Practitioner

Requirements	Hours
GRD 705 Teaching at the College Level and Beyond	3
GRD 716 Developing a Teaching Portfolio	2
GRD 750 CIRTLL Seminar in Teaching and Learning	1
GRD 751 CIRTLL Seminar in Teaching and Learning II	1
GRD 755 CIRTLL Teaching Practicum	3
Elective Courses:	5
GRD 701 Presentation and Discussion Skills	
GRD 707 Presenting Effectively	
GRD 708 Writing Successfully	
GRD 713 Mentoring 101	
GRD 719 Introduction to Mentoring & Leadership	
GRD 727 Writing & Reviewing Research	
GRD 728 Professional Writing & Publishing	
GRD 729 Writing Your Journal Article in 12 Weeks	
GRD 730 Developing and Managing Your Professional Image	

GRD 733	Managing & Leading Teams	
GRD 745	Communication and Diversity Leadership	
GRD 747	Navigating the Job Market	
GRD 749	Improvisational Techniques to Improve Leadership, Teaching, and Research Communication	
GRD 754	CIRTLL Effective STEM Teaching Approaches	
GRD 766	Introduction to Online Teaching	
Total Hours		15

Graduate Certificate in College Teaching - Scholar

Requirements	Hours
GRD 705 Teaching at the College Level and Beyond	3
GRD 716 Developing a Teaching Portfolio	2
GRD 750 CIRTLL Seminar in Teaching and Learning	1
GRD 751 CIRTLL Seminar in Teaching and Learning II	1
GRD 755 CIRTLL Teaching Practicum	3
GRD 759 CIRTLL Teaching-as-Research in STEM Courses	3
GRD 760 CIRTLL Teaching-as-Research Project	3
Elective Courses:	5
GRD 701 Presentation and Discussion Skills	
GRD 707 Presenting Effectively	
GRD 708 Writing Successfully	
GRD 713 Mentoring 101	
GRD 719 Introduction to Mentoring & Leadership	
GRD 727 Writing & Reviewing Research	
GRD 728 Professional Writing & Publishing	
GRD 729 Writing Your Journal Article in 12 Weeks	
GRD 730 Developing and Managing Your Professional Image	
GRD 733 Managing & Leading Teams	
GRD 745 Communication and Diversity Leadership	
GRD 747 Navigating the Job Market	
GRD 749 Improvisational Techniques to Improve Leadership, Teaching, and Research Communication	
GRD 752 CIRTLL Seminar on STEM Teaching	
GRD 753 CIRTLL Seminar on STEM Academic Teaching Careers	
GRD 754 CIRTLL Effective STEM Teaching Approaches	
GRD 756 CIRTLL The College Classroom	
GRD 757 CIRTLL Effective Use of Technology in Teaching and Learning	
GRD 758 CIRTLL Diversity in the College Classroom	
GRD 761 CIRTLL Special Topics	
GRD 762 CIRTLL Individualized Seminar	
GRD 763 CIRTLL Individualized Teaching and Learning Project	
GRD 765 CIRTLL Individualized Teaching Experience II	
GRD 766 Introduction to Online Teaching	
Total Hours	21

Program Index

Accounting (M.Ac.) (p. 39)	Graduate Certificate in Social Media (p. 37)
Administration Health Services (D.Sc., Ph.D.) (p. 153)	Graduate Certificate in Technology Commercialization and Entrepreneurship (p. 37)

Anatomical Science (M.S.) (http://next.catalog.uab.edu/graduate/biomedicalsciencesinterdisciplinarythemes/anatomicalscience)	Graduate School Professional Development Program (p. 231)	Business Administration (M.B.A.) (p. 42)	Master of Engineering: Design and Commercialization (M.Eng.) (http://catalog.uab.edu/graduate/schoolofengineering/professionaldegreeprograms/designandcommercialization)
Anthropology (M.A.) (p. 46)	Health Administration (M.S.H.A.) (p. 156)	Chemistry (M.S., Ph.D.) (p. 52)	Master of Engineering: Information Engineering Management (M.Eng.) (p. 124)
Art History (M.A.) (p. 49)	Health Behavior (M.P.H., M.S.P.H., Ph.D.) (p. 222)	Civil Engineering (M.S.C.E., Ph.D.) (p. 127)	Materials Engineering (M.S.Mt.E., Ph.D.) (p. 134)
Arts Education (M.A.Ed.) (p. 94)	Health Care Organization and Policy (M.P.H., M.S.P.H., Dr.PH.) (p. 224)	Clinical Laboratory Sciences (M.S.) (p. 144)	Mathematics (M.S.) (p. 62)
Biology (M.S., Ph.D.) (p. 51)	Health Education and Health Promotion (Ph.D.) (p.)	Clinical Medical Social Work (M.S.W.) (http://next.catalog.uab.edu/graduate/collegeofartsandsciences/socialwork)	Mathematics, Applied (Ph.D.) (p. 62)
Biomedical and Health Sciences (M.S.) (p. 141)	Health Focused Patient/Client Management for Physical and Occupational Therapists (p. 139)	Clinical Pathology Assistant (M.S.) (http://next.catalog.uab.edu/graduate/schoolofhealthprofessions/clinicalanddiagnosticssciences/clinicalpathologyassistant)	Mechanical Engineering (M.S.M.E.) (p. 136)
Biomedical Engineering (M.S.B.M.E., Ph.D.) (p. 126)	Health Informatics (M.S.H.I.) (p. 158)	Communication Management (M.A.) (p. 54)	Medical Scientist Training Program (M.D., Ph.D.) (p. 178)
Biomedical Sciences: Biochemistry, Structural and Stem Cell Biology Theme (p. 79)	Healthcare Quality and Safety (M.S.) (p. 161)	Community Health and Human Services (M.A.Ed.) (p.)	Medical Sociology (Ph.D.) (p. 75)
Biomedical Sciences: Cancer Biology Theme (p. 80)	Healthcare Simulation (M.S.) (http://next.catalog.uab.edu/graduate/schoolofhealthprofessions/healthservicesadministration/healthcaresimulation)	Computer Engineering (Ph.D.) (p. 133)	Multidisciplinary Biomedical Sciences (M.S.) (http://next.catalog.uab.edu/graduate/thegraduateschool/basicmedicalscience)
Biomedical Sciences: Cell, Molecular, and Developmental Biology Theme (p. 81)	High School and Middle School Education (M.A.Ed.) (p. 101)	Computer Forensics and Security Management (M.S.) (p. 45)	Nuclear Medicine Technology (M.S.) (p. 148)
Biomedical Sciences: Genetics, Genomics, and Bioinformatics Theme (p. 82)	History (M.A.) (p. 61)	Computer Science (M.S., Ph.D.) (p. 55)	Nurse Anesthesia (M.S.N.) (p. 191)
Biomedical Sciences: Immunology Theme (p. 82)	Instructional Design and Development (M.S.)	Counselor Education (M.A.) (p.)	Nursing (AMNP) (p. 187)
Biomedical Sciences: Microbiology Theme (p. 83)	Interdisciplinary Engineering (Ph.D.) (http://catalog.uab.edu/graduate/schoolofengineering/interdisciplinaryprogram/interdisciplinaryengineering)	Criminal Justice (M.S.C.J.) (p. 57)	Nursing (D.N.P.) (p. 193)
Biomedical Sciences: Neuroscience Theme (p. 84)	Interdisciplinary Programs (MPH/DMD, MPH/DVM, MPH/MD, MPH/PHD) (p. 200)	Data Science (M.S.) (http://next.catalog.uab.edu/graduate/collegeofartsandsciences/computerscience/#text)	Nursing (M.S.N.) (p. 188)
Biomedical Sciences: Pathobiology and Molecular Medicine Theme (p. 85)	Kinesiology (M.S.) (p.)	Dentistry (M.S.) (p. 88)	Nursing (Ph.D.) (p. 195)
Biostatistics (M.P.H., M.S., M.S.P.H., Ph.D.) (p. 212)	Management of Information Systems (M.S.) (http://catalog.uab.edu/graduate/schoolofbusiness/mgmtinfosystemsquantitativemethods/#programstext)	DMD/PhD Program (p. 90)	Nutrition Sciences (M.S., Ph.D.) (p. 164)
Biotechnology (M.S.) (p. 142)	Master of Engineering: Advanced Safety Engineering and Management (M.Eng.) (p. 122)	Early Childhood Education (M.A.Ed., Ph.D.) (p. 96)	Occupational Therapy (M.S.) (p. 168)
Biotechnology and Regulatory Affairs Certificate (p. 143)	Master of Engineering: Construction Engineering Management (M.Eng.) (p. 123)	Education (Ed.S.) Multiple Concentrations (http://next.catalog.uab.edu/graduate/schoolofeducation)	Physical Therapy (D.P.T.) (p. 175)
		Educational Leadership (M.A.Ed., Ed.D., Ed.S.) (p.)	Physician Assistant Studies (M.S.P.A.S.) (p. 150)
		Educational Studies in Diverse Populations (Ph.D.) (p. 91)	Physics (M.S., Ph.D.) (p. 64)

Electrical Engineering (M.S.E.E., Ph.D.) (p. 132)	Psychology (Ph.D.) (p. 69)	• CPA-Clinical Pathologist Assistant (p. 287)
Elementary Education (M.A.Ed.) (p. 99)	Public Administration (M.P.A.) (p. 67)	• CRM-Nursing-Clinical Research Management (p. 288)
Engineering Management (M.S.E.M) (http://next.catalog.uab.edu/graduate/schoolofengineering/professionaldegreeprograms/msem)	Reading Education (M.A.Ed.) (p. 105)	• CS-Computer Science (p. 288)
English (M.A.) (p. 60)	Rehabilitation Science (Ph.D.) (p. 139)	• Early Childhood Education (p. 296)
English as a Second Language (M.A.Ed.) (p. 100)	School Psychometry (M.A.Ed.) (p. 106)	• ECG-Counseling, Human Service (p. 298)
Environmental Health Sciences (M.P.H., M.S.P.H., Ph.D.) (p. 214)	Sociology (M.A.) (p. 78)	• ECT-Collaborative Teacher Education (p. 301)
Epidemiology (M.P.H., M.S.P.H., Ph.D.) (p. 218)	Special Education (M.A.Ed.) (p. 106)	• ECY-Special Education (p. 306)
Forensic Science (M.S.F.S.) (p. 59)	Teacher Leadership (Ed.S.) (http://catalog.uab.edu/graduate/schoolofeducation/curriculumandinstruction/teacherleader)	• EDA-Art Education (p. 309)
Genetic Counseling (M.S.) (p. 146)	Teaching English to Speakers of Other Languages - TESOL (Ed.S)	• EDC-Curriculum Education (p. 309)
Gerontology (p. 178)	Vision Science (M.S., O.D./M.S., Ph.D.) (p. 197)	• EDF-Foundations of Education (p. 310)
		• EDL-Educational Leadership (p. 311)
		• EDR-Reading Education (p. 317)
		• EE-Electrical & Computer Engineering (p. 318)
		• EEC-Elementary and Early Childhood Education (p. 322)
		• EESL-English as a Second Language (p. 324)
		• EGR-Engineering (p. 327)
		• EH-English (p. 330)
		• EHS-High School Education (p. 333)
		• ELE-Elementary Education (p. 334)
		• EMS-Middle School Education (p. 335)
		• ENH-Environmental Health (p. 335)
		• EPI-Epidemiology (p. 341)
		• EPR-Educational Psychology (p. 345)
		• ESP-Education School Psychometry (p. 346)
		• FLL-Foreign Language & Literatures (p. 347)
		• FR-French (p. 347)
		• FS-Forensic Science (p. 347)
		• GBS-Graduate Biomedical Science (p. 348)
		• GC-Genetic Counseling (p. 356)
		• GER-Gerontology (p. 357)
		• GHS-Global Health Studies (p. 358)
		• GRD-Graduate School (p. 359)
		• HB-Health Behaviour (p. 362)
		• HCO-Health Care Organization (p. 368)
		• HCS-Healthcare Simulation (p. 379)
		• HI-Health Informatics (p. 379)
		• HQS-Healthcare Quality & Safety (p. 380)
		• HRP-Health Professions (p. 381)
		• HY-History (p. 381)
		• IEM-Information Engineering Management (p. 382)
		• INFO-Bioinformatics (p. 383)
		• IS-Information Systems (p. 387)
		• KIN-Kinesiology (p. 388)
		• LEAD-Leadership (p. 390)
		• MA-Mathematics (p. 391)
		• MBA-Master of Business Administration (p. 396)
		• MBS-Multidisciplinary Biomedical Science (p. 398)
		• ME-Mechanical Engineering (p. 399)
		• MHP-Health Physics (p. 403)
		• MIC-Microbiology (p. 404)
		• MPA-Master of Public Administration (p. 404)
		• MSE-Materials Science & Engineering (p. 405)

Course Index

- AC-Accounting (p. 235)
- AH-Administration Health Services (p. 236)
- AH-Health Administration (p. 238)
- AHD-Administration Health Services DSc (p. 239)
- ANSC-Anatomical Science (p. 240)
- ANTH-Anthropology (p. 241)
- ARH-Art History (p. 245)
- ASEM-Advanced Safety Engineering & Management (p. 247)
- BHS-Biomedical & Health Sciences (p. 249)
- BME-Biomedical Engineering (p. 249)
- BST-Biostatistics (p. 251)
- BT-Biotechnology (p. 255)
- BTR-Biotechnology & Regulatory Affairs (p. 255)
- BY-Biology (p. 256)
- CB-Cell Biology (p. 260)
- CD-Clinical Dentistry (p. 261)
- CDS-Clinical & Diagnostic Science (p. 263)
- CE-Civil Engineering (p. 264)
- CECM-Construction Engineering Management (p. 269)
- CESC-Sustainable Smart Cities (p. 270)
- CESE-Structural Engineering (p. 272)
- CH-Chemistry (p. 272)
- CHHS-Community Health & Human Services (p. 277)
- CJ-Criminal Justice (p. 280)
- CLS-Clinical Laboratory Science (p. 285)
- CM-Communication Management (p. 286)
- CPA-Clinical Pathologist Assistant (p. 287)
- CRM-Nursing-Clinical Research Management (p. 288)
- CS-Computer Science (p. 288)
- Early Childhood Education (p. 296)
- ECG-Counseling, Human Service (p. 298)
- ECT-Collaborative Teacher Education (p. 301)
- ECY-Special Education (p. 306)
- EDA-Art Education (p. 309)
- EDC-Curriculum Education (p. 309)
- EDF-Foundations of Education (p. 310)
- EDL-Educational Leadership (p. 311)
- EDR-Reading Education (p. 317)
- EE-Electrical & Computer Engineering (p. 318)
- EEC-Elementary and Early Childhood Education (p. 322)
- EESL-English as a Second Language (p. 324)
- EGR-Engineering (p. 327)
- EH-English (p. 330)
- EHS-High School Education (p. 333)
- ELE-Elementary Education (p. 334)
- EMS-Middle School Education (p. 335)
- ENH-Environmental Health (p. 335)
- EPI-Epidemiology (p. 341)
- EPR-Educational Psychology (p. 345)
- ESP-Education School Psychometry (p. 346)
- FLL-Foreign Language & Literatures (p. 347)
- FR-French (p. 347)
- FS-Forensic Science (p. 347)
- GBS-Graduate Biomedical Science (p. 348)
- GC-Genetic Counseling (p. 356)
- GER-Gerontology (p. 357)
- GHS-Global Health Studies (p. 358)
- GRD-Graduate School (p. 359)
- HB-Health Behaviour (p. 362)
- HCO-Health Care Organization (p. 368)
- HCS-Healthcare Simulation (p. 379)
- HI-Health Informatics (p. 379)
- HQS-Healthcare Quality & Safety (p. 380)
- HRP-Health Professions (p. 381)
- HY-History (p. 381)
- IEM-Information Engineering Management (p. 382)
- INFO-Bioinformatics (p. 383)
- IS-Information Systems (p. 387)
- KIN-Kinesiology (p. 388)
- LEAD-Leadership (p. 390)
- MA-Mathematics (p. 391)
- MBA-Master of Business Administration (p. 396)
- MBS-Multidisciplinary Biomedical Science (p. 398)
- ME-Mechanical Engineering (p. 399)
- MHP-Health Physics (p. 403)
- MIC-Microbiology (p. 404)
- MPA-Master of Public Administration (p. 404)
- MSE-Materials Science & Engineering (p. 405)

- MSEM-Engineering Management (p. 409)
- MSTP-Medical Science Training Program (p. 409)
- NA-Nursing-Nurse Anesthesia (p. 410)
- NAH-Nursing-Adult Health (p. 412)
- NBB-Nursing-Biobehavioral (p. 413)
- NBL-Neurobiology (p. 413)
- NCA-Nursing-Critical Care (p. 416)
- NCC-Nursing-Child/Adolescent (p. 418)
- NCH-Nursing-Child Health (p. 419)
- NCL-Nursing-Clinical Nurse Leader (p. 419)
- NCS-Nursing-Clinical Specialty (p. 419)
- NCV-Nursing-Cardiovascular (p. 420)
- NDP-Nursing-Dual Pediatric (p. 420)
- NFA-Nursing-RN First Assist (p. 422)
- NFH-Nursing-Family (p. 423)
- NGN-Nursing-Gerontological (p. 425)
- NHSA-Nursing-Health Administration (p. 426)
- NMD-Nursing-Diabetes Management (p. 428)
- NMT-Nuclear Medicine Technology (p. 429)
- NNE-Nursing-Neonatal (p. 430)
- NNI-Nursing-Informatics (p. 431)
- NOH-Nursing-Occupational Health (p. 433)
- NPA-Nursing-Palliative Care (p. 433)
- NPE-Nursing-Pediatrics (p. 434)
- NPN-Nursing-Psychiatric/Mental Health (p. 435)
- NPR-Nursing-Promotion/Protection/Restorative Health (p. 437)
- NRM-Nursing-Research Methods (p. 437)
- NST-Nursing Statistical Methods (p. 439)
- NTC-Nursing-Teaching (p. 440)
- NTR-Nutrition Science (p. 441)
- NUR-Nursing (p. 444)
- NWH-Nursing-Women's Health (p. 454)
- OT-Occupational Therapy (p. 455)
- PA-Physician Assistant (p. 458)
- PH-Physics (p. 460)
- PHR-Pharmacology (p. 463)
- PSDO-Physician Scientist Development (p. 464)
- PT-Physical Therapy (p. 464)
- PTC-Health Focused Patient/Client Management (p. 466)
- PUH-Public Health (p. 466)
- PY-Psychology (p. 472)
- RHB-Rehabilitation Science (p. 474)
- SOC-Sociology (p. 475)
- SPA-Spanish (p. 477)
- SW-Social Work (p. 478)
- TMS-Translational & Molecular Science (p. 482)
- TOX-Toxicology (p. 482)
- VIS-Vision Science (p. 482)

AC-Accounting

AC 500. Financial Accounting I. 3 Hours.

Accounting cycle, environment of financial accounting, conceptual framework of financial accounting, financial statements, time value of money, cash and receivables. Enrollment requires permission of the M.Ac. Program Director.

AC 501. Cost Accounting. 3 Hours.

Basic Theory and procedures involving cost determination, analysis, and control. Cost allocations, applications of overhead, budgeting, standard costs, job order, process and byproduct costing, spoilage, and quantitative techniques. Enrollment requires permission of M.Ac. Program Director.

AC 502. Income Taxation I. 3 Hours.

Fundamentals and basic concepts of various entities, with emphasis on federal income taxation of individuals. Enrollment requires permission of M.Ac. Program Director.

AC 504. Accounting Information Systems. 3 Hours.

Transaction processing cycles of accounting system; internal control, development, and control of information systems; emerging development of information technology. Enrollment requires permission of the M.Ac. Program Director.

AC 510. Financial Accounting II. 3 Hours.

Continuation of AC 500. Inventories, plant assets, intangible assets, current liabilities, long term debt and stockholders' equity, dilutive securities, earnings per share, and investments. Enrollment requires permission of M.Ac. Program Director.

AC 513. Internal Auditing. 3 Hours.

Theory and practice of internal auditing and application of internal auditing principles and techniques to selected audit problems. Enrollment requires permission of M.Ac. Program Director.

AC 514. Governmental and Not-for-Profit Accounting. 3 Hours.

Special features of budgetary and fund accounting as applied to municipalities, other government units, and to other non-profit entities.

AC 523. External Auditing. 3 Hours.

Study of the external audit function and the essential standards that govern audit practice. Enrollment requires permission of M.Ac. Program Director.

AC 530. Financial Accounting III. 3 Hours.

Dilutive securities, earnings per share, investments, accounting for income taxes, accounting changes and error analysis, statement of cash flows, retirement benefits, leases and selected disclosures. Enrollment requires permission of the M.Ac. Program Director.

AC 540. International Accounting: From a User's Perspective. 3 Hours.

Development of international accounting knowledge needed to make informed decisions in global business environment.

AC 541. International Accounting: Study Abroad. 3 Hours.

Development of international accounting knowledge needed to make informed decisions in global business environment through study abroad.

Prerequisites: AC 540 [Min Grade: C]

AC 564. Accounting Internship. 3 Hours.

Work experience enabling students to better integrate academic knowledge with practical applications by exposure to accounting practice and business environment.

Prerequisites: GPAO 03.0

AC 573. Fraud Examination. 3 Hours.

Advanced forensic accounting concepts with a primary focus on occupational fraud and abuse--its origins, perpetration, prevention, and detection.

AC 574. Forensic Accounting Practicum. 1-3 Hour.

Work experience requiring the application of forensic accounting concepts and methods.

Prerequisites: AC 573 [Min Grade: C] and LS 571 [Min Grade: C]

AC 580. Advanced Financial Accounting. 3 Hours.

Business combinations, consolidated financial statements, multinational accounting and partnerships. Preq: AC430 and graduate standing, and approval of M.Ac. program director.

AC 590. Advanced Topics in Accounting. 3 Hours.

Contemporary professional accounting issues.

AC 600. Financial Accounting Research. 3 Hours.

Consideration of recent pronouncements from various authoritative bodies such as the FASB and SEC through research projects and case discussions.

AC 606. Advanced Auditing and Attestation. 3 Hours.

Development of auditing to its present status; authoritative bodies influencing auditing; new developments. Preq: Admission to M.Ac. program or graduate standing and approval of the M.Ac. program director.

AC 612. Governance and the Business Environment. 3 Hours.

This course examines the process by which individuals inside and outside a publicly-traded or other complex organization seek to govern the organization's activities, including boards of directors, shareholders, management, independent auditors, internal risk managers, and the Securities and Exchange Commission.

AC 620. Tax Research. 3 Hours.

Basic and advanced research tools in taxation; ethics in taxation, analysis of the tax research process and selected parts of the Internal Revenue Code and Regulations; tax planning techniques. Admission to Master of Accounting program required. MBA students with an accounting undergraduate degree can take the course with the permission of the instructor.

AC 649. Directed Research. 3 Hours.

Supervised study of topics not covered in regular courses.

AC 672. Advanced Information Technology Auditing. 3 Hours.

IT auditing with a focus on the role of IT audit in the financial audit profession, professional standards, and professional organizations. An emphasis on IT audit methodology as applied to financial audits and other public accounting audit services. Preq: Graduate standing, or permission of the instructor.

AH-Administration Health Services

AH 700. Health Economics. 3 Hours.

Economic concepts and their relevance to health care industry; financing and delivery arrangements employed in U.S. health care system; role of economic factors in development of public policy and implications of changes in public policy.

AH 701. Administrative Theory. 3 Hours.

History of, recent contributions to, and current issues in administrative theory and management; focus on evolution of management thought and research and on developing areas of research interest that will contribute to field.

AH 702. Growth and Development of the U.S. Health Care System. 3 Hours.

Historical development of U.S. health care system; implications for solution of current problems.

AH 703. Philosophy of Science. 3 Hours.

Systems of thought and activities in theory-building process, deriving hypotheses from literature, understanding scientific theory, philosophy of science; applications to health services administration.

AH 704. Multivariate Analysis. 3 Hours.

Application of multivariate statistical techniques; emphasis on application to health-related research questions and interpretation.

AH 705. Health Care Finance. 3 Hours.

Financial management functions, third-party reimbursement, determination of costs and charges, analysis of financial positions, working capital management, budgeting, capital expenditure analysis, and case studies.

AH 706. Strategic Management Theory and Research. 3 Hours.

Current and historically important research in field of strategic management, including major streams of research, role of strategic management in management disciplines, relationships to other disciplines, and pedagogical approaches used in graduate and undergraduate strategy courses.

AH 707. Research Methods. 3 Hours.

Issues of research design and research methods for organizational studies and health services research; integration of knowledge from quantitative courses with areas of research interest in students' chosen fields.

AH 708. Dissertation Research Methods. 3 Hours.

Advanced focus on research methods frameworks in preparation for development of dissertation proposal.

AH 709. Accounting for Management. 3 Hours.

Exploration of management accounts that provide financial information for evidence-based decisions; theories for management accounting.

AH 710. Comparative Health Systems. 3 Hours.

This course allows students to compare the U.S. health care delivery system with approaches used in other countries and to identify health system reform efforts occurring in selected global regions. Emphasis will be placed on the role of the health system within selected forms of government and at various levels of economic development.

AH 712. Research in Organizational Behavior. 3 Hours.

Examination of topics and empirical research in organizational behavior; emphasis on important issues in field, including areas of controversy and contemporary interest.

Prerequisites: AH 706 [Min Grade: C]

AH 714. Marketing Strategy and Research. 3 Hours.

Examination of development of marketing strategy and strategic management process; exploration of research topics and implications of literature.

Prerequisites: AH 706 [Min Grade: C](Can be taken Concurrently)

AH 715. Research in Organizational Theory. 3 Hours.

Topics and research in organization and management theory applied to health services organizations, including organization-environment relations, population ecology, interorganization relations, and strategic alliances.

AH 716. Macroenvironmental Analysis. 3 Hours.

Examination of research literature that addresses external and internal environmental factors affecting strategic management.

Prerequisites: AH 706 [Min Grade: C]

AH 718. Strategic Implementation and Evaluation. 3 Hours.

Examination of current research on role of information systems in strategic management.

AH 719. Marketing Theory. 3 Hours.

A theoretical approach to the study of marketing and the components of marketing theory including scientific explanations and analysis.

AH 720. Continuing Seminar. 2 Hours.

Presentations by faculty and Ph.D. candidates concerning issues in particular areas of specialization. May be repeated for credit.

AH 722. Regression Analysis. 3 Hours.

Various approaches to regression analysis, including ordinary least squares and probability models, such as logit and probit.

AH 723. Research in Organizational Theory II. 3 Hours.

Advanced organizational theory and concepts applied to healthcare organizations, including power, leadership, motivation, culture, decision making, and reward systems with practical applications for healthcare.

AH 724. Research in Organizational Behavior II. 3 Hours.

Study of human behavior theory in organizations is continued with a focus on methods and theories to understand, analyze, and predict organizational behavior. Ethical analyses are covered.

AH 725. Financial Management. 3 Hours.

Theories for financial management and their application for data-driven decision making.

AH 726. Corporate Capital Structure and Analysis. 3 Hours.

Factors that impact capital structure decision making as well as how to conduct an analysis of the impacts and decisions are explored.

AH 727. Applied Multivariate Statistic. 3 Hours.

This is a survey course on the application of multivariate techniques in health care management research. The course focuses on application of multivariate statistical methods to health administration research questions, with emphasis on interpretation within real healthcare management problems.

AH 731. Administrative Theory and Practice. 3 Hours.

Administrative theories and principles are used to show the relation of theory to practice and to demonstrate the significance of administrative theory in healthcare and evidence-based decision making.

AH 732. Organizational Behavior. 3 Hours.

Theories, models, and research depicting how group and individual behavior and processes impact the internal dynamics of organizations.

AH 750. Modern Marketing Concepts. 3 Hours.

Marketing theories, research, models, and concepts are discussed and applied in healthcare organizations.

AH 755. Dissemination and Implementation Science in Health Care. 3 Hours.

Historical, scientific, and theoretical underpinnings of dissemination and implementation science; conceptual and methodological challenges of conducting dissemination and implementation science research.

AH 775. Strategic Planning and Management Health Care Organizations. 3 Hours.

Assessment of strategic management literature applied to health services organizations, exploration of strategy formulation, strategic content, and implementation and evaluation of topics for health care organizations.

Prerequisites: AH 706 [Min Grade: C]

AH 777. Mixed Methods Research I: Introduction. 3 Hours.

Introduction to mixed methods research: essence of mixed methods research, rationale for using it, fundamental principles and key characteristics, major design applications, and means of assessing the quality of mixed methods inferences.

AH 778. Mixed Methods Research II: Designing and Conducting Mixed Methods Study. 3 Hours.

Knowledge and skills of designing and conducting mixed methods studies in social and health sciences: types of research problems addressed, specification of mixed methods purpose statements and research questions, types of mixed methods designs, data collection and analysis strategies within mixed methods designs, procedures for reporting and evaluating mixed methods studies, and visually presenting mixed methods procedures.

AH 779. Mixed Methods Applications in Community-Based Action Research. 3 Hours.

Overview of how mixed methods can be applied in designing and conducting community-based action research studies: community-based action research, its purposes and cross-disciplinary utilization; a mixed methods methodological framework for action research; steps in designing and conducting mixed methods action research studies in community settings; specific types of mixed methods action research designs; sampling, data collection, analysis, validation, and evaluation of mixed methods action research projects.

AH 780. Strategic Information Systems. 3 Hours.

Examination of current research on role of information systems in strategic management and sources available to health care organizations for strategic decision support.

Prerequisites: AH 706 [Min Grade: C]

AH 783. Writing Effective Mixed Methods Grant Proposals. 3 Hours.

Logistics of developing competitive mixed methods grant applications for K and R type funding mechanisms; special focus on specific aims, innovation and significance, research plan, human subject protection, project team, resources, and budget; integrating multiple methods and data sources, establishing analytical rigor, and addressing reviewer feedback.

AH 784. Qualitative Research: A Grounded Theory Approach. 3 Hours.

In-depth knowledge of grounded theory qualitative approach: its historical origins, philosophical and theoretical foundations, methodological principles and applications, types of research problems addressed, specification of the purpose statement and research questions, sampling, data collection and analysis strategies, establishing credibility and trustworthiness, and procedures for reporting a grounded theory study. Structured field experience using NVivo software.

AH 785. Qualitative Research: Analysis and Interpretation. 3 Hours.

Applied knowledge of data analysis and interpretation in qualitative inquiry as related to its five basic approaches (narrative, case study, ethnography, grounded theory, and phenomenology). Students will develop basic skills in using qualitative research software NVivo for data organization, management and analysis.

AH 786. Qualitative Research: A Case Study and Ethnographic Approaches. 3 Hours.

In-depth knowledge about case study and ethnographic qualitative research approaches: historical origins, philosophical and theoretical foundations, methodological principles and applications, types of research problems addressed, specification of the purpose statement and research questions, sampling, data collection and analysis strategies, establishing credibility and trustworthiness, and procedures for reporting a case study and ethnography. Structured field experience using NVivo software.

AH 787. Qualitative Research: A Phenomenological Approach. 3 Hours.

In-depth knowledge about a phenomenological qualitative approach: its historical origins, philosophical and theoretical foundations, methodological principles and applications, types of research problems addressed, specification of the purpose statement and research questions, sampling, data collection and analysis strategies, establishing credibility and trustworthiness, and procedures for reporting a phenomenological study. Structured field experience using NVivo software.

AH 788. Independent Studies. 3 Hours.**AH 789. Independent Studies. 3 Hours.****AH 790. Independent Study and Research. 1-12 Hour.**

Independent Study and Research in Administration Health Services. Can be taken from 1-12 hours graduate credit.

AH 797. Independent Studies. 1-3 Hour.**AH 798. Non-Dissertation Research. 1-6 Hour.**

Non dissertation research credits. Can be taken 1 to 6 graduate credits.

AH 799. Dissertation Research. 1-6 Hour.

Dissertation Research. Must be admitted to doctoral candidacy. Must have 2 semesters before graduation.

Prerequisites: GAC Z

AH-Health Administration

HA 599. Professional Development. 0 Hours.

Professional development experiences associated with the MSHA degree program.

HA 602. Introduction to Health Care Systems. 3-5 Hours.

U.S. health care system. Historical context; systems theory; analysis of organizational components; health services personnel; national, state, and local government roles; financing mechanisms; demography; mortality and morbidity; quality assurance; political issues; and trends in progress. Individual and group projects and field trips.

HA 605. Health Policy and Politics in the U.S.. 3 Hours.

Policy-making process in U.S. Review of forces influencing policy-making, legislative process, and evolution of U.S. health policy.

HA 606. Operations Management & Process Improvement in Health Care Organizations. 3-4 Hours.

Presents an overview of operational management and processes from the administrative perspective. Provides students with knowledge, skills, and tools including lean/six sigma, to implement, facilitate, and coordinate continuous quality improvement activities in health care environments.

HA 607. Decision Science for Health Services Administration. 3 Hours.

Day-to-day operational aspects of health services administration through use of required readings, case studies, class discussions, and class assignments.

Prerequisites: HA 602 [Min Grade: C]

HA 612. Essentials of Health and Human Disease. 3 Hours.

Reviews medical terminology, diseases, and diagnostic and therapeutic procedures for key body systems and the fundamentals of epidemiology.

HA 613. Health Law. 3 Hours.

Selected legal principles and their application to health field. Legal aspects of corporate liability, medical malpractice, admission and discharge processes, medical staff bylaws, informed consent, nursing, patients' rights, medical records, and governmental regulation of personnel and health facilities.

HA 614. Process Improvement. 3 Hours.

Customer driven process involving team and process thinking and application of statistical tools to way in which work is accomplished. Provides students with knowledge, skills, and tools necessary to implement, facilitate, and coordinate continuous quality improvement activities in health care environments.

HA 616. Biomedical Ethics. 3 Hours.

Focuses on the examination of various faith traditions, theories, principles and methods that influence reasoning, analysis and argument in contemporary health care ethics. Investigation of notable cases, the application of Modern Moral Theory, and in depth discourse on current issues in health care ethics (including media) is the cornerstone of the course.

HA 620. Healthcare Financial Management I. 3 Hours.

Application of financial management techniques to decision making for health care providers. Financial management functions and organizations, financial statement analysis, working capital management, present value analysis, capital budgeting, cost of capital, variance analysis, financing techniques, and financial analysis case studies.

HA 621. Healthcare Financial Management II. 3 Hours.

Analytical and synthetic aspects of financial management tools. Project method and case studies used to supplement theory.

HA 622. Financial Management for Health Professionals. 3 Hours.

Financial statements, cost allocation, capital budgeting, time value analysis, reimbursement, financial risk and return, long-term debt financing, capital structure, cost of capital, and analysis of financial performance.

HA 623. Application of Health Care Finance Principles. 3 Hours.

This course gives students opportunities to work on finance related projects in a health care setting. It is intended for Master of Science in Health Administration students who are pursuing the Health Care Financial Management Certificate. The students will apply knowledge they have acquired in previous courses in Health Care Financial Management.

HA 624. Revenue Cycle Management. 3 Hours.

The purpose of this course is to expose generalist administrators to information directly related to a modern healthcare revenue cycle and the impact that this process has on the financial viability for all healthcare organizations.

HA 625. Strategic Planning and Management. 3 Hours.

Methods for strategic planning and management of health services organizations. Techniques for determining strategies for unique services, integration of strategy, structure, and administrative systems.

HA 628. Leadership Development. 3 Hours.

Provide tools for the students' professional development and leadership; assist students' research for an administrative residency.

HA 631. Organization Theory and Behavior. 3 Hours.

Introduction to organization theory and behavior with applications to health services organizations. Topics include organizational structure, organization/ environment relationships, organizational performance, power and leadership, perception, attitudes, motivation, communication, and group dynamics.

HA 632. Quantitative Methods in Health Services Admin. 3 Hours.

Selected mathematical, statistical, and computer applications and statistical techniques applied to decision making in hospitals and health care organizations.

HA 635. Human Resources Management in Health Services Administration. 3 Hours.

Human resources management issues, including strategic role of employee selection, appraisal, rewards, and development, applications to health care sector, labor relations, and unique aspects of labor law relevant to health care organizations.

HA 636. High Performing Healthcare Organizations. 3 Hours.

This course is designed for future managers and leaders of hospitals and health systems and those who expect to have extensive involvement in them from the perspective of buyers, insurers, or policy makers. The course provides students with knowledge about how the best hospitals and health systems respond to their environment, and how they reach and implement decisions about future activities.

HA 637. Leadership. 3 Hours.

Individual leadership talents in handling various organizational challenges, such as leading organization change, building strong culture, developing effective teams, resolving conflicts, implementing effective motivational systems, and nurturing a learning organization.

HA 640. Information Systems and Management Science in Health Services Administration. 3 Hours.

Introductory course that provides basic vocabulary and principles of modern information architectures. Computer networking and communication technologies needed to support modern information infrastructures. Emphasis on management and use of information to support management decision making.

HA 643. Long-Term Care Administration. 3 Hours.

Seminar analysis of effect of chronic conditions and aging on delivery of health services, nursing homes and alternatives, mental health facilities and agencies, and rehabilitation facilities and services. Field trips and individual research projects.

HA 644. Seminar Issues in Ambulatory Care and Medical Group Management. 3 Hours.

This course provides an overview to the field of ambulatory care and physician practice management. With the emphasis on outpatient care, these areas offer tremendous career potential for graduate students. Many aspects are similar between the acute care setting and the ambulatory care environment; however, this course will highlight areas that differ and how those differences impact doing business. This course builds on many of the Masters-level introductory courses.

HA 645. Health Economics. 3 Hours.

Economic analysis applied to health services sector; concept of efficiency applied to production and distribution of health services, health insurance, government programs, health care personnel, and health services organizations; current public policy issues; emphasis on student application of economic principles to health care issues.

HA 650. Management and Leadership Skills for Clinical Professionals. 1-3 Hour.

Leadership concepts and management principles as employed by clinical professionals in health care organizations. Focus on effective approaches to communication, change and conflict management, performance and financial management, and cultural competence.

HA 655. Seminar: Synthesis of Health Services Administration. 3-4 Hours.

Case method and problem-solving applications. Integration of materials presented during previous academic coursework. Course offered via Internet for Executive HA students. 2-3 hours each term of residency.

HA 671. Health Care Marketing. 3 Hours.

Introductory survey of marketing concepts as applied to health services organizations. Consumer behavior, market segmentation, target marketing, marketing research, management, and control of marketing mix variables.

HA 672. Health Care Entrepreneurship. 3 Hours.

This course provides a overview of the principle components of health care entrepreneurship, including business planning, raising funds, and the entrepreneurial activity and promoting innovation in existing healthcare organizations (intrapreneurial ventures).

HA 674. Health Care Innovation. 3 Hours.

Introduction to innovation management concepts, theories of idea generation, methods to select strategically innovative services, service delivery models, and project management concepts.

HA 675. Health Administration Internship. 3 Hours.

Provides an experience for MSHA students to become more familiar with a health care organization or the deliver/administration of health care in a different country; provides an opportunity for students to apply and integrate knowledge and skills; interactions with health care managers and executives in a "real world" health care setting; enables students to explore and clarify their own career goals and to begin the process of professional development.

HA 678. Special Topics in Health Administration. 1-4 Hour.

Exploration of current issues in Health Administration.

HA 680. Health Administration Capstone. 2 Hours.

Helps facilitate the students' transition from the academic learning environment to the "real world".

HA 690. Administrative Residency. 2-6 Hours.

Structured field experience providing mentoring relationship with preceptor, observation of management processes within health services organization, and application of administrative theory and techniques. 2-6 hours each term of residency.

HA 695. Independent Study. 1-6 Hour.**HA 697. Independent Study. 3 Hours.**

AHD-Administration Health Services DSc

AHD 705. Health Care Finance. 3 Hours.

Financial management functions, third-party reimbursement, determination of costs and charges, analysis of financial positions, working capital management, budgeting, capital expenditure analysis, and case studies.

AHD 706. Strategic Management Theory and Research. 3 Hours.

This course enables students to become well-versed in the healthcare strategic management scholarly literature; and ultimately contribute to it. Mastering the healthcare strategy literature requires different skills than those needed to manage an organization strategically. Thus, this course focuses on the relevant literature and not on the process of strategic planning or management.

AHD 707. Research Methods. 3 Hours.

This course introduces methods and issues relevant to research in the business disciplines and in health services. The various business disciplines and the broad field of health services draw heavily from the social and behavioral sciences as the basis for much of their theoretical and empirical work. This course will focus on issues that are relevant generally to social science research, with the goal of applying that information to research in health services.

AHD 710. Comparative Health Systems. 3 Hours.

This course allows students to compare the U.S. health care delivery system with approaches used in other countries and to identify health system reform efforts occurring in selected global regions. Emphasis will be placed on the role of the health system within selected forms of government and at various levels of economic development.

AHD 711. Health Systems Leadership. 3 Hours.

Evidence based materials used to teach skills to develop an understanding of leadership theories and application through the use of fundamental leadership principles proven to be successful in the healthcare industry.

AHD 714. Marketing Strategy and Research. 3 Hours.

This course will introduce the doctoral student to the study of marketing strategy through an examination of the literature in the field. The course is intended to provide a broad background for understanding and conducting research in this area. As such, it will require students to draw on their knowledge of other functional and organizational topics as well as other social sciences (e.g., psychology, sociology, and economics) to better understand the subject of marketing strategy from an academic and organizational perspective.

AHD 715. Research in Organization Theory. 3 Hours.

Course designed to develop the student's ability to use theory based research in health-care organizations. This course will cover the major theoretical perspectives on organizations and will link these to contemporary empirical studies. Special perspectives on organizations and will link these to contemporary empirical studies. Special focus is placed on exploring the link between theory and research exhibited in this empirical work to enable students to develop the capability of using theory to guide their own research.

AHD 716. Macro-Environmental Analysis. 3 Hours.

Macro-environmental analysis is strategic in nature and will focus on specific macro-environmental conditions or policies that may impact the delivery and financing of health care services and product. Macro-environmental analysis is traditionally the first step in the development of a strategic plan; sometimes referred to as external market analysis or political, economic, social, and technological (PEST) analysis.

AHD 718. Strategic Implementation and Evaluation. 3 Hours.

Examination of types of evaluations and evaluation designs, emphasis on application of evaluations in organizations; development of indicators; impact measurement.

AHD 722. Regression Analysis. 3 Hours.

Various approaches to regression analysis, including ordinary least squares and probability models, such as logit and probit.

AHD 727. Applied Multivariate Statistics for Health Administration Research. 3 Hours.

This is a survey course on the application of multivariate techniques in health care management research. The course focuses on application of multivariate statistical methods to health administration research questions, with emphasis on interpretation within real health care management problems.

AHD 730. Health Econ & Insurance. 3 Hours.

Development of economic principles and describes system of health care financing and delivery in the United States, providing a basis for analyzing health management and policy options.

AHD 731. Health Policy. 3 Hours.

Exploration of the health policy-making process in the U.S., the impact of policy decisions (or lack of decisions) on key stakeholders, and needed research and policy approaches to these issues.

AHD 735. Healthcare Quality Improvement. 3 Hours.

Policy issues and managerial methods related to quality and safety in healthcare organizations. Role of senior executives, board members, physician leaders in quality improvement and in creating a quality-focused organizational culture. Public and private sector approaches to quality measurement and improvement.

AHD 775. Strategic Planning and Mgt. 3 Hours.

Assessment of strategic management literature applied to health services organizations, exploration of strategy formulation, strategic content, and implementation and evaluation of topics for health care organizations.

AHD 778. Special Topics in Administration - Health Services. 1-4 Hour.

Exploration of current issues in Health Services Administration.

AHD 780. Strategic Information Systems. 3 Hours.

Examination of current research on role of information systems in strategic management and sources available to health care organizations for strategic decision support.

AHD 798. Non-Dissertation Research. 1-6 Hour.

Mentored research to design a study addressing a significant healthcare delivery problem.

AHD 799. Dissertation Research. 1-6 Hour.

Mentored research to conduct a study addressing a significant healthcare delivery problem.

Prerequisites: GAC Z

ANSC-Anatomical Science

ANSC 601. Human Gross Anatomy. 4 Hours.

Course provides a comprehensive survey of the gross anatomy of the human along with functional and applied anatomy as it relates to common clinical findings.

ANSC 601L. Human Gross Anatomy Lab. 1 Hour.

Lab component of Human Gross Anatomy.

ANSC 602. Gross Anatomy Supplement. 1 Hour.

This course will provide students with detailed dissections of head, neck, pelvis and perineum anatomy that are not otherwise covered in existing courses.

ANSC 618. Histology of Mammalian Organ Systems. 3 Hours.

This course will cover the specialized cell biology and microscopic anatomy for each of the mammalian organ systems, as well as consider current research with regards to each system. The objective is to understand how cells organize into tissues and organ systems and how these systems function in the body, as well as appreciate the microscopic appearance of cells, tissues and organs.

ANSC 655. Neuroscience. 6 Hours.

The course provides the student with a balanced basic science view of the structure and function of the nervous system. The course is designed to provide students with a comprehensive overview of the nervous system from molecular to behavioral levels. The inclusion of relevant clinical correlations is designed to facilitate the students' understanding of the function of the normal nervous system and to provide an overview of the clinical neurosciences. Offered spring terms.

ANSC 656. Human Embryology. 2 Hours.

This course uses didactic lectures, lab exercises and student presentations to help students gain an understanding of the major events in human development from gastrulation to birth. Individual units focus on the developmental processes of specific organ systems. The course uses an anatomical focus to describe the morphological characteristics of the developing embryo/fetus. The biochemical and molecular biology of development are only briefly discussed. Morphology and anatomy are also related to clinical presentation of birth defects. Offered summer terms.

ANSC 657. Medical Imaging. 1 Hour.

Students will learn to obtain and interpret ultrasound images by practicing techniques on classmates and reading existing ultrasound images. Other radiograph images (X-ray, MRI) will also be used to help students understand planar anatomy and its relationship to 3D anatomy. Students will learn the basics of the technology behind the different medical techniques to provide a fuller understanding of image interpretation.

ANSC 695. Teaching Practicum. 3 Hours.

Students will act as supplemental instructors in a variety of anatomy lab courses, complete their own (or in teams) whole-body prosection, and prepare and present 2-3 hours of new lecture content for anatomy.

ANSC 696. Research Project. 3 Hours.

Students will develop an original research project in medical education, clinical anatomy, or other anatomy research. Students will be evaluated on their ability to formulate an anatomically relevant research question, review the existing literature, and communicate their findings via a poster or oral presentation to department.

ANTH-Anthropology

ANTH 504. Human Rights, Peace, and Justice. 3 Hours.

This course offers an introductory exploration of theories, concepts, and issues involved in the study of peace, human rights, social justice, and conflict resolution. It considers the relationship of human rights to achieving peace with justice, including the role of international law. It introduces the concepts of positive peace, human security, and global interdependence. Finally, the course includes an examination and critique of anthropological approaches to peace and the associated practical applications to real world conflicts, rights violations, and global challenges.

ANTH 505. Anthropology of Peace, Justice, and Ecology. 3 Hours.

This course entails the intensive exploration of peace, social justice, nonviolence, and conflict resolution. It is a team-taught companion course to ANTH 504, "Human Rights, Peace, and Justice." Together, these two introductory seminars launch first-year Master's students into in-depth examinations and critiques of anthropological approaches to peace, justice, human rights, and ecology as well as into the exploration of theoretical and practical problems and solutions.

ANTH 508. Conflict Resolution in Cross-Cultural Perspective. 3 Hours.

This course explores conflict and conflict management from an anthropological perspective. It includes ethnographic examples from around the globe. Do all societies engage in war? How are conflicts handled in other cultures? The course will challenge a Western view that humans are naturally violent and warlike and consider some interesting anthropological controversies. Specific topics considered include conflict models, origins of war, conflict resolution, socialization of conflict styles, third party mediation, and ways to reduce violence and prevent war.

ANTH 509. Methods in Peace & Human Rights Research & Practice. 3 Hours.

The study of peace, justice, ecology, and human rights draws on a diverse methodological tool-kit and comprehensive skill-sets. This course introduces students to some of these methods such as using online databases, conducting interviews, text analysis, meta-analyses and literature reviews, participant observation, behavior observation, and content analysis. Concrete examples of research methods and practice reveal the interconnectedness of basic and applied research as well as theory and practice.

ANTH 512. Peaceful Societies and Peace Systems. 3 Hours.

This course explores peaceful societies, some of which are internally peaceful and some of which do not make war, as well as peace systems, that is, clusters of neighboring societies that do not make war on each other and possibly not with any outside groups either. The main questions addressed in the course are: How do peaceful societies and peace systems manage to successfully keep the peace? What lessons do peaceful societies and peace systems hold for creating a less violent and warless world?

ANTH 513. Peace & Environmental Sustainability. 3 Hours.

By highlighting that ecology sets the stage for the social and economic domains, this course traces our interdependence with nature and makes the case that sustaining the natural conditions that are essential for the functioning of the ecosystem on which our lives depends equals sustaining peace. The course takes a positive peace perspective on environmental sustainability goals and methods to achieve them.

ANTH 514. Prehistory of War and Peace in North America. 3 Hours.

This course explores the origins, development, and consequences of conflict and warfare among the prehistoric and early historic indigenous cultures of North America, as well as the complimentary processes of cooperation and peace-making. Archaeological, biological, and ethnohistorical sources are utilized to understand the ways in which war and peace were carried out among a wide variety of Native American cultures from the earliest evidence of human occupation to European contact and beyond. Both indigenous and European practices of war and peace are considered.

ANTH 515. Peace through Global Governance. 3 Hours.

Global governance represents a new dimension in social organization. Anthropology has much to contribute to understanding it. Global governance has the potential to promote social progress and human development, the protection of human rights, peace, and human security. The course examines security—military, collective, and human security—and the evolution of international identity, norms, values, and laws and their contributions to the development of global civil society.

ANTH 516. War & Peace in Ancient Mesopotamia. 3 Hours.

"War & Peace in Ancient Mesopotamia" (ca. 10,000 - 323 BCE) begins with an introduction to the advent of farming, urban life, various crafts, writing, and other innovations in the region of the "Two Rivers," namely the Tigris and Euphrates' flood plain. It proceeds with the rise and fall of early state complex societies and empires in the Bronze and Iron Ages, and terminates in the Persian period. Although providing much focus on diverse issues dealing with war, alliances, diplomacy, treaties, and peace, this course also integrates a comprehensive background context and overview of other aspects of past societies in this region, including history, archaeology, language, literature, religion, architecture, art, material culture, and trade.

ANTH 517. Peace Ethology. 3 Hours.

This course provides insights into causes, mechanisms, development, function, and evolution of peaceful behavior in humans and nonhuman animals. The course shows how studying the role of peaceful behavior in the survival and propagation of animal life has direct significance for improving our understanding of the evolved abilities for peace in humans.

ANTH 518. The Power of Nonviolence. 3 Hours.

This course introduces students to the theory and practice of nonviolence as a manner of social change and as a philosophy. The course explores some of the classic writings on nonviolence such as those by Tolstoy, Gandhi, and King as well as current research findings on the efficacy of nonviolent social change, for instance, the work of Sharp, Nagler, Ackerman, and Chenoweth. Readings, films, small group and whole class discussions, guest lectures by activists will contribute to an understanding of the necessary skills for practicing and promoting nonviolent social change. Students will develop projects and presentations that utilize an online nonviolence database.

ANTH 519. Religion, Reconciliation, & Forgiveness. 3 Hours.

This course examines the role of religion, spirituality, reconciliation, apology, and forgiveness in conflict situations, from the individual to the global. Topics include the role of religion in both war and peace. The course has a cross-cultural and inclusive dimension and goes well beyond Christianity to also consider Buddhism, Confucianism, Islam, and other religions. The spiritual dimensions of Gandhian nonviolence are also considered.

ANTH 520. Cultural Transformation: Our History, Our Future. 3 Hours.

The course will explore the significance of Eisler's Partnership-Domination Model and the socio-cultural systems informed by it. The course will focus on the practical application of the partnership approach for promoting peace and human rights across social levels from the family, schools, community, upward to the global level. Consideration will be given to how to transform values, institutions, economics, and politics from domination to partnership.

ANTH 521. Technological Monitoring of Human Rights and Conflicts. 3 Hours.

This class will give students an overview of how humanitarian work intersects with innovation and technological advances. The class will introduce students to how social media, remote sensing technologies/drones, cell phones, open source, crowd sourcing, Big Data, cloud computing, the Internet, and sensors are all changing how we collect data and interpret the world around us, and how that information is revolutionizing humanitarian and conflict monitoring.

ANTH 523. Vikings: Raiders, Traders, Farmers. 3 Hours.

The Vikings are most popularly thought of as warriors raiding settlements along the northern coastline of Europe during the Viking Age (ca. 793 – 1050 AD), but their society and activities extended well beyond this scope. This course furnishes an overview of Viking social structure, subsistence, art, architecture, religion, language, and literature. It covers hostile and peaceful interactions with the peoples of Greenland, the Arctic, Labrador and Newfoundland and considers the evidence for Norse explorations and influence in North America.

ANTH 532. Villains, Victims, & Vigilantes. 3 Hours.

This course examines ways in which the concepts of "rights" and "justice" are understood and enacted in local communities, particularly in regions of the world experiencing high rates of violent criminality. Beginning with a review of formal law and legal principles underlying state systems of justice, the course surveys settings in which dissatisfaction with state efforts to protect rights have induced communities to develop alternate policing and judicial institutions.

ANTH 587. Special Problems in Peace Research. 3 Hours.

Supervised study of specified topic area in peace studies; defined problem explored in depth. Topics are determined by student and instructor interest.

ANTH 588. Special Problems in Human Rights. 3 Hours.

Supervised study of specified topic area in Human Rights; defined problem explored in depth. Topics are determined by student and instructor interest.

ANTH 601. Forensic Anthropology. 4 Hours.

Forensic Approaches to Osteology Applied human osteology, emphasizing ability to identify age, sex, and population type of skeletal material. Effects of disease and behavior on bones.

ANTH 602. Conquest of Mexico. 3 Hours.

This course examines the Spanish conquest of Mexico from both Spanish and indigenous perspectives. It further surveys the institutionalization of Spanish control over the fallen Aztec Empire and the broader intellectual and material consequences of the conquest.

ANTH 605. Advanced Cultural Anthropology. 3 Hours.

Advanced Cultural Anthropology Critical review of theoretical approaches in cultural anthropology.

ANTH 608. Advanced Linguistic Anthropology. 3 Hours.

Advanced LINGUISTIC Anthropology Historical development of theory and field practice of linguistics; psycholinguistics, sociolinguists, nonverbal communication, semiotics, and ethnosemantics; applied linguistics.

Prerequisites: ANTH 120 [Min Grade: C]

ANTH 609. Advanced Archaeological Anthropology. 3 Hours.

Advanced Archaeological Anthropology Principal theoretical approaches to 19th/20th century archaeology; historical, processual, and post-processual.

ANTH 610. Advanced Biological Anthropology. 3 Hours.

Advanced Biological Anthropology Human evolution, primatology, race, human genetics. Tasks performed by physical anthropologists.

ANTH 611. Field Archaeology. 0-6 Hours.

Field Archaeology Archaeological field and laboratory techniques, including excavation, surveying, and artifact analysis and description; general problems of archaeological interpretation.

ANTH 613. Human Osteology. 3 Hours.

The identification of human skeletal remains. This laboratory/lecture course provides the groundwork for much of the work in physical anthropology. The first course of the sequence into Anth 401/601.

ANTH 615. Ethnographic Field Methods. 3-6 Hours.

Ethnographic Field Methods Classroom instruction and practical experience in techniques of ethnographic fieldwork, including participant observation, household surveys, structured and unstructured interviewing, and genealogies.

ANTH 617. Origins of Agriculture. 3 Hours.

Survey of evidence for animal and plant domestication and reasons for spread of food production.

ANTH 619. Food and Culture. 3 Hours.

This course is designed to present a broad view of the role of food in human culture through time and in a variety of geographic settings, offering students and opportunity to reflect on the cultural meanings of food in human life. Class lectures, assigned readings, and films will be used to enhance each student's understanding of the subject from a cross cultural perspective. We will examine the biological basis of diet how foodways develop and change, how and why anthropologists study diet, and variations in foodways around the world.

ANTH 622. Landscape Archaeology. 3 Hours.

The course will cover the techniques and strategies employed by archaeologists to reconstruct past landscape, which involves scientific testing, remote sensing, GIS, survey, excavation and environmental analysis. Examples will be drawn from projects across diverse landscape types in Europe, the Middle East, Africa, Central America and Asia. In-field and laboratory application of techniques will be emphasized.

ANTH 624. The Law of Historical and Cultural Resources. 2 Hours.

This survey course will familiarize students with federal and state laws and regulations relevant to archeology and anthropology, such as the National Historic Preservation Act and the Native American Graves Protection and Repatriation Act. It will also introduce them to other legal issues such as obtaining National Register listings, preservation easements and federal income tax rehabilitation credits.

ANTH 625. African-American Archaeology. 3 Hours.

African American Archaeology is one of the better established research interests within U.S. Historical Archaeology. This course will examine the development of the archaeology of the African diaspora from its beginnings in the 1960s to the present day. Its principal focus will be the plantation of the Southern United States. The course will include an examination of history of the plantation economy as well as an exploration of issues currently of interest to archaeologists studying the archaeological record of African American life.

ANTH 628. Comparative Religion. 3 Hours.

Human behavior in relation to the supernatural; religion as a system of social behavior and values; theories of religion.

ANTH 629. Egypt: Arch Field School. 6 Hours.

Two week field school in Egypt. Students will visit Egypt old and new, including Islamic Cairo, Coptic churches, the pyramids of Giza, Alexandria, the tombs and temples of Luxor (Valley of the Kings), Aswan (Abu Simbel), and an archaeological excavation. Experience Egyptian folklore through dance and musical performances.

ANTH 630. Zooarchaeology. 3-6 Hours.

This course includes an introduction to methods and theories of zooarchaeological research. Practical experience in processing, identification, and interpretation of animal bone remains from archaeological sites forms a large part of class time.

ANTH 632. Geographical Information Systems and Anthropology. 3 Hours.

Survey of the use of geographical information systems in the study of Global, regional, and local socio-cultural patterns.

ANTH 633. Anthropology of Development. 3 Hours.

Effects of Western penetration into indigenous societies and role of anthropologists in development projects in the Third World.

ANTH 634. Observing the Earth from Space. 3 Hours.

The course will give students the ability to analyze remotely sensed data from satellite images. Students will learn about the physics and mathematics behind remote sensing. They will also learn about the wide range of satellite images and techniques to analyze them via ERDAS Imagine, ER Mapper and other programs. Applications of remote sensing to a variety of fields will form a key component of the class. The course will culminate in a term project involving remote sensing applications to UAB faculty-led initiatives in health, medicine, geography and anthropology. There will be a weekly lab component of the course.

ANTH 636. Community Internship. 3-6 Hours.

Application of anthropological approaches to the efforts of a public or private sector. Institutional approval of both the host institution and the department of anthropology required before registration.

ANTH 637. Real World Remote Sensing App. 3 Hours.

This course will be offered as a research seminar focusing on real world applications of remote sensing technology. Students will work closely with UAB professors and scientists at NASA's Marshall Space Flight Center in Huntsville doing original remote sensing research on new satellite datasets. These datasets cover diverse areas including terrorism, global warming, health, anthropology / archaeology, atmospheric studies, urban expansion and coastal management. Students will be responsible for analyzing the satellite imagery and presenting papers to NASA.

ANTH 640. Arch and Hist Bible Lands. 3 Hours.

Archaeology and History of the Bible Lands. Examination of region spanning modern Syria, Lebanon, Israel, and Jordan from 10,000-585 BC.

ANTH 641. Anthropology of Human Rights. 3 Hours.

Examination of conceptual, political, and legal aspects of human rights from an anthropological perspective. Topics considered may include: state violence; the history of human rights claims; the opposition of cultural rights and human rights claim; human rights as a form of political discourse; human rights practices in select contemporary settings.

ANTH 642. Historical Archaeology. 3 Hours.

This course involves all stages of archaeological field work at a historical archaeology site. Students will learn survey skills, excavation, mapping, recovery, and post-field analysis techniques.

ANTH 645. Medical Anthropology & Health Disparities. 3 Hours.

This course explores the bio-cultural basis of health and cross-cultural variation in illness and healing which includes theoretical bases of medical anthropology, comparative health care systems, and social, political, and economic issues related to health care delivery.

ANTH 646. Explorers, Mummies and Hieroglyphs. 3 Hours.

This course provides a thematic approach to pharaonic Egypt in general, with one portion covering diverse aspects such as geography, an overview of the history of Dynasties 1-31, society and government, daily religion, mortuary religion, architecture, literature, the military, trade, economy, and daily life. Another portion of the course provides several documentaries regarding early to more recent explorers and Egyptologists. The third focus introduces Egyptian hieroglyphs in eight grammar classes and follow-up user-friendly, in-class exercises, aiming to enable students to translate basic hieroglyphic texts.

ANTH 647. Advanced Peace Studies. 3 Hours.

Intensive exploration of concepts and issues involved in the study of peace, social justice, nonviolence and conflict resolution. Students will engage in an in-depth examination and critique of anthropological approaches to peace and the associated theoretical and practical problems and applications.

ANTH 649. Egyptian History & Arch. 3 Hours.**ANTH 650. Nationalism Ethnicity and Violence. 3 Hours.**

Social and cultural analysis of ethnicity and nationalist ideologies particularly where these have led to violent confrontations within modern nation-states. Considers primordialist versus constructionist theories of difference; the varying weight to be attributed to political, historical and cultural factors in the study of nationalism; and the politics of culture vs the culture of politics.

ANTH 652. Sustainable Peace Seminar. 3 Hours.

This course will focus on the integration of knowledge related to peace, justice, ecology, and human rights, or in other words, on the numerous interrelated aspects of the "positive peace" concept. This course is a seminar, meaning that participants will engage in much discussion. In turn, participants will present topics for discussion and others will respond and engage in dialogue. At times the focus will be on one participant's research, and at other times the focus will be on a particular book or set of readings.

ANTH 653. Primatology. 3 Hours.

Biology, behavior, and distribution of living non-human primates. Emphasis on field studies of old-world monkeys and apes.

ANTH 654. Biological Anthropology and Contemporary Issues. 3 Hours.

This course applies a biological anthropological perspective to explore what it means to be human and to develop critical perspectives on our culture, science, and media. How did humanity arrive in its current position? How do we understand human diversity? What can we learn from the differences among people, their overwhelming biological similarity, and their common humanity? How do we use this knowledge to build a sustainable future for ourselves?.

ANTH 655. Archaeology of Alabama. 3 Hours.

This course will review the archaeology of Alabama from per-European and historical perspectives. Topics covered may include industrial archaeology, Native American prehistory, and field work may be included.

ANTH 657. Anthropology of Gender. 3 Hours.

Cultural construction of gender differences in human societies; shifting definitions of proper male and female roles across cultures and through time.

ANTH 658. Human Sexuality. 3 Hours.

This course will explore human sexuality and gender from an anthropological perspective, including biological and cultural perspectives, as well as the areas where anthropology meets psychology. The evolution of sexual behavior in humans and in non-human primates will be examined, as well as how sexuality is embedded in socio-cultural context both across and within societies.

ANTH 659. Politics, Drugs and Society in Latin America. 3 Hours.

This course will examine the role of drug production and the drug trade in the economic and political life of Latin American societies. Viewed historically and ethnographically, the course will include coverage of the traditional uses of drugs in indigenous societies as well as the more recent globalization of the industry.

ANTH 660. Ecological Anthropology. 3 Hours.

Examines interactions among behavioral, technological, organizations, and ideological features of human cultures that serve to adapt societies to their physical environment.

ANTH 661. Historical Ecology. 3 Hours.

This course explores the topic of Historical Ecology and examines the relationship between humans and their environments from the perspectives of history, anthropology, archaeology, ecology, and biogeography.

ANTH 664. Political Anthropology. 3 Hours.

The Comparative analysis of political structures and process throughout the world, focusing especially on non-Western forms; a survey of anthropological attempts to understand the complex interplay of culture and power in human societies.

ANTH 665. Classics in Ethnography. 3 Hours.

This course surveys a selection of classic descriptive accounts of human cultures. It is a reading intensive course covering works that helped shape the discipline of anthropology or that are illustrative of particular movements in the history of the discipline.

ANTH 667. Museum Studies. 3 Hours.

This course uses case studies, analysis of topical issues, and problem-based learning exercises to explore the many aspects of museum studies relevant to the administration and management of not-for-profit museums. This course provides an interdisciplinary introduction to museum work.

Prerequisites: ANTH 106 [Min Grade: C]

ANTH 669. Ethnographic Perspectives In Rural Mexico. 3 Hours.

Comparative and historical analysis of rural Mexican communities, emphasizing the impact of recent NAFTA-related economic policies and democratic political reforms.

ANTH 671. Evolution of Human Carnivory. 3 Hours.

In this course, students will use analytical methods from zooarchaeology and taphonomy as well as observation of non-human primates and contemporary hunter-gatherers to investigate the paleoecology of carnivory during the evolutionary history of the human lineage.

Prerequisites: ANTH 102 [Min Grade: C] or ANTH 211 [Min Grade: C] or ANTH 453 [Min Grade: C] or ANTH 694 [Min Grade: C] or ANTH 610 [Min Grade: C]

ANTH 686. Special Problems in Applied Anthropology. 3 Hours.

Supervised study of specified topic area in peace studies; defined problem explored in depth. Topics are determined by student and instructor interest.

ANTH 690. Research Methods. 3 Hours.

ANTH 691. Special Problems in Cultural Anthropology. 1-6 Hour.
Special Problems in Cultural Anthropology Supervised study of specified topic area; defined problem explored in depth. Topics determined by student and instructor interest in cultural anthropology.

ANTH 692. Special Problems in Archaeology. 1-6 Hour.
Special Problems in Archaeology Supervised study of specified topic area; defined problem explored in depth. Topics determined by student and instructor interest in archaeology.

ANTH 693. Special Problems in Linguistics. 1-6 Hour.
Special Problems in Linguistics Supervised study of specified topic area; defined problem explored in depth. Topics determined by student and instructor interest in linguistics.

ANTH 694. Special Problems in Biological Anthropology. 1-6 Hour.
Special Problems in Biological Anthropology Supervised study of specified topic area; defined problem explored in depth. Topics determined by student and instructor interest in special topics in biological anthropology.

ANTH 695. Special Problems in Multimedia Anthropology. 1-6 Hour.
Supervised study of multimedia applications to anthropological topics. Specific problem area addressed to be determined by student and instructor interest.

ANTH 697. Special Topics in Anthropology. 3 Hours.
Topics vary. See class schedule for topic.

ANTH 699. Thesis Research. 1-6 Hour.
Thesis Research Independent development of research project.

Prerequisites: GAC M

ARH-Art History

ARH 507. The Art of Rome. 3 Hours.
Covers Ancient Rome, but focuses on Medieval through early Baroque painting, sculpture, and architecture. Examines the city of Rome over time. Also considers the impact of the papacy on the city and its use of ancient Roman models.

ARH 519. Arts of Death in the Middle Ages. 3 Hours.
The visual culture of death and the afterlife from the Roman catacombs to cadaver tombs, 300-1500.

ARH 521. Italian Renaissance Art. 3 Hours.
The visual arts of the Italian Renaissance (1300-1550) in their historic context.

ARH 522. The Birth of Painting: Portable Pictures Across Renaissance Europe. 3 Hours.
The emergence of modern easel painting, 1300-1600.

ARH 523. Study Abroad: European Art. 3 Hours.
On-site study of art and architecture in Europe.

ARH 524. Northern Renaissance Art. 3 Hours.
The visual arts of the Northern Renaissance (1300-1600) in their historic context.

ARH 530. Eighteenth-Century Art in Europe. 3 Hours.
Visual culture in eighteenth-century Britain and France including study of eighteenth-century holdings in the Birmingham Museum of Art.

ARH 531. European Painting in the Seventeenth Century. 3 Hours.
Painting in Europe from Italian and Spanish Baroque through the Dutch Golden Age.

ARH 535. Arts of Power in Early Modern Europe. 3 Hours.
The visual arts in service of kings, popes, and the people, 1300-1700.

ARH 540. Nineteenth Century Art I: Neoclassicism, Romanticism, and Realism. 3 Hours.
Painting, sculpture, and graphic arts in Europe, 1780-1850.

ARH 541. Nineteenth-Century Art II: Impressionism and Post-Impressionism. 3 Hours.
Painting, sculpture, and graphic arts in Europe, 1860-1900.

ARH 550. American Art to 1900. 3 Hours.
Painting, sculpture, and architecture in the U.S., with an emphasis on 19th century.

ARH 560. Twentieth Century Art to 1945. 3 Hours.
Painting, sculpture, and architecture in Europe and the United States, 1900-1945.

ARH 561. Modern Design. 3 Hours.
History of modern design. Will examine various design disciplines, design theory, well as the relationships between design, fine art, architecture and popular culture.

ARH 564. Art Since 1945. 3 Hours.
Painting, sculpture, and architecture, primarily in the United States, 1945 to the present.

ARH 565. Aspects of Contemporary Art. 3 Hours.
Topics in contemporary art, ca. 1970 to the present. Course offerings will vary from year to year and will study a specific historical moment, medium, theme, or subject. Prerequisite: ARH 204 or permission of instructor.

ARH 567. Modern Architecture. 3 Hours.
History of modern architecture, covering examples from the late 18th century to the present and emphasizing the United States.

ARH 568. Race and Representation. 3 Hours.
History of 20th-century African American art in context of contemporary theories of identity and in relation to African art. Includes study of objects in the Birmingham Museum of Art.

ARH 570. Tomb Art in East Asia. 3 Hours.
What is the purpose of a tomb? How do its structure and décor convey ancient perceptions of death? Who are the occupants, and how did they envision their journey into the afterlife? This course is a survey of the funerary arts of China, Korea, and Japan. By investigating tombs, shrines, sarcophagi, wall paintings, and grave goods throughout East Asia, we will gain a deeper understanding of ancient religions, social structures, ethnic identities, and cross-cultural interactions. Lectures will be supplemented by several visits to the Museum's Asian collections.

ARH 571. Topics in Asian Cinema. 3 Hours.
This course offers students an introduction to a vital aspect of contemporary Asian culture, recognizing that film can be an important focus of contemporary cultural commentary and critique. The course presumes no prior knowledge of Asia or cinema and its artistic tradition. The goal of the course is to view and discuss, as a class, approximately ten films, emphasizing an understanding of their cultural background and an appreciation of their aesthetic merits as films and cultural settings in Asia. Attendance at weekly screenings is mandatory.

ARH 572. Buddhist & Hindu Art in India to 1200. 3 Hours.

This course explores the environments of worship and devotion particular to India's major indigenous religious traditions, from their earliest expressions in approximately the fifth century BCE through to the arrival of Islam in India, ca. 1200. We will examine aesthetic conventions, religious ideals, and urban cultures by focusing on the sculpture and architecture traditions of Hinduism, Buddhism, and Jainism.

ARH 573. Japanese Prints and Printmakers. 3 Hours.

History of Japanese wood-block prints and printmakers from the seventeenth through the twentieth centuries.

ARH 574. Landscape and Image in East Asia. 3 Hours.

This course surveys the major traditions of landscape art in East Asia. We will explore the ways in which places and spaces are transformed into famous places and sacred sites and consider the critical role played by visual representation in this process. Major topics include the relationship between landscape and power, cultural memory, literature, mythology, seasonality, travel, and literati culture. We will examine the functions of landscape art in various cultural, geographical, and temporal contexts of East Asia. We will look at landscape painting in China from the Tang through the Ming dynasties and consider the complex processes of cultural dissemination and adaptation by looking at the reception of Chinese landscape painting tradition in Korea and Japan.

ARH 575. Japanese Art. 3 Hours.

Art and culture of Neolithic era through Nineteenth century.

ARH 577. Piety and Power: Art in India after 1200. 3 Hours.

This course looks at the arts of India after 1200, when Indian art and culture was increasingly influenced and altered by religious and secular powers from outside the subcontinent. We will examine Islamic art and architecture under the patronage of various Sultanate traditions, and finally the Mughals, who expressed their power and piety in monumental architecture and extensively illustrated books. We will also consider the influence of Europeans in South Asia, culminating with the colonial project of the British Raj. Ongoing negotiations between these newly-arriving groups and Indians older, indigenous traditions will be studied. Throughout the course we will dissect the categories of knowledge about South Asia and its art that were constructed primarily by the British, considering, for example, the usefulness of dividing India's art history into categories of "Hindu," "Islamic," "European," and etc.

ARH 578. Buddhist Arts of East Asia. 3 Hours.

Survey of art and architecture created for Buddhist religious purposes in China, Japan, and to a lesser extent Korea and Central Asia. The course will include a brief overview of Buddhist monuments in South Asia, study of the iconography of Buddhist images in graphic and sculptural media, and analysis of a variety of Buddhist styles in painting, sculpture, and architecture.

ARH 579. Study Abroad: Art and Culture of South Asia. 3 Hours.

This course allows students to become immersed in the art and culture of Asia through direct experience in the field. Focus will be primarily on South Asia but may vary with each course offering to include Nepal, Tibet, and Southeast Asia. Preliminary lectures in Birmingham and significant written assignments required.

ARH 580. Art Criticism and Theory. 3 Hours.

A topics course on subjects in art criticism and theory. The specific focus will vary by instructor and may emphasize either non-Western or Western theories, criticisms, and approaches.

ARH 581. Special Topics: Early Modern Art. 3 Hours.

Special topics in the arts of the Early Modern period in the Western Art tradition. Subject will vary with each offering.

ARH 582. Special Topics: Modern Art. 3 Hours.

A special topics course on subjects in the Modern period in the Western tradition, beginning in the later eighteenth century. Specific course topics will vary by semester.

ARH 583. Special Topics: Gender and the Visual Arts. 3 Hours.

Topic will vary, depending on instructor. This course will address ways in which gender has affected the history of artistic practice and patronage. It will consider such issues as the gendering of pictorial practice and space, strategies of representing gendered subjects, and the impact of women as patrons of art and architecture.

ARH 584. Special Topics: Contemporary Art. 3 Hours.

Special topics in the arts of the Contemporary period in the Western art tradition. Subject will vary with each offering.

ARH 585. Special Topics: Museum Studies. 3 Hours.

Museum operation; organization and preparation of exhibitions; cataloging objects in collection; experience with UAB Institute of Visual Art and Birmingham Museum of Art.

ARH 586. Special Topics: South Asian Art. 3 Hours.

Special topics in the arts of South Asia. Subject will vary with each offering.

ARH 587. Special Topics: Field Study. 3 Hours.

Trips to prominent museums and galleries in United States. Preliminary lectures in Birmingham and significant written assignments required.

ARH 588. Special Topics: East Asian Art. 3 Hours.

Special topics in the arts of East Asia. Subject will vary with each offering.

ARH 590. Art Theory: Special Topics. 3 Hours.

Topics in art theory will vary with each offering.

ARH 592. Museum/Gallery Internship. 3 Hours.

Through active participation in the daily operations of a museum, gallery, or art space, students will acquire direct working knowledge of cooperating art institution. Students will be required to work at the institution a minimum of 10 supervised hours per week during the term. Permission of instructor required. May be repeated to a maximum of 6 semester hours.

ARH 593. Seminar: South Asian Art. 3 Hours.

Seminar in the arts of South Asia. Subject will vary with each offering.

ARH 594. Seminar: East Asian Art. 3 Hours.

Seminar in the arts of East Asia. Subject will vary with each offering.

ARH 595. Seminar: Early Modern Art. 3 Hours.

Seminar in Early Modern Art. Research seminar focused on topics in the visual arts of Europe and its colonies 1300-1750. Subject will vary with each offering.

ARH 596. Seminar: Modern Art. 3 Hours.

Seminar in Modern Art. Subject will vary with each offering.

ARH 597. Seminar: Contemporary Art. 3 Hours.

Seminar in Contemporary Art. Subjects will vary with each offering.

ARH 598. AEIVA Internship. 3 Hours.

The AEIVA Intern Team will participate in all phases of daily gallery operations, ranging from curatorial practices, exhibition design, video/photographic documentation and production, technical and analytical writing, graphic design, etc. This team will act as a support staff for the AEIVA curatorial/ administrative staff in a hands-on museum/gallery work environment. May be repeated to a maximum of 6 semester hours.

ARH 630. Seminar: Early Modern Art. 3 Hours.

Seminar in Early Modern Art.

ARH 640. Seminar: Modern Art. 3 Hours.

Seminar in Modern Art.

ARH 660. Seminar: Contemporary Art. 3 Hours.

Seminar in Contemporary Art.

ARH 670. Seminar: South Asian Art. 3 Hours.

Seminar in South Asian Art.

ARH 680. Methods and Approaches to the History of Art. 3 Hours.

This literature-intensive course covers the historiography of the field and a range of theoretical approaches. Should be taken in the first semester of enrollment in the M.A. program.

ARH 698. Independent Studies. 2-6 Hours.

Independent Study Topics vary. Permission of instructor required.

ARH 699. Thesis Research. 3,6 Hours.

Thesis Research. Must be admitted to master level candidacy to take this course. At least 6 graduate credits needed for graduation.

Prerequisites: GAC M

ASEM-Advanced Safety Engineering & Management

ASEM 601. ASEM Seminar. 0 Hours.

Seminar focusing on student research and guest presentations of various topics of interest to safety and risk management engineers and safety professionals.

ASEM 610. Introduction to System Safety - Prevention through Design. 3 Hours.

Best practice in any business sector requires the pursuit of a triple bottom line - protecting people, planet, and profit. This course provides an overview of system safety in general and Prevention through Design in particular and explores their efficacy in helping companies achieve a bottom line that is socially, environmentally, and financially rewarding. Topics of inquiry include the processes of hazard analysis and risk assessment, the concept of "acceptable" risk, the safety decision hierarchy of controls, safety standards (the mandatory minimum vs. the voluntary best practice), safety as a cost control strategy, and the critical elements of a comprehensive, advanced safety program. Course content is presented within the framework of real-world case studies from a variety of industry sectors, including, but not limited to, manufacturing, utilities, and health care and includes several guest lectures by leaders in the profession. Students apply course content to their own business environment. Guest lecturers from diverse backgrounds will discuss their experiences in managing safety in the workplace. Live participation in a weekly 1.5 hour online forum is required. Course must be taken during the first semester.

ASEM 611. Hazard Analysis and Waste Elimination. 3 Hours.

Hazards have the potential to cause harm to people, planet, and profits. Hazard analysis is a process that begins with the identification of a hazard and proceeds into an estimate of the severity of harm or damage that could result if the potential is realized and a hazard-related incident occurs (ASSE TR-Z790.001 – 2009). This course examines engineering techniques utilized to systematically and logically identify and analyze hazards in the workplace. These techniques include preliminary hazard list (PHL), preliminary hazard analysis (PHA), system hazard analysis (SHA), subsystem hazard analysis (SSHA) and others. Students work in teams to use these techniques to retrospectively analyze a real-world disaster.

Prerequisites: ASEM 610 [Min Grade: B]

ASEM 612. Engineering Risk. 3 Hours.

Engineering risk is defined both quantitatively and qualitatively as an estimate of the probability that a hazard-related incident will occur and of the severity of harm or damage that could result. This course provides students with tools to assess and reduce safety risks in their own company. These tools include risk assessment matrices, probabilistic risk assessment (PRA) measures, including event tree analysis, fault tree analysis, and other prevention through design concepts. The role of a structured, formalized decision analysis process in preventing serious injuries and fatalities is also explored. Students engage in a risk mitigation decision analysis project, which is specific to their company and/or business sector. Guest lecturers from diverse industries discuss their experiences in assessing and managing risk. Live participation in a weekly 1.5 hour online forum is required.

Prerequisites: ASEM 610 [Min Grade: B]

ASEM 613. Human Performance and Engineering Design. 3 Hours.

Companies can miss important opportunities to eliminate waste if they rely primarily on training to prevent human error. This course explores the historical perspective on human error and serious injury. The course material will provide a solid understanding of the principles of occupational biomechanics and human tolerance to injury with focus on human anthropometry and mechanical work capacity. This course also includes studies of human reliability, static analysis of systems in equilibrium and mechanical systems, design and performance. Due to the quantity of back related injuries and related lost time in the workplace, back pain and injury is studied along with the effect of vibration on the human body. Real-world case studies provide for application of the engineering hierarchy of controls: hazard elimination, hazard substitution, engineering controls, warnings, administrative behavior controls, and personal protective equipment. The course also examines the design aspects of ergonomics, the biomechanical engineering basis of injury prevention, and the long term economic consequences of seemingly minor injuries. In semester projects, students perform incident investigations using biomechanical and other data. After gathering and analyzing data to determine injury causation, they will identify and re-design error-provocative environments in their own workplaces. Guest lecturers from diverse backgrounds will discuss their experiences with human performance and/or biomechanics. Live participation in a weekly 1.5 hour online forum is required.

Prerequisites: ASEM 610 [Min Grade: B]

ASEM 614. Engineering Ethics and Acceptable Risk. 3 Hours.

This course explores the economic, social, and political consequences of safety risk and considers provocative real world dilemmas: What is acceptable risk? Are the fundamental canons of engineering ethics contrary to the concept of acceptable risk? What is the worth of human life? Students will conduct critical reviews of corporate safety and ethics policies from market leaders in all major industries as well as their own company. Real-world case studies provide the framework for exercises in resolving conflicts of interest and avoiding the dilemma of "whistle blowing." Guest lecturers from diverse backgrounds will discuss their experiences with ethics in the workplace. Live participation in a weekly 1.5 hour online forum is required.

Prerequisites: ASEM 610 [Min Grade: B](Can be taken Concurrently)

ASEM 615. Leading through Climates of Change. 3 Hours.

All progressive companies are moving toward greater sustainability - protecting people, planet, and profits. To guide their companies through these changes and integrate safety into the priorities at the executive level, safety engineers and professionals must have strong leadership skills. This course explores engineering leadership best practices, including the eight steps of transformational leadership - creating a sense of urgency, creating a guiding coalition, developing a vision and strategies, communicating the vision, empowering broad-based action, generating short term wins, consolidating gains and anchoring the culture. This course also explores the concept of Resilience Engineering and helps students understand the impacts of socio-technical risks. Guest lecturers from diverse industries discuss their experiences in managing change in today's global business environment. Live participation in a weekly 1.5 hour online forum is required.

Prerequisites: ASEM 610 [Min Grade: B]

ASEM 616. Policy Issues in Prevention through Design. 3 Hours.

This course provides an overview of best practices in four major policy areas: (1) cost-benefit analysis; (2) corporate culture and the "HR Department"; (3) standards, codes, and regulations; and (4) strategic alliance development. Case studies are used to illuminate both the role of engineers and other safety professionals in shaping public policy on the local, national and international levels and the ethical challenges they encounter. The significance of an organization's corporate culture in developing and implementing advanced safety management plans is also explored. Students conduct "gap analyses" of their company's policies by comparing them to best practices and identifying unintended consequences of poor safety policy in their own business and industry sector. Students will engage in discussion board posts on contemporary policy issues and participate in exercises related to federal rulemaking. Guest lecturers from diverse backgrounds will discuss their experiences with policy issues. Live participation in a weekly 1.5 hour online forum is required.

Prerequisites: ASEM 610 [Min Grade: B]

ASEM 617. Crisis Leadership and Safety-Critical Design. 3 Hours.

Unique technical and leadership skills are required to avert or manage a crisis. This course teaches students those skills in an experiential learning environment. Case studies of real-world industrial and environmental disasters provide the framework for exploring critical human-machine interfaces; crisis communication; coping with people in recovery and developing and implementing a business continuity response. Students will engage in discussion board posts and develop a Business Impact Analysis report for their work environment or business unit. Guest lecturers from diverse backgrounds will discuss their experiences in managing crisis events. Live participation in a weekly 1.5 hour online forum is required.

Prerequisites: ASEM 610 [Min Grade: B]

ASEM 619. Capstone Project - Part 1. 3 Hours.

Bringing to bear the competencies acquired through the program, students develop a proposal, outline, schedule and rough draft of a comprehensive, advanced safety engineering and management plan for their business unit/specialty area that is consistent with the ANSI/ AIHA Z10-2005, Occupational Health and Safety Management Systems standard. Judicious selection of the Capstone topic and of projects throughout the ASEM curriculum allows students to build on and use earlier course products to support their Capstone report. Live participation in a quarterly 1.25 hour online forum is required. Must be taken during the penultimate or final semester.

Prerequisites: ASEM 610 [Min Grade: B] and ASEM 611 [Min Grade: B] and ASEM 612 [Min Grade: B] and ASEM 613 [Min Grade: B] and ASEM 614 [Min Grade: B] and ASEM 615 [Min Grade: B] and ASEM 616 [Min Grade: B] and ASEM 617 [Min Grade: B] and ASEM 618 [Min Grade: B] and ASEM 628 [Min Grade: B](Can be taken Concurrently)

ASEM 620. Capstone Project - Part 2. 3 Hours.

Students complete the development of their comprehensive, advanced safety engineering and management (ASEM) plan, including background information of the project, an ASEM plan (management and employee participation, planning, implementation and operation, evaluation and corrective action and management review), and rollout strategy. Students must submit completed report with detailed attachments, and orally present project highlights to the class in a live online classroom setting. Live participation in a quarterly 1.25 hour online forum is required.

Prerequisites: ASEM 610 [Min Grade: B] and ASEM 611 [Min Grade: B] and ASEM 612 [Min Grade: B] and ASEM 613 [Min Grade: B] and ASEM 614 [Min Grade: B] and ASEM 615 [Min Grade: B] and ASEM 616 [Min Grade: B] and ASEM 617 [Min Grade: B] and ASEM 618 [Min Grade: B] and ASEM 628 [Min Grade: B](Can be taken Concurrently)

ASEM 628. Electrical Systems Safety. 3 Hours.

There is a subset of occupational hazards characterized as low frequency, but with very high consequence (potential for catastrophic loss, fatality or permanent disabling injury). A mishap involving unintentional exposure or contact with electrical energy is one of the low frequency/high consequence exposures. We live in an electrical world, with electrical hazards embedded in nearly every aspect of daily living – at home, at work, in public places, and in recreational activities. This course explores hazards, risks and context of electrical mishaps coupled with a systems safety engineering approach to manage the risks. Course content is presented within the framework of real-world case studies from a variety of industry sectors, including, but not limited to, manufacturing, utilities, and health care and includes several guest lectures by leaders in the profession. Students apply course content to their own business environment. Live participation in a weekly 1.5 hour online forum is required.

Prerequisites: ASEM 610 [Min Grade: B]

ASEM 690. Special Topics in (Area). 1-6 Hour.

Special Topics.

ASEM 691. Individual Study in (Area). 1-6 Hour.

Individual study.

BHS-Biomedical & Health Sciences

BHS 501. Seminar I. 1 Hour.

The first of a three-course series to prepare students for application, admission, and success in professional school and the biomedical workforce. Topics will include study skills, interview skills, and test taking strategies.

BHS 502. Molecules and Cells. 4 Hours.

Chemical structures and functions of biomolecules and human cells. The disciplines of biochemistry, genetics, cell biology, and histology will be integrated to provide a framework for understanding normal and abnormal cellular states. Topics will include cellular physiology, metabolic pathways, inheritance, molecular genetics, and basic histology.

BHS 503. Microbiology and Immunology. 4 Hours.

Biology of viruses, bacteria, parasites, and fungi as well as the natural human responses to these pathogens. Innate and adaptive immunity will be explored in the context of pathogenic and non-pathogenic assault. Introduction to concepts in general pathology including mechanisms of cell injury and repair, cell adaptation, and inflammation.

BHS 550. Integrated Systems I: Neuroendocrine. 3 Hours.

Integrated study of the nervous and endocrine body systems. The gross anatomy, histology, and physiology of each system will be examined through an integrated approach, which will include a study of the interrelationships of these controlling body systems. Correlations to disease states and disease treatments will be stressed throughout.

BHS 555. Integrated Systems II: Cardiopulmonary. 3 Hours.

Integrated study of the cardiovascular and respiratory body systems. The gross anatomy, histology, and physiology of each system will be examined through an integrated approach, which will include a study of the interrelationships of these systems and the gross anatomy of the thorax. Correlations to disease states and disease treatments will be stressed throughout.

BHS 560. Integrated Systems III: Genitourinary. 2 Hours.

Exploration and integration of the urinary and reproductive systems of the human body, including development and anatomical features and differences between males and females. Microanatomy of kidneys correlated with body fluid homeostasis and urine production, and clinical disorders of the urinary tract. Male and female reproductive tracts' structure, function and gametogenesis. Female menstrual cycle at the level of hormonal regulation, events at the ovary, and changes in the uterus. Microanatomy and physiology of pregnancy. Diseases associated with the genitourinary tracts.

BHS 600. Integrated Systems IV: Gastrointestinal. 2 Hours.

Integrated study of the gastrointestinal body system. The gross anatomy, histology, and physiology of each organ will be examined through an integrated approach, which will include a study of the gross anatomy of the abdomen. Correlations to disease states and disease treatments will be stressed throughout.

BHS 601. Seminar II. 1 Hour.

The second of a three-course series to prepare students for application, admission, and success in professional school and the biomedical workforce. Topics will include professionalism, cultural competence, and ethical behavior.

BHS 602. Seminar III. 1 Hour.

The third of a three-course series to prepare students for application, admission, and success in professional school and the biomedical workforce. Topics will include interpersonal skills and teamwork.

BHS 605. Integrated Systems V: Musculoskeletal and Skin. 3 Hours.

Integrated study of the skeletal, muscular and integumentary body systems. The gross anatomy, histology, and physiology of each system will be examined through an integrated approach, which will include a study of the interrelationships of these systems and the gross anatomy of the back and limbs. Correlations to disease states and disease treatments will be stressed throughout.

BHS 610. Clinical Application and Simulation. 2 Hours.

A capstone course to provoke critical thinking about the effects of disease at various levels of organization on multiple organ systems. The integration of content throughout the program will be stressed. Activities will include small-group case studies, simulation, and standardized patient interactions.

BHS 675. Special Topics in Biomedical and Health Sciences. 1-4 Hour.

Exploration of current issues in Biomedical and Health Sciences.

BHS 698. Non-Thesis Research. 4 Hours.

This course will provide students with the opportunity to engage in inquiry and problem solving in the biomedical sciences. Students may engage in a research project or literature review on a topic related to health and disease. A written report will be the culmination of these activities.

BME-Biomedical Engineering

BME 508. Biofluids. 3 Hours.

Application of fluid mechanics in blood flow in the circulatory system; cardiovascular fluid mechanics, wall shear stress and the development of atherosclerosis, viscoelastic behavior of the arteries, Non-Newtonian character of blood.

BME 517. Engineering Analysis. 3 Hours.

Solutions to engineering problems involving ordinary and partial differential equations; Laplace transform, power series, Bessel functions, Legendre polynomials, Fourier series, Fourier integral and transform, Sturm-Liouville and separation of variables.

BME 520. Implant-Tissue Interactions. 3 Hours.

An overview of implant biocompatibility including tissue histology, histopathology of implant response and the regulatory process for medical devices.

BME 524. Current Topics in Stem Cell Engineering. 3 Hours.

This course is designed for students interested in the field of stem cells, regenerative medicine, and tissue engineering using stem cells and stem cell derived cells. The course will introduce the role of stem cells in tissue growth and development, the theory behind the design and in vitro construction of tissue and organ replacements, and the applications of biomedical engineering principles to the treatment of tissue-specific diseases. Students will have hands on experience on culturing and analyzing stem cells, stem cell differentiation, analysis of functional and physiological properties of differentiated cells, and fabricating basic engineered-tissues.

BME 535. Tissue Engineering. 3 Hours.

Principles underlying strategies for regenerative medicine such as stem cell based therapy, scaffold design, proteins or genes delivery, roles of extracellular matrix, cell-materials interactions, angiogenesis, tissue transplantation, mechanical stimulus and nanotechnology.

BME 542. Principles of Medical Imaging. 3 Hours.

Types of radiation used in medical imaging, physics of interaction of ionizing radiation with matter, bremsstrahlung, attenuation coefficients, Compton scatter, nuclear disintegration of radionuclides, generation of medical radionuclides.

BME 543. Medical Image Processing. 3 Hours.

Fundamental topics of medical image processing to practical applications using conventional computer software.

BME 550. Computational Neuroscience. 3 Hours.

This course examines the computational principles used by the nervous system. Topics include: biophysics of axon and synapse, sensory coding (with an emphasis on vision and audition), planning and decision-making, and synthesis of motor responses. There will be an emphasis on a systems approach throughout. Homework includes simulations.

BME 561. Bioelectric Phenomena. 3 Hours.

Quantitative methods in the electrophysiology of neural, cardiac and skeletal muscle systems.

BME 562. Cardiac Electrophysiology. 3 Hours.

Experimental and computational methods in cardiac electrophysiology, ionic currents, action potentials, electrical propagation, the electrocardiogram, electromechanical coupling, cardiac arrhythmias, effects of electric fields in cardiac tissue, defibrillation, and ablation.

BME 571. Continuum Mechanics of Solids. 3 Hours.

Matrix and tensor mathematics, fundamentals of stress, momentum principles, Cauchy and Piola-Kirchoff stress tensors, static equilibrium, invariance, measures of strain, Lagrangian and Eulerian formulations, Green and Almansi strain, deformation gradient tensor, infinitesimal strain, constitutive equations, finite strain elasticity, strain energy methods, 2-D Elasticity, Airy Method, viscoelasticity, mechanical behavior of polymers.

BME 572. Industrial Bioprocessing and Biomanufacturing. 3 Hours.

This course will introduce students to the growing industries related to biomedical, biopharmaceutical and biotechnology. It is targeted to offer the students marketable skills to work in a vital area of economic growth and also convey some of the challenges and opportunities awaiting.

BME 575. Quantitative Biomechanics of Injury and Rehabilitation. 3 Hours.

Students will learn the material, mechanical, electrophysiological and energetic principles of human movement. Students will learn about the healthy nonimpaired system and compare to systems impaired by injury or disability for applications in rehabilitation.

BME 590. Special Topic in BME. 3 Hours.

Special topics in biomedical areas.

BME 601. Seminar in Biomedical Engineering. 1 Hour.

Current topics in biomedical engineering technology and applications.

BME 623. Wound Healing. 3 Hours.

Study of principles of healing, methods to enhance, and clinical applications.

BME 630. Engineering Design and Commercialization. 3 Hours.

The purpose of this course is to introduce students to the process of innovating medical technologies and better prepare them for a career in the medical technology industry. Students will learn aspects of biomedical product development from needs finding, invention, intellectual property, and regulatory processes.

BME 664. Neural Computation. 3 Hours.

This course examines the principal theoretical underpinnings of computation in neural networks. Emphasis will be placed on understanding the relationship between the different approaches: dynamical systems, statistical mechanics, logic, Kalman filters, and likelihood/Bayesian estimation.

BME 665. Computational Vision. 3 Hours.

This course approaches the study of biological and artificial vision from an atheoretical perspective. We begin with a comparative survey of visual systems, and will examine vision algorithms and architectures.

BME 670. Quantitative Physiology. 3 Hours.

Study of physiological problems using advanced mathematical techniques. Topics covered include: mechanics, fluid dynamics, transport, electrophysiology of cell membranes, and control systems.

Prerequisites: BME 517 [Min Grade: C] or ME 661 [Min Grade: C] or ME 567 [Min Grade: C] or ME 761 [Min Grade: C]

BME 672. Cellular Therapy. 3 Hours.

This course will introduce students to the advanced novel research field, its clinical application, and the great potential for commercialization. It is targeted to let the students understand the fundamental mechanism of cellular therapies, get familiar with the progress of several successful therapies using human T cells and stem cells, and learn the challenges and opportunities in future biopharmaceutical and biotechnology industries.

BME 673. Lab Rotation. 3 Hours.

Graduate student entering the PhD and MS program will be matched with primary mentors through Matching Day and Lab Rotation Policy. Lab rotation will be done through the BME course. Lab rotation period in each lab can be 1 through 3 months, depending on mutual agreement between a student and a faculty. Minimum 2 lab rotations are required for students.

BME 680. Biomolecular Modeling. 3 Hours.

We will teach molecular modeling principles and applications in this course. Throughout the course, students are offered hands-on exercises in molecular modeling tools and software. The course will help students understand the critical relationship among structure, function, and thermodynamic driving forces in structural biology, and be able to utilize molecular modeling techniques to explore biological phenomena at the molecular level.

BME 690. Special Topics in (Area). 1-6 Hour.**BME 691. Individual Study in (Area). 1-6 Hour.****BME 693. Internship in Biomedical Engineering. 1-6 Hour.****BME 697. Journal Club in (Area). 1-3 Hour.**

Journal Club in Medical Imaging.

BME 698. Non-Thesis Research. 1-12 Hour.**BME 699. Master's Degree Thesis Research. 1-12 Hour.**

Prerequisites: GAC M

BME 701. Seminar in Biomedical Engineering. 1 Hour.

Current topics in biomedical engineering technology and applications.

BME 723. Wound Healing. 3 Hours.

Study of principles of healing, methods to enhance, and clinical applications.

BME 764. Neural Computation. 3 Hours.

This course examines the principal theoretical underpinnings of computation in neural networks. Emphasis will be placed on understanding the relationship between the different approaches: dynamical systems, statistical mechanics, logic, Kalman filters, and likelihood/Bayesian estimation.

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Study of physiological problems using advanced mathematical techniques. Topics covered include: mechanics, fluid dynamics, transport, electrophysiology of cell membranes, and control systems.

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BME 772. Cellular Therapy. 3 Hours.

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BME 773. Lab Rotation. 3 Hours.

Graduate students entering the PhD and MS program will be matched with primary mentors through Matching Day and Lab Rotation Policy. Lab rotation will be done through BME course. Lab rotation period in each lab can be done 1 through 3 months, depending on mutual agreement between a student and a faculty. Minimum 2 lab rotations are required for students.

BME 780. Biomolecular Modeling. 3 Hours.

We will teach molecular modeling principles and applications in this course. Throughout the course, the students are offered hands-on exercises in molecular modeling tools and software. The course will help students understand the critical relationship among structure, function, and thermodynamic driving forces in structural biology, and to be able to utilize molecular modeling techniques to explore biological phenomena at the molecular level.

BME 790. Special Topics in (Area). 1-6 Hour.**BME 791. Individual Study in (Area). 1-6 Hour.****BME 793. Internship in Biomedical Engineering. 1-6 Hour.****BME 797. Journal Club in Medical Imaging. 1-3 Hour.**

Journal Club in (Area).

BME 798. Non-Dissertation Research. 1-12 Hour.**BME 799. Dissertation Research. 1-12 Hour.**

Prerequisites: GAC Z

BST-Biostatistics

BST 601. Biostatistics. 4 Hours.

Logic and language of scientific methods in life science research; use of basic statistics in testing hypotheses and setting confidence limits. Simple and multiple regression and elementary experimental designs. BST 601 is a 4-credit course for MPH students. There are no formal prerequisites for this course; however, familiarity and comfort with basic mathematical concepts is essential. The minimum technical skills required include the ability to use Adobe Acrobat, Word, Excel, and PowerPoint. If you are deficient in any of these areas, it is your responsibility to improve your skills before starting the course.

BST 601Q. Biostatistics Online. 4 Hours.

Logic and language of scientific methods in life science research; use of basic statistics in testing hypotheses and setting confidence limits. Simple and multiple regression and elementary experimental designs. No prerequisites but familiarity with basic algebra is important. BST 601 is a 4-credit course for MPH students. There are no formal prerequisites for this course; however, familiarity and comfort with basic mathematical concepts is essential. The minimum technical skills required include the ability to use Adobe Acrobat, Word, Excel, and PowerPoint. If you are deficient in any of these areas, it is your responsibility to improve your skills before starting the course.

BST 603. Introductory Biostatistics for Graduate Biomedical Sciences. 3 Hours.

This course will utilize current statistical techniques to assess and analyze health science related data.

BST 607. Environmental Sampling and Exposure Assessment. 3 Hours.

Application of statistical techniques including use of lognormal distribution for environmental and occupational health exposure assessment problems. Spatial and temporal correlations are discussed and appropriate analysis techniques are described for these situations using statistical software packages.

BST 608. Statistical Modeling in Clinical and Epi Studies. 3 Hours.

Provide an understanding of modeling approaches to address the challenges of "real Life" data sets in the framework of linear models as they relate to clinical and epidemiological studies.

Prerequisites: BST 602 [Min Grade: C] and BST 612 [Min Grade: C]

BST 611. Intermediate Statistical Analysis I. 3 Hours.

Students will gain a thorough understanding of basic analysis methods, elementary concepts, statistical models and applications of probability, commonly used sampling distributions, parametric and non-parametric one and two sample tests, confidence intervals, applications of analysis of two-way contingency table data, simple linear regression, and simple analysis of variance. Students are taught to conduct the relevant analysis using current software such as the Statistical Analysis System (SAS).

BST 611Q. Intermediate Statistical Analysis I Online. 3 Hours.

This course will utilize current statistical techniques to assess and analyze public health related data. In addition, students will learn to read and critique the use of such techniques in published research. Students will also determine what analytical approaches are appropriate under different research scenarios.

BST 612. Intermediate Statistical Analysis II. 3 Hours.

This course will introduce students to the basic principles of tools of simple and multiple regression. A major goal is to establish a firm foundation in the discipline upon which the applications of statistical and epidemiologic inference will be built. If prerequisite is not met, permission of instructor is required.

Prerequisites: BST 611 [Min Grade: C] or BST 611Q [Min Grade: C]

BST 612Q. Intermediate Statistical Analysis II Online. 3 Hours.

This course will utilize current statistical techniques to assess and analyze public health related data. In addition, students will learn to read and critique the use of such techniques in published research. Students will also determine what analytical approaches are appropriate under different research scenarios.

Prerequisites: BST 611 [Min Grade: C] or BST 611Q [Min Grade: C]

BST 613. Intermediate Statistical Analysis III. 3 Hours.

This course will introduce students to additional general concepts in biostatistics beyond an introductory level to include study design, power and sample size estimation, mixed-models, survival analysis, survey design and interpretation of research results. Prerequisites: BST 601 or 611 and 612, or prior statistics/biostatistics course that included hypothesis testing for proportions and means, ANOVA, correlation, simple and multiple linear regression, and logistic regression (with approval of the instructor).

Prerequisites: (BST 601 [Min Grade: C] or BST 601Q [Min Grade: C] or BST 611 [Min Grade: C] or BST 611Q [Min Grade: C]) and (BST 612 [Min Grade: C] or BST 612Q [Min Grade: C])

BST 619. Data Collection and Management. 3 Hours.

Basic concepts of study design, forms design, quality control, data entry, data management and data analysis. Hands-on experience with data entry systems, e.g., DBASE, and data analysis software, e.g., PC-SAS. Exposure to other software packages as time permits. Previous computer experience or workshop on microcomputers highly recommended. NOTE: If space permits, non-degree graduate students will be permitted to enroll. All students registered for the course must attend 1st class to remain enrolled. Previous computer experience or workshop on microcomputers highly recommended.

Prerequisites: BST 601 [Min Grade: C] or BST 601Q [Min Grade: C] or BST 611 [Min Grade: C] or BST 611Q [Min Grade: C] or BST 621 [Min Grade: C]

BST 620. Applied Matrix Analysis. 3 Hours.

Vector and matrix definitions and fundamental concepts; matrix factorization and application. Eigen-values and eigen-vectors, functions of matrices, singular and ill-conditioned problems.

Prerequisites: BST 622 [Min Grade: C]

BST 621. Statistical Methods I. 3 Hours.

Mathematically rigorous coverage of applications of statistical techniques designed for Biostatistics majors and others with sufficient mathematical background. Statistical models and applications of probability; commonly used sampling distributions; parametric and nonparametric one and two sample tests and confidence intervals; analysis of two-way contingency table data; simple linear regression; simple analysis of variance designs with equal or proportional subclass members; use of contrasts and multiple comparisons procedures; introduction to survival analysis; multivariate methods. Interested students must have a year of calculus sequence before enrolling in BST 621.

BST 622. Statistical Methods II. 3 Hours.

Mathematically rigorous coverage of applications of statistical techniques designed for Biostatistics majors and others with sufficient mathematical background. Statistical models and applications of probability; commonly used sampling distributions; parametric and nonparametric one and two sample tests and confidence intervals; analysis of contingency tables; simple linear regression; simple analysis of variance designs with equal or proportional subclass members; use of contrasts and multiple comparisons procedures; introduction to survival analysis; multivariate methods.

Prerequisites: BST 621 [Min Grade: B](Can be taken Concurrently)

BST 623. General Linear Models. 3 Hours.

Simple and multiple regression using matrix approach; weighted and non-linear regression; variable selection methods; modeling techniques; regression diagnostics and model validation; systems of linear equations; factorial designs; blocking; an introduction to repeated measures designs; Coding schemes.

Prerequisites: BST 622 [Min Grade: B]

BST 624. Experimental Design. 3 Hours.

Intermediate experimental design and analysis of variance models using matrix approach. Factorial and nested (hierarchical) designs; blocking; repeated measures designs; Latin squares; incomplete block designs; fractional factorials; confounding. Students should have had matrix algebra as a prerequisite.

Prerequisites: BST 623 [Min Grade: C]

BST 625. Design/Conduct Clinical Trials. 3 Hours.

Concepts of clinical trials; purpose, design, implementation and evaluation. Examples and controversies presented.

Prerequisites: (BST 611 [Min Grade: B] and BST 612 [Min Grade: B]) or (BST 621 [Min Grade: B] and BST 622 [Min Grade: B])

BST 626. Data Management and Reporting with SAS. 3 Hours.

This course is designed to provide an introduction to data management and reporting using the SAS system.

BST 626Q. Data Management and Reporting with SAS. 3 Hours.

This course is designed to provide an introduction to data management and reporting using the SAS system. Students who have some PC computer experience or who have been introduced to SAS are eligible to take this course. Any student taking this course should be familiar with simple summary statistics such as the mean, standard deviation, standard error, median and percentiles as well as proportions. Outside of familiarity with these basic statistics, no other statistical background is required. Though not required, some programming background will be useful as this assures the instructor that the student is familiar with the logic critical in understanding conditional execution commonly used in SAS.

BST 630. Estimation & Inference. 3 Hours.

This course is an introduction to probability concepts and statistical inference. Topics include counting techniques, discrete and continuous univariate and multivariate random variables & common distributions, probability, expectation, variance, confidence intervals, the Central Limit Theorem, and hypothesis testing.

BST 631. Statistical Theory I. 4 Hours.

Fundamentals of probability; independence; distribution and density functions; random variables; moments and moment generating functions; discrete and continuous distributions; exponential families, marginal and conditional distributions; transformation and change of variables; convergence concepts, sampling distributions. Point and interval estimation; hypothesis and significance testing; sufficiency and completeness; ancillary statistics; maximum likelihood and moment estimators; asymptotic properties of estimators and tests; introduction to Bayesian inference. Prerequisites: Proficiency in Algebra and calculus is required.

BST 632. Statistical Theory II. 4 Hours.

Fundamentals of probability; independence; distribution and density functions; random variables; moments and moment generating functions; discrete and continuous distributions; exponential families, marginal and conditional distributions; transformation and change of variables; convergence concepts, sampling distributions. Point interval estimation; hypothesis and significance testing; sufficiency and completeness; ancillary statistics; maximum likelihood and moment estimators; asymptotic properties of estimators and tests; introduction to Bayesian inference.

Prerequisites: BST 631 [Min Grade: B]

BST 640. Nonparametric Methods. 3 Hours.

Properties of statistical tests; order statistics and theory of extremes; median tests; goodness of fit; tests based on ranks; location and scale parameter estimation; confidence intervals; association analysis; power and efficiency.

Prerequisites: BST 621 [Min Grade: C] and BST 631 [Min Grade: C]

BST 655. Categorical Data Analysis. 3 Hours.

Intermediate level course with emphasis on understanding the discrete probability distributions and the correct application of methods to analyze data generated by discrete probability distributions. The course covers contingency tables, Mantel-Haenszel test, measures of association and of agreement, logistic regression models; regression diagnostics; proportional odds; ordinal and polytomous logistic regression; Poisson regression; log linear models; analysis of matched pairs; and repeated categorical data.

Prerequisites: BST 621 [Min Grade: B] and BST 622 [Min Grade: B]

BST 660. Applied Multivariate Analysis. 3 Hours.

Analysis and interpretation of multivariate general linear models including multivariate regression, multivariate analysis of variance/covariance, discriminant analysis, multivariate analysis of repeated measures, canonical correlation, and longitudinal data analysis for general and generalized linear models. Extensive use of SAS, SPSS, and other statistical software.

Prerequisites: BST 623 [Min Grade: B]

BST 661. Structural Equation Modelling. 3 Hours.

Basic principles of measurements; factor analysis and latent variable models; multivariate predictive models including mediation mechanisms and moderators effects; path analysis; integrative multivariate covariance models, methods of longitudinal analysis.

Prerequisites: BST 623 [Min Grade: C]

BST 665. Survival Analysis. 3 Hours.

Kaplan-Meier estimation; Parametric survival models; Cox proportional hazards regression models; sample size calculation for survival models; competing risks models; multiple events models.

Prerequisites: BST 622 [Min Grade: B](Can be taken Concurrently)

BST 670. Sampling Methods. 3 Hours.

Simple random, stratified, cluster, ratio regression and systematic sampling; sampling with equal or unequal probabilities of selection; optimization; properties of estimators; non-sampling errors; sampling schemes used in population research; methods of implementation and analyses associated with various schemes.

Prerequisites: BST 631 [Min Grade: C]

BST 671. Meta-Analysis. 3 Hours.

Statistical methods and inference through meta analysis.

Prerequisites: BST 623 [Min Grade: C] and BST 632 [Min Grade: C]

BST 675. Introduction to Statistical Genetics. 3 Hours.

This class will introduce students to population genetics, genetic epidemiology, microarray and proteomics analysis, Mendelian laws, inheritance, heritability, test cross linkage analysis, QTL analysis, human linkage and human association methods for discrete and quantitative traits.

Prerequisites: BST 611 [Min Grade: C] or BST 621 [Min Grade: C]

BST 676. Genomic Data Analysis. 3 Hours.

The purpose of this class is to teach graduate students practical skills and statistics concepts and methods that underlie the analysis of high-dimensional genomic big data generated by high throughput technologies, as well as issues in the experimental design and implementation of these technologies. Lectures contents will be delivered often with live demonstrations. Afterwards, students will be immersed by practical problem solving sessions. The R language will be used for programming throughout the course.

Prerequisites: BST 611 [Min Grade: B] or BST 621 [Min Grade: B]

BST 680. Statistical Computing with R. 3 Hours.

This course is mainly focused on R and how to use R to conduct basic statistical computing. The course contains three themes: R programming, introduction to high performance computing, and basics of statistical computing.

Prerequisites: BST 621 [Min Grade: C] and BST 622 [Min Grade: C] and BST 626 [Min Grade: C]

BST 690. Biostatistical Consulting and Applied Problems. 3 Hours.

Students will work individually to address, analyze and present the results of an applied problem or grant design each week. The presentation of approaches, solutions and designs will be conducted in a round table format. Students will be evaluated on the quality of solution and by their presentation and class participation.

Prerequisites: BST 621 [Min Grade: C] and BST 622 [Min Grade: C]

BST 691. Pre-Doctoral Seminar Series. 1 Hour.

Biostatistics Seminar Series. This course is restricted to Biostatistics in Public Health majors only. This course provides an opportunity for students to learn about ongoing research in the field of biostatistics, clinical trials, and statistical genetics.

BST 695. Special Topics. 1-3 Hour.

Special topics in Biostatistics not covered in regular 600 level courses, but suited for Masters students in Biostatistics and doctoral students in other related disciplines.

BST 697. Internship in Biostatistics. 3 Hours.

The internship provides an opportunity for each student to work in a public health setting in a position that carries responsibility and is of particular interest. BST 697 is a 3-credit hour course requirement of all MPH-seeking students. In order to register for the internship course, students must have completed all public health core coursework. Usually, this means that students must wait until their 3rd semester to complete the internship. Students must complete a minimum of 180 contact hours with the organization during the semester in which they register for the internship.

Prerequisites: (BST 601 [Min Grade: C] or BST 601Q [Min Grade: C] or BST 611 [Min Grade: C] or BST 611Q [Min Grade: C]) and (BST 612 [Min Grade: C] or BST 612Q [Min Grade: C]) and (ENH 600 [Min Grade: C] or ENH 600Q [Min Grade: C] or ENH 611 [Min Grade: C] or ENH 611Q [Min Grade: C]) and (EPI 600 [Min Grade: C] or EPI 600Q [Min Grade: C] or EPI 610Q [Min Grade: C] or EPI 610 [Min Grade: C]) and (HB 600 [Min Grade: C] or HB 600Q [Min Grade: C]) and (HCO 600 [Min Grade: C] or HCO 600Q [Min Grade: C])

BST 698. Non Thesis Research. 1-12 Hour.

Independent non-thesis research with guidance of appropriate faculty. Restricted to Biostatistics Majors only or permission of instructor / department.

BST 699. Thesis Research. 1-12 Hour.

Thesis Research under the direction of research committee. At least 6 graduate credits needed for graduation. Must be admitted to candidacy.

Prerequisites: GAC M

BST 723. Theory of Linear Models. 3 Hours.

Multivariate normal distributions and quadratic forms; least square estimation; nested models; weighted least squares, testing contrasts; multiple comparison; polynomial regression; maximum likelihood theory of log linear models will be studied.

Prerequisites: BST 632 [Min Grade: B]

BST 725. Advances Clinical Trials. 3 Hours.

This course will provide students with the tools to develop a basic understanding of the fundamental statistical principles involved in the design and conduct of clinical trials.

Prerequisites: BST 611 [Min Grade: C] and BST 612 [Min Grade: C] or BST 621 [Min Grade: C] and BST 622 [Min Grade: C] and BST 625 [Min Grade: C]

BST 726. Advanced Clinical Trials II. 1 Hour.

This course builds on the knowledge gained in BST 725 in order to develop a more thorough understanding of the basic methodology behind important statistical concepts used in the design and analysis of large, randomized clinical trials. The class will involve discussions of publications dealing with current topics of interest in clinical trials.

Prerequisites: BST 621 [Min Grade: C] and BST 622 [Min Grade: C] and BST 625 [Min Grade: C] and BST 631 [Min Grade: C] and BST 632 [Min Grade: C] and BST 725 [Min Grade: C]

BST 735. Advanced Inference. 4 Hours.

Stochastic convergence and fundamental inequalities; weak convergence and the central limit theorems; large sample behavior of the empirical distribution and order statistics; asymptotic behavior of estimators and tests with particular attention to LR, score and Wald tests.

Prerequisites: BST 631 [Min Grade: B] and BST 632 [Min Grade: B]

BST 740. Bayesian Analysis. 3 Hours.

To introduce the student to the basic principles and tools of Bayesian Statistics and most importantly to Bayesian data analysis techniques. A major goal is to establish a firm foundation in the discipline upon which the applications of statistical and epidemiologic inference will be built.

Prerequisites: BST 632 [Min Grade: C]

BST 741. Advanced Bayesian Analysis II. 3 Hours.

This course is intended to illustrate advanced Bayesian modeling and computation for variety of models and problems.

Prerequisites: BST 631 [Min Grade: B] and BST 632 [Min Grade: B]

BST 750. Stochastic Modeling. 3 Hours.

Poisson processes; random walks; simple diffusion and branching processes; recurrent events; Markov chains in discrete and continuous time; birth and death process; queuing systems; applications to survival and other biomedical models will be studied.

Prerequisites: BST 632 [Min Grade: C]

BST 760. Generalized Linear and Mixed Models. 3 Hours.

Generalized linear models; mixed models; and generalized estimating equations.

Prerequisites: BST 723 [Min Grade: B]

BST 765. Advanced Computational Methods. 3 Hours.

Numerical algorithms useful in biostatistics including likelihood maximization using the Newton-Raphson method, EM algorithm, numerical integration using quadratic and Monte-Carlo methods, data augmentation algorithm, and MCMC and Metropolis-Hastings algorithm; randomization tests; resampling plans including bootstrap and jackknife will be studied.

Prerequisites: BST 632 [Min Grade: B]

BST 775. Statistical Methods for Genetic Analysis I. 3 Hours.

This course will provide a statistical basis for describing variation in qualitative (disease) and quantitative traits. This will include decomposition of trait variation into components representing genes, environment and gene-environment interaction. Resemblance between relative and heritability will be described. Important topics of discussion will include oligogenic and polygenic traits, complex segregations analysis, methods of mapping and characterizing simple and complex trait loci. NOTE: It is assumed that students are comfortable with regression theory, covariance, correlation, and likelihood theory. Interested students are urged to contact the instructors with concerns regarding assumed knowledge.

Prerequisites: BST 623 [Min Grade: C] and BST 632 [Min Grade: C] and BST 675 [Min Grade: C]

BST 776. Statistical Methods for Genetic Analysis II. 3 Hours.

This course builds on the knowledge gained in BST 775 with rigorous mathematical & statistical treatment of methods for localizing genes and environmental effects involved in the etiology of complex traits using case-control and pedigree data. NOTE: Knowledge of SAS and programming languages such as C++, and basic knowledge of multivariate methods and Markov chain theory is highly recommended.

Prerequisites: BST 775 [Min Grade: C]

BST 793. Post-doc Seminar Series. 3 Hours.

BST seminar series. Permission of instructor / department required.

BST 795. Advanced Special Topics. 1-6 Hour.

This course is designed to cover advanced special topics in Biostatistics that are not covered in regular 700 level courses, but suited for doctoral students in Biostatistics.

Prerequisites: BST 622 [Min Grade: B] and BST 632 [Min Grade: B]

BST 798. Non-Dissertation Research. 1-12 Hour.

Non-dissertation research with the guidance of appropriate faculty. Research conducted before admission to candidacy for the doctoral degree. Biostatistics majors only or permission of instructor / department required.

BST 799. Dissertation Research. 1-12 Hour.

Doctoral Level Dissertation Research under the direction of the dissertation research committee. Reserved for Biostatistics only or permission of instructor /department. Admission to Candidacy required.

Prerequisites: GAC Z

BT-Biotechnology

BT 500. Principles of Biotechnology - Nucleic Acid Technology. 3 Hours.

Theories and knowledge required for the development and commercialization of nucleic acid-based technology for the biotechnology industry including genes, cloning, detection, therapies, diagnostics, and analysis.

BT 550. Principles of Biotechnology - Amino Acid Technology. 3 Hours.

Theories and knowledge required for the development and commercialization of amino acid-based technology for the biotechnology industry including protein-based therapeutics, diagnostics, vaccines, and research reagents.

BT 600. Principles of Biotechnology - Systems Biology & Pharmacology. 3 Hours.

Theories and knowledge required for the understanding of the science and technology of systems biology and pharmacology.

BT 650. Applications in Biotechnology I. 1 Hour.

Lab provides the opportunity to set-up, perform, and interpret the results of various molecular assays. These include, but are not limited to, the following: nucleic acid isolation, enzymatic manipulation of nucleic acids, gel electrophoresis, amplification reactions and hybridization reactions. Most of the laboratory work will involve a eukaryotic system.

BT 651. Applications in Biotechnology II. 1 Hour.

A laboratory that prepares students for the biotechnology industry by teaching how recombinant DNA can be used to generate specific proteins in any protein expression system.

BT 652. Applications in Biotechnology III. 1 Hour.

Laboratory applications required for the research and development of nucleic acid and amino acid based technology for the biotechnology industry.

BT 670. Bench to Commercialization I. 3 Hours.

Focus on growth of a biotechnology company from inception through the early stages of development. Topics will include market assessment, business plan development, raising capital, and regulatory and quality systems requirements for drugs, biologics, medical devices or combination products.

BT 671. Bench to Commercialization II. 3 Hours.

Focus is on the issues and challenges effecting the life cycle of a biotechnology company and product as it progresses through the different stages of development including regulatory strategies, financing strategies, business development, and marketing strategies.

BT 672. Bench to Commercialization III. 3 Hours.

Focus is on the role of managers and leaders within biotechnology companies as they undergo constant change. The course will review effective communication strategies, problem solving tactics, leadership skills and development of methods to implement change. Students will focus on developing writing, verbal, and presentation skills through a series of projects.

BT 675. Special Topics in Biotechnology. 1-4 Hour.

Exploration of current issues in Biotechnology.

BT 676. Innovative Technologies in Biotechnology. 1 Hour.

An overview of new and innovative technologies used in the discovery, development, and production of biotechnology products. This will include a series of guest speakers who have successfully discovered novel technologies and products and transitioned them into early-stage companies.

BT 695. Biotechnology Internship. 2-4 Hours.

Supervised basic research in areas including molecular biology, protein chemistry, drug discovery, cardiovascular diseases, neurodegenerative diseases and cancer. Students are trained in research planning and execution, problem-solving, team work, and data analysis and presentation.

BT 698. Non-Thesis Research. 1-6 Hour.

Non Thesis Research.

BTR-Biotechnology & Regulatory Affairs

BTR 605. Biotechnology Regulatory & Quality Systems. 3 Hours.

U.S. and European Union regulatory affairs frameworks and practices governing the development, approval, manufacturing and surveillance of pharmaceuticals and medical devices, including in vitro diagnostic products. Regulations covered include investigational new drug applications (IND), new drug applications (NDA), good laboratory practices (GLP), good clinical practices (GCP) and current good manufacturing practices (cGMP).

BTR 615. Applications of Biological Processes in Drug Development. 3 Hours.

Overview of biological processes and laboratory techniques for discovery, development and evaluation of therapeutic drugs. Focus on drug development processes such as gene cloning, culture scale-up, downstream processing, and product purification. Emphasis on theory and application of laboratory methods used in drug development.

BTR 620. Regulation of Food and Drugs. 3 Hours.

Administrative procedures followed by the FDA; enforcement activities of the FDA, including searches, seizure actions, injunctions, criminal prosecutions, and civil penalties authorized by statutes.

BTR 640. Clinical Development of Drugs, Biologics, Diagnostics, and Medical Devices. 3 Hours.

Major concepts under which clinical trials are designed and run. Focus on phases of clinical trial development, role of the U.S. Food and Drug Administration, Institutional Review Boards, and the Code of Federal Regulations and ethical principles.

BTR 675. Special Topics in Biotechnology Regulatory Affairs. 1-4 Hour.

Exploration of current issues in Biotechnology Regulatory Affairs.

BTR 690. Clinical Trial Implementation. 3 Hours.

Activities involved in running a clinical trial from study initiation to study close-out. Complex details and issues associated with study initiation, site and data management, preparation of the final report and study close-out.

BY-Biology

BY 501. Advanced Genetics for Teachers I. 3 Hours.

Basic genetic principles; recent research developments. Prerequisite: Permission of instructor.

BY 502. Botany for Teachers. 3 Hours.

Provides understanding of human structural and functional relationships essential in modern biology. Corequisite: BY 503.

BY 503. Advanced Biology for Teachers III. 1 Hour.

Laboratory supplementing lecture (BY 502) through use of human specimens, models, and demonstrations.

BY 504. Life Science for Middle School Teachers. 3 Hours.

Life Science for Middle School Teachers.

BY 507. Microbial Ecology. 3 Hours.

Microorganisms in nature; interactions with each other and with environment. Independent project required. Prerequisite: BY 271.

BY 511. Molecular Genetics. 3 Hours.

Prokaryotic and eukaryotic gene structure and function. Independent project required. Prerequisite: BY 271, BY 330 and CH 232.

BY 527. Histology. 4 Hours.

Microscopic anatomy of cells, tissues, and organs of animals; correlation of structure and function. Techniques and methodology. Lecture and laboratory. Completion of additional independent project required for graduate credit.

BY 527L. Histology Laboratory. 0 Hours.

Histology Lab required with BY 527 lecture.

BY 531. Advanced Recombinant DNA Technology. 3 Hours.

Manipulation of genes and their regulations, and techniques used in recombinant DNA technology. Independent project required. Prerequisites: BY 311, BY 330, CH 233 and CH 460 or 461.

BY 535. Natural History of Vertebrates. 4 Hours.

Adaptations of vertebrates for survival in particular environments. Survey and classification of local vertebrates. Two lectures, one laboratory or field trip per week. Independent project required.

BY 535L. Natural History of the Vertebrates Lab. 0 Hours.

Lab must be taken with BY 535 lecture.

BY 540. Biology of Aging. 3 Hours.

Current understanding of aging, measuring aging changes, theories of aging and aging changes in various human systems.

Prerequisites: BY 123 [Min Grade: C]

BY 552. Field Botany. 4 Hours.

Principles and techniques of plant identification and classification; consideration of phylogenetic systems. Lecture and field trips. Independent project required.

BY 552L. Field Botany Lab. 0 Hours.

Lab must be taken with BY 552 lecture.

BY 555. Principles of Scientific Investigation. 3 Hours.

Methods of scientific process, experimental design, data interpretation and presentation, and scientific writing.

BY 560. Advanced Invertebrate Zoology. 3 Hours.

Selected topics. Lecture and student projects. Prerequisite: BY 255.

BY 565. Limnology. 4 Hours.

Biology of freshwater and estuarine organisms. Lecture, laboratory, and field trips. Prerequisite: BY 124 and BY 470.

Prerequisites: BY 104 [Min Grade: D] and BY 370 [Min Grade: D]

BY 565L. Limnology Lab. 0 Hours.

Lab must be taken with BY 565 lecture.

BY 567. Tropical Ecology. 3 Hours.

An overview of the major tropical ecotypes with emphasis on ecology of terrestrial, aquatic, and marine tropical organisms. Major portion of course taught at a tropical field station in the Caribbean. Lectures, laboratory, and field trips. Library research paper required. Prerequisites: BY 255 or 256 or 470 and Graduate Standing and Permission of Instructor.

BY 568. Galapagos Ecology. 3 Hours.

The ecology of the Galapagos Islands, with an emphasis on terrestrial & marine organisms. Major portion conducted on the Galapagos Islands. Lecture & field trips. Library research paper required. Prerequisites: BY 255 or 256 or 470 and Graduate Standing and Permission of Instructor.

Prerequisites: BY 255 [Min Grade: D] or BY 256 [Min Grade: D] or BY 470 [Min Grade: D]

BY 569. Rain Forest Ecology. 3 Hours.

Overview of physical and environmental factors that structure the rainforest, biodiversity of life, and interactions of its organisms. A survey of prominent biota will be conducted. Major portion of course taught in Costa Rica. Lectures and field trips. Library research paper required. Prerequisites: BY 255 or 256 or 470 and Graduate Standing and Permission of Instructor.

BY 570. Ecology. 3 Hours.

Ecosystems and population biology. Lectures. Independent project required. Prerequisite: BY 255 or 256 or 260 and Graduate Standing.

BY 571. Ecology Lab. 1 Hour.

Preq is BY 570 or concurrent enrollment. Field trips. 1 hour.

Prerequisites: BY 570 [Min Grade: C](Can be taken Concurrently)

BY 573. Biochemical Adaptation to the Environment. 3 Hours.**BY 585. Northern Field Studies. 3 Hours.**

Ecology of northern coniferous forest and tundra ecosystems. Major portion of course taught on site in Alaska. Lecture and field trips. Graduate project/paper required. 3 hours. (Irregular offering).

BY 595. Special Topics in Biology I. 1-4 Hour.**BY 596. Special Topics in Biology II. 0-4 Hours.****BY 597. Investigative Techniques. 2 Hours.****BY 598. MR Lev Non-Thesis Research. 1-10 Hour.****BY 605. Microbial Physiology. 3 Hours.**

Microbial structure and function, growth, metabolism, and regulation of cellular activity. Independent project required. Prerequisites: BY 271 and 3 semester hours of organic chemistry.

BY 607. Microbiology Ecology. 3 Hours.

Microorganisms in nature; interactions with each other and with the environment. Independent project required.

BY 610. Comparative Animal Physiology. 3 Hours.

Special physical and chemical processes occurring at cell tissue, and organ levels. Independent projects required.

BY 611. Advanced Human Anatomy. 4 Hours.

This course is a detailed, advanced examination of human anatomy and histology. In a laboratory setting, students will achieve course objectives from dissecting a human cadaver, and observing prosected cadavers and casted models.

BY 612. CIRTL-Biology. 1-4 Hour.

This discipline specific seminar course in CIRTL (The Center for the Integration of Research, Teaching and Learning) - Biology is specially designed to offer students a hands-on opportunity to do an in-depth analysis on various effective teaching techniques that can be utilized in a typical college classroom setting. In the light of this analysis, students are expected to deliver a presentation simulating a classroom lecture on any topic related to Biology or if they prefer, they can also give an oral presentation on any pedagogical topic.

BY 613. CIRTL Service-Learning Workshop. 1 Hour.

This workshop offered by the Department of Biology for CIRTL (The Center for the Integration of Research, Teaching and Learning) @UAB is specially designed to offer students a hands-on opportunity on designing a service-learning course in the realm of their study with an added emphasis on the importance of service-learning in today's classroom.

BY 615. Eco-Epid. of Arthropods. 4 Hours.

This course covers the ecology, epidemiology, & control of arthropods and the pathogens they transmit to humans and animals. Special emphasis will be placed on emerging and re-emerging pathogens such as: dengue, yellow fever, bartonella, Rift Valley fever, typhus, & Chagas disease. The laboratory will reinforce the lectures with hands-on identification of both arthropods and pathogens. Lecture and Lab. Independent Project required. 3 hours.

BY 615L. Ecology & EPI Arthrop Lab. 0 Hours.**BY 616. Cellular Physiology. 3 Hours.**

Structure and function of cells and their components at the molecular level. Laboratory experience using modern equipment and biochemical methods. Independent project required.

BY 618. Colloquium in Biology of Aging. 1 Hour.

The course will focus on readings and interpretation of scientific papers, data, and experimental results relevant to endocrinology and aging. In addition to readings, oral presentations, discussions, and a research proposal are the major components of the course.

BY 619. Reproductive Physiology. 3 Hours.

Comparative reproductive physiology in animals with emphasis on mammals. Independent project required.

BY 620. General Endocrinology. 3 Hours.

The central theme of this course is the role of hormone chemical messengers in the regulation of physiological processes. Topics include structure of endocrine cells and glands, hormone synthesis and chemistry, physiological effects of hormones, and mechanisms of hormone action. Emphasis is placed on vertebrate systems, but instructive invertebrate systems are also considered. Term paper required.

Prerequisites: BY 256 [Min Grade: C]

BY 626. Evolutionary Medicine. 3 Hours.

An evolutionary approach to issues relating to human health and disease.

BY 628. Instruct Bio Labs: Teaching Techniques. 3 Hours.

Student will assist in instruction of an introductory biology laboratory. Responsibilities will also include preparation of quizzes and practicals and designing and conducting an instructional laboratory exercise.

BY 629. Evolutionary Biology. 3 Hours.

This course introduces the history of evolutionary thought and modern evolutionary theory. Discussions cover (but are not limited to) the history of life, mechanisms of evolutionary change, sexual selection, adaptation, speciation, and molecular evolution. Students will also be introduced to historical and contemporary studies of evolution on a wide variety of topics and organisms. Regular meetings outside of lecture will involve discussions of classic and contemporary research papers in the field.

BY 632. Biological Information Resources. 3 Hours.

The National Center for Biological Information (NCBI) website is a treasure house of information and tools for researchers in all areas of modern Biology. The goal of this course is to provide guidance for students who wish to become familiar with the NCBI website through an online learning experience. They will learn many of the features available at this site and will gain experience using some of the tools. The course will be taught completely online and will consist of 1) Guidelines for navigating through NCBI, 2) Study guide questions for students to answer online, 3) NCBI tutorials with questions to be answered online, 4) Assignments with questions to be answered online, 5) Online exams. Graduate levels require a graduate project.

Prerequisites: BY 123 [Min Grade: C] or BY 124 [Min Grade: C]

BY 633. Advanced Molecular Genetics. 3 Hours.

Examination of the molecular genetics of eukaryotic organisms, including genomes, nucleosomes, chromosomes, transcription, splicing, transposition and signal transduction. The role of molecular biology in immune diversity and cell growth will also be studied.

BY 634. Functional Genomics and Systems Biology. 3 Hours.

Systems biology is an inter-disciplinary study underlying complex biological processes as integrated systems of many interacting components. This course will give students a foundation in understanding complex biological interactions at the molecular, network and genomic level. This course will cover state-of-the-art high throughput established and novel approaches used in genome sequencing, transcriptomics, proteomics and metabolomics to obtain, integrate and analyze complex data. The students will also get familiar with knowledge on experimental perturbation of genomes, gene regulatory networks, comparative genomics and evolution, basic bioinformatics. This course will be a combination of text based lectures and discussions of the current literature relevant to Functional Genomics and Systems Biology.

Prerequisite: BY210 minimum grade of C.

Prerequisites: BY 210 [Min Grade: C]

BY 637. Epigenetics. 3 Hours.

This course provides a survey of the field of epigenetics, introducing the student to the diverse areas of epigenetic research in a variety of eukaryotic systems. The course combines lectures with discussion of primary literature and research talks from invited faculty speakers working in epigenetics. In addition to providing an overview of the field of epigenetics, this course emphasizes working with primary scientific literature and the development of critical reading skills. Additional assignments are required for graduate credit.

BY 640. Immunology. 3 Hours.

Immune system and functions of host humoral and cellular immune responses. Mechanisms of antigen and antibody reactions and basic immunological methods. Term paper required.

BY 642. Experimental Phycology. 4 Hours.

Introduction to algae. Experimental approaches to productivity. Algae as model systems. Independent project required. Concurrent enrollment in BY 642 lab required.

BY 642L. Experimental Phycology Lab. 0 Hours.

Lab must be taken concurrently with BY 642 lecture.

BY 645. Neuroanatomy. 4 Hours.

This course will provide detailed lecture and laboratory experiences that describe the anatomy of the human brain, spinal cord, and peripheral nervous system. Students will culture rat hippocampal neurons and map the cerebral and cerebellar cortex on preserved human brains. Deep brain structures will be identified and their functional significance explored. Cranial nerves and major peripheral nerves will be described and identified through cadaveric dissections. Normal pathways will be contrasted with examples of abnormalities along with the resulting functional impairments. Graduate credit will be earned through the completion of additional term papers and/or projects.

BY 646. Techniques in Biological Research. 3 Hours.

Concepts and practical application of techniques pertinent to biological research.

BY 648. Psychoneuroimmunology. 3 Hours.

Explores communication between neuroendocrine and immune systems.

BY 651. Principles of Botany. 3 Hours.

This course introduces the student to the basic concepts of plant biology including plant diversity, structure, physiology, metabolism, reproduction, genetics, molecular biology, evolution and ecology. It is targeted to Biology Majors and Biology Graduate Students. This class brings together knowledge and methodologies from a number of different disciplines to provide students with an intensive and comprehensive plant curriculum from the molecular to the organismal level.

BY 652. Field Botany for Teachers. 4 Hours.

Principles and techniques of plant identification and classification; consideration of phylogenetic systems. Lectures and field trips. Independent project required.

BY 652L. Field Botany Lab. 0 Hours.

Lab must be taken with BY 652 lecture.

BY 655. Biometry. 3 Hours.

Statistical techniques used to analyze and interpret data, with emphasis on biological applications. Lecture and computer-based laboratory. 3 semester hours. Graduate standing and permission of instructor.

BY 656. Comparative Vertebrate Anatomy. 4 Hours.

Study of the anatomical systems of vertebrates in an evolutionary and functional context. Covers form, function, development and phylogeny of vertebrates, with overviews of organ systems, and the major adaptive events of vertebrate evolution. Labs complement lectures with dissections of representative species, and surveys of specializations in other forms. Lecture and laboratory.

BY 656L. Comparative Vertebrate Anatomy Lab. 0 Hours.

Comparative Vertebrate Anatomy Lab required with BY 656 lecture.

BY 662. Introductory Neurobiology. 3 Hours.

Introduction to biological basis of nervous system function. Comparative approach applying molecular, cellular, and systems' concepts to nervous system function is used to examine electrical and chemical signaling, neural circuitry, and cellular basis of behavior and neural development. Independent project required.

BY 665. Limnology. 4 Hours.

Introduction to ecology of inland waters and estuaries. Lectures and field trips.

BY 665L. Limnology Lab. 0 Hours.

Lab must be taken concurrently with BY 665 lecture.

BY 667. Population Ecology. 3 Hours.

This course covers the structure and dynamics of populations with an emphasis on understanding how reproduction, mortality, and dispersal interact to control fluctuations in population size and structure. Special emphasis will be placed on the use of models to address specific applications in conservation biology and natural resource management. Independent project/paper required. Preqs: BY 570 & graduate stranding or permission of instructor.

BY 668. Conservation Genetics. 3 Hours.

This intensive course will introduce students to the genetic tools of modern population biology – which ones are available, practical, and useful for particular questions – and how these genetic analyses have been applied to a wide variety of ecological topics, including: dispersal, life histories, recruitment, habitat and mate choice, local selection, genetic differentiation, the conservation of biodiversity, and speciation. Importantly, this course is an opportunity to become proficient at applying molecular tools to bolster ecological studies. Time will be spent in lectures and learning practical coding and data analyses.

BY 669. Molecular Ecol & Phylogenetics. 3 Hours.

Course surveys processes and patterns of molecular evolution and methods of phylogenetic analysis of DNA sequences, amino acid sequences, and other molecular markers. Additionally, a project/paper will be required. Graduate level; 3 hours credit.

BY 670. Scientific Communication. 3 Hours.

Becoming a professional biologist is challenging and requires mastering a variety of skills. This course complements the biological knowledge graduate students gain from other courses and their thesis research by providing training, experience, and critical feedback in the following areas.

BY 671. Biochemical Adapt Environment. 3 Hours.

Examination of physiological and biochemical adaptations of organisms to physical environment.

BY 673. Biochemical Adaptation to the Environment. 3 Hours.**BY 674. Chemical Ecology. 3 Hours.**

Study of chemical interactions between organisms or between organisms and their environment. Topics include chemical signaling between organisms, sensing of the chemical environment, and chemical defenses against predators, pathogens, biofoulers, or competitors. Students will be introduced to these topics in a wide variety of terrestrial and aquatic habitats, with a special emphasis on marine organisms. Independent project/paper required. Preq: Graduate standing.

BY 675. Comparative Developmental Biology. 3 Hours.

Mechanisms of development with emphasis on comparative biology. Graduate standing.

Prerequisites: BY 210 [Min Grade: D]

BY 679. Colloquium in Evidenced Based Teaching. 1 Hour.

This pedagogy based colloquium is designed to prepare the next generation of future STEM faculty members in evidence-based practices. The course will begin with an in-depth discussion related to the Vision and Change in Biology Undergraduate Education: A Call to Action. Specific chapters from this document will be assigned as "Reading Assignments" on a weekly basis. Furthermore, journal article discussions will be included to better understand innovative teaching strategies like active-learning, classroom-response system, inclusive learning environments and initiating team based learning activities.

BY 680. Epigenetics Discussion. 1 Hour.

This course provides the student with an exposure to a wide range of basic epigenetics research topics. It will promote scientific literacy, discussion skills, and critical thinking skills. In addition, students will gain experience developing lectures and providing constructive criticisms to their peers.

BY 681. Colloquium in Physiological Ecology. 1 Hour.

Current research.

BY 682. Colloquium in Immunology. 1 Hour.

Current research.

BY 683. Colloquium in Physiology. 1 Hour.

Current research.

BY 684. Colloquium in Microbial Ecology. 1 Hour.

Current research.

BY 685. Colloquium in Cell Biology. 1 Hour.

Current research.

BY 686. Colloquium in Mammalian Development. 1 Hour.

Current research.

BY 687. Colloquium in Endocrinology. 1 Hour.

Current research.

BY 688. Colloquium in Algal Ecophysiology. 1 Hour.

Current research in specific areas.

BY 689. Colloquium in Genetics. 1 Hour.

Current research.

BY 690. Colloquium in Cellular Physiology. 1 Hour.

Current research in specific areas.

BY 691. Colloquium in Botany. 1 Hour.

Current research developments.

BY 692. Colloquium in Ecology. 1 Hour.

Current research.

BY 693. Colloquium in Embryology. 1 Hour.

Current research.

BY 694. Colloquium in Microbiology. 1 Hour.

Current research in microbial ecology and microbial physiology.

BY 695. Special Topics in Biology I. 1-4 Hour.**BY 696. Special Topics in Biology II. 1-4 Hour.**

biology special topics.

BY 697. Investigative Techniques. 1-2 Hour.

Application of modern experimental techniques in solving research problems.

BY 698. Nonthesis Research. 1-12 Hour.

Non-thesis research hours.

BY 699. Thesis Research. 1-10 Hour.

Prerequisite: Admission to candidacy.

Prerequisites: GAC M

BY 718. Colloquium in Biology of Aging. 1 Hour.

The course will focus on readings and interpretation of scientific papers, data, and experimental results relevant to endocrinology and aging. In addition to readings, oral presentations, discussions, and a research proposal are the major components of the course.

BY 732. Biological Information Resources. 3 Hours.

The National Center for Biological Information (NCBI) website is a treasure house of information and tools for researchers in all areas of modern Biology. The goal of this course is to provide guidance for students who wish to become familiar with the NCBI website through an online learning experience. They will learn many of the features available at this site and will gain experience using some of the tools. The course will be taught completely online and will consist of 1) Guidelines for navigating through NCBI, 2) Study guide questions for students to answer online, 3) NCBI tutorials with questions to be answered online, 4) Assignments with questions to be answered online, 5) Online exams. Graduate levels require a graduate project.

Prerequisites: BY 123 [Min Grade: C] or BY 124 [Min Grade: C]

BY 734. Functional Genomics and Systems Biology. 3 Hours.

Systems biology is an inter-disciplinary study underlying complex biological processes as integrated systems of many interacting components. This course will give students a foundation in understanding complex biological interactions at the molecular, network and genomic level. This course will cover state-of-the-art high throughput established and novel approaches used in genome sequencing, transcriptomics, proteomics and metabolomics to obtain, integrate and analyze complex data. The students will also get familiar with knowledge on experimental perturbation of genomes, gene regulatory networks, comparative genomics and evolution, basic bioinformatics. This course will be a combination of text based lectures and discussions of the current literature relevant to Functional Genomics and Systems Biology.

Prerequisite: BY210 minimum grade of C.

Prerequisites: BY 210 [Min Grade: C]

BY 737. Epigenetics. 3 Hours.

This course provides a survey of the field of epigenetics, introducing the student to the diverse areas of epigenetic research in a variety of eukaryotic systems. The course combines lectures with discussion of primary literature and research talks from invited faculty speakers working in epigenetics. In addition to providing an overview of the field of epigenetics, this course emphasizes working with primary scientific literature and the development of critical reading skills. Additional assignments are required for graduate credit.

BY 746. Tech in Biological Research I. 3 Hours.

Concepts and practical application of techniques pertinent to biological research.

BY 751. Principles of Botany. 3 Hours.

This course introduces the student to the basic concepts of plant biology including plant diversity, structure, physiology, metabolism, reproduction, genetics, molecular biology, evolution and ecology. It is targeted to Biology Majors and Biology Graduate Students. This class brings together knowledge and methodologies from a number of different disciplines to provide students with an intensive and comprehensive plant curriculum from the molecular to the organismal level.

BY 755. Biometry. 3 Hours.

Statistical techniques used to analyze and interpret data, with emphasis on biological applications. Lecture and computer-based laboratory. 3 semester hours. Graduate standing and permission of instructor.

BY 767. Population Ecology. 3 Hours.

This course covers the structure and dynamics of populations with an emphasis on understanding how reproduction, mortality, and dispersal interact to control fluctuations in population size and structure. Special emphasis will be placed on the use of models to address specific applications in conservation biology and natural resource management. Independent project/paper required. Graduate standing or permission of instructor.

BY 768. Conservation Genetics. 3 Hours.

This intensive course will introduce students to the genetic tools of modern population biology – which ones are available, practical, and useful for particular questions – and how these genetic analyses have been applied to a wide variety of ecological topics, including: dispersal, life histories, recruitment, habitat and mate choice, local selection, genetic differentiation, the conservation of biodiversity, and speciation. Importantly, this course is an opportunity to become proficient at applying molecular tools to bolster ecological studies. Time will be spent in lectures and learning practical coding and data analyses.

BY 769. Molecular Ecol & Phylogenetics. 3 Hours.

This intensive course will introduce students to the genetic tools of modern population biology – which ones are available, practical and useful for particular questions – and how these genetic analyses have been applied to a wide variety of ecological topics, including: dispersal, life histories, recruitment, habitat and mate choice, local selection and genetic differentiation, the conservation of biodiversity and speciation. Importantly, this course is an opportunity to become proficient at applying molecular tools to bolster ecological studies. Time will be spent in lectures and learning practical coding and data analyses.

BY 770. Scientific Communication. 3 Hours.

Becoming a professional biologist is challenging and requires mastering a variety of skills. This course complements the biological knowledge graduate students gain from other courses and their thesis research by providing training, experience, and critical feedback in the following areas.

BY 773. Biochemical Adaptation to the Environment. 3 Hours.**BY 780. Epigenetics Discussion. 1 Hour.**

This course provides the student with an exposure to a wide range of basic epigenetics research topics. It will promote scientific literacy, discussion skills, and critical thinking skills. In addition, students will gain experience developing lectures and providing constructive criticisms to their peers.

BY 781. Colloquium in Physiological Ecology. 1 Hour.

Current research.

BY 782. Colloquium in Immunology. 1 Hour.

Current research.

BY 783. Colloquium in Physiology. 1 Hour.

Current research.

BY 784. Colloquium in Microbial Ecology. 1 Hour.

Current research.

BY 785. Colloquium in Cell Biology. 1 Hour.

Current research.

BY 786. Colloquium in Mammalian Development. 1 Hour.

Current research.

BY 787. Colloquium in Endocrinology. 1 Hour.

Current research.

BY 788. Colloquium in Algal Ecophysiology. 1 Hour.

Current research in specific areas.

BY 789. Colloquium in Genetics. 1 Hour.

Current research.

BY 790. Colloquium in Cellular Physiology. 1 Hour.

Current research in specific areas.

BY 791. Colloquium in Botany. 1 Hour.

Current research developments.

BY 792. Colloquium in Ecology. 1 Hour.

Current research.

BY 793. Colloquium in Embryology. 1 Hour.

Current research.

BY 794. Colloquium in Microbiology. 1 Hour.

Current research in microbial ecology and microbial physiology.

BY 795. Special Topics in Biology I. 1-4 Hour.**BY 796. Special Topics in Biology II. 1-4 Hour.****BY 797. Investigative Techniques. 1-2 Hour.**

Application of modern experimental techniques in solving research problems.

BY 798. Nondissertation Research. 1-10 Hour.

Non-dissertation research hours.

BY 799. Dissertation Research. 1-10 Hour.

Dissertation research hours. Admission to candidacy required.

Prerequisites: GAC Z

CB-Cell Biology

CB 500. BioTeach. 3,6 Hours.

For teachers of science courses. Hands on experience. McWane Center BioTeach is a graduate-level introductory laboratory course in molecular biology designed for high-school science teachers. UAB faculty provide a lecture series covering topics that include AIDS, tuberculosis, cancer, forensic medicine, tropical diseases, neurobiology, human genetics, sickle cell anemia and ethical issues in genetic research. Lectures are coupled with hands-on, laboratory training in bacterial genetics, mutagenesis, DNA cloning, gel electrophoresis, polymerase chain reaction, DNA sequencing, forensic analysis, and applications of molecular biology. Science teachers will learn how to incorporate the laboratory experiments into their own classrooms and labs. BioTeach is a course in molecular and cellular biology primarily intended for in-service secondary education teachers, but also includes pre-service teachers. Students will receive state-of-the-art lectures from top UAB researchers on subjects that range from the biology of HIV/AIDS to molecular mechanism underlying hypertension. Each lecture is accompanied by a laboratory experience that the teachers can take back into their classrooms. Further, the teachers each develop a lesson plan that provides a format for teaching each of the BioTeach modules during a one-week secondary education science classroom experience. The Course is taught at McWane Science Center and can be taken for 1-6 credit hours, based on the students participation in the course.

CB 700. Gross Anatomy of the Thorax, Abdomen, & Pelvis for Teacher Education. 2 Hours.

Human gross anatomy and dissection of the thorax, abdomen, and pelvis. This course will take current and future anatomy educators through the complete gross anatomy of the thoracic, abdominal, and pelvic cavities. Correlations to common medical illnesses and strategies for anatomy education will be emphasized throughout.

CB 712. Journal Club Developmental Biology. 1 Hour.

Journal Club in Developmental Biology.

CB 722. Journal Club Vascular Biology. 1 Hour.

Vascular Biology Journal Club. This course will present the latest understanding of the cellular and molecular biology of the vascular system, including discussions of cardiovascular control by the brain, hypertrophy and hyperplasia in the heart and blood vessels and the regulation of pressor and depressor hormones.

CB 740. Research in Cell Biology. 1 Hour.

Research in Cell Biology.

CB 747. Cell Biology Seminar. 1 Hour.

Seminars in Cell Biology.

CB 750. Graduate Gross Anatomy. 6 Hours.

Lectures, demonstrations, and dissection of all systems and regions of human body.

CB 751. Tissue Injury and Repair. 1 Hour.**CB 752. Graduate Histology. 3 Hours.**

Light microscopic features and ultrastructure of cells, fundamental tissues, and organ systems.

CB 753. Teaching Assist Grad Histology. 1-2 Hour.**CB 799. Doctoral Level Dissertation Research in Cell Biology. 1-15 Hour.**

Dissertation research. Must have graduate dean approved 5 member committee and doctoral approved candidacy to take research credits.

Prerequisites: GAC Z

CD-Clinical Dentistry

CD 601. Advanced Endodontic Seminar I. 3 Hours.

Special Topics in Endodontics.

CD 602. Special Topics in General Dentistry. 3-6 Hours.**CD 603. Special Topics in Oral and Maxillofacial Surgery. 1-12 Hour.****CD 604. Special Topics in Orthodontics. 3 Hours.****CD 605. Special Topics in Pediatric Dentistry. 1-6 Hour.****CD 606. Special Topics in Periodontics. 3-12 Hours.****CD 607. Removable Prosthodontic Seminar. 1-12 Hour.****CD 608. Special Topics in Radiology. 1-6 Hour.****CD 609. Fixed Prosthodontics Seminar. 1-12 Hour.****CD 610. Introduction to Medical Genetics. 3 Hours.****CD 611. Special Topics in Maxillofacial Prosthodontics. 1-6 Hour.****CD 612. Avanced Prosthodontics Clinic First Year Clinic. 1-12 Hour.****CD 613. Special Topics in Hospital Dentistry. 1-6 Hour.****CD 614. Periodonal Case Conferences. 3 Hours.****CD 615. Periodontal Literature Review Seminars. 3 Hours.****CD 616. Periodontal Board Topics. 1-3 Hour.****CD 617. Maxillofacial Pathology. 3 Hours.****CD 618. Maxillofacial Orthognathic Surgery. 3 Hours.****CD 619. Dentoalveolar Surgery. 3 Hours.****CD 620. Clinical Pediatric Dentistry I. 3-6 Hours.****CD 621. POSTGRADUATE MAXILLOFACIAL TRAUMA. 3 Hours.****CD 622. ORAL and MAXILLOFACIAL MICROBIOLOGY SEMINAR. 3 Hours.**

ORAL and MAXILLOFACIAL MICROBIOLOGY SEMINAR.

CD 623. POSTGRAD OMS SURGERY ANATOMY SEMINAR. 3 Hours.**CD 624. OMS Pathology Seminar. 3 Hours.****CD 625. Design and Analysis in Clinical Dental Research. 3 Hours.****CD 626. Graduate Implantology II. 3 Hours.****CD 627. Biocompatibility Testing/Biodegradation Phenomena. 3 Hours.****CD 628. Enamel Properties Acid Etching and Adhesion. 4 Hours.****CD 629. Ceramic Cements Alloy-Ceramic Systems Color Meas. 3 Hours.****CD 630. Clinical Biomaterials Research Methods. 3 Hours.****CD 631. Polymeric Biomaterials. 3 Hours.****CD 632. Biomaterials Seminar. 1 Hour.****CD 633. Alloy Systems in Dentistry. 3 Hours.****CD 634. Craniofacial Genetics. 3 Hours.****CD 635. Pediatric Dentistry Journal Club. 2 Hours.****CD 636. Hospital Dentistry. 2 Hours.****CD 637. Growth and Development-Genetics. 3 Hours.****CD 638. Current Topics in Dentistry. 1 Hour.****CD 639. Dental Management of Medically Compromised Patient. 2 Hours.****CD 640. Physical Diagnosis. 3 Hours.****CD 641. Advanced Dental Materials III. 3 Hours.**

The resident will develop an in-depth understanding of the clinical applications and effective manipulation of current dental materials. Dentin bonding agents, composite resin selection, placement and polymerization will be covered. An overview of biomaterials for dental implants, and ceramic materials for prostodontics will also be presented.

CD 642. Biomaterials Book Review. 3 Hours.

The purpose of the book review is to strengthen the basic understanding of properties and behavior of different dental materials.

CD 643. Adv Clinical Prosth III. 6 Hours.

Advanced Clinical Prosthodontics III will provide students with a breadth of clinical experience in fixed, removable, implant, surgical, maxillofacial and other complex prosthodontics.

CD 644. Evidence Based Dentistry. 3 Hours.

Evidence based dentistry will teach students how to use literature as basis of clinical decisions.

CD 645. PBL: Adv Prosthodontics Topics. 3 Hours.

Topics in Advanced Prosthodontics. Permission of instructor required.

CD 646. Multidisciplinary Seminars I. 3 Hours.

Multidisciplinary seminars will teach the students how to interact with other disciplines in an informal setting and learn from these other disciplines.

CD 647. Treatment Planning Conference. 3 Hours.

Treatment planning conference will teach students how to generate a succinct and reasonable treatment sequence.

CD 648. Prosthodontic Case Conference. 3 Hours.

Prosthodontic case conference will teach students how to present completed treatment, and how to critically and professionally evaluate treatment outcomes.

CD 649. Prosthodontics Lit Review. 3 Hours.

Prosthodontics literature review will teach students how to critically evaluate literature, and to be familiar with current concepts in prosthodontics.

CD 650. Advanced Topics in Hospital Dentistry. 1-6 Hour.**CD 651. Advanced Endodontics Seminar II. 3 Hours.**

Advanced Topics in Endodontics.

CD 652. Advanced Topics in General Dentistry. 3-6 Hours.**CD 653. Advanced Topics in Oral Surgery. 3-6 Hours.****CD 654. Advanced Topics in Orthodontics. 3 Hours.****CD 655. Advanced Topics in Pediatric Dentistry. 1-6 Hour.****CD 656. Advanced Topics in Periodontics. 1-12 Hour.****CD 657. Advanced Clinical Prosthodontics Second Year Clin. 3-12 Hours.****CD 658. Advanced Topics in Radiology. 1-12 Hour.****CD 659. Advanced Topics Fixed Prosthodontics. 3-12 Hours.****CD 660. Advanced Topics in Maxillofacial Prosthetics. 1-6 Hour.****CD 661. Physical Properties of Biomaterials. 1-3 Hour.****CD 662. Laboratory Methods for Biomaterials Research. 2-4 Hours.****CD 663. Diagnosis and Screening Procedures in Dentistry. 3 Hours.****CD 664. Grand Rounds in Pediatric Dentistry. 2-3 Hours.****CD 665. Maxillofacial Seminar. 3 Hours.**

Physiology and Concepts of Occlusion.

CD 666. Clinical Maxillofacial Prosthetics. 1-3 Hour.**CD 667. Selected Topics in Anatomy of the Head and Neck. 3 Hours.****CD 668. Postgraduate Oral Pathology. 3 Hours.****CD 669. Clinical Pediatric Dentistry II. 3 Hours.****CD 670. Board Case Reviews in Pediatric Dentistry. 3 Hours.****CD 671. Case Presentations in Pediatric Dentistry. 1 Hour.****CD 672. Advanced Topics in OMS. 5 Hours.****CD 673. Special Topics in OMS Trauma. 4 Hours.****CD 674. Advanced Topics in OMS - Orthognathic. 4 Hours.**

Advanced Topics in OMS - Orthognathic.

CD 675. Special Topics in OMS - Patient Care. 4 Hours.**CD 676. Advanced Topics in Oral Pathology. 4 Hours.****CD 677. Advanced Prosthodontics Third Year Clinic. 3 Hours.****CD 678. Board Preparation in Pediatric Dentistry. 3 Hours.**

Review course for pediatric dental residents.

CD 679. Fundamentals of Pediatric Dentistry. 1-6 Hour.**CD 680. Dental Clinical Pathology. 3 Hours.****CD 681. Clinical Pedodontics III. 3 Hours.****CD 682. Special Topics in Endodontics. 3 Hours.****CD 683. Advanced Dental Materials I. 3 Hours.**

Advanced course in dental materials.

CD 684. Advanced Dental Materials II. 3 Hours.

Advanced course in dental materials II.

CD 685. Advanced Endodontic First Year Clinic. 3 Hours.**CD 686. Advanced Endodontic Second Year Clinic. 3 Hours.****CD 687. Advanced Clinical Dentistry. 3 Hours.**

Advanced course in clinical dentistry.

CD 688. Special Pathology. 1 Hour.**CD 689. Conscious Sedation. 3 Hours.****CD 690. Physiology and Concepts of Occlusion. 3 Hours.****CD 691. Special Topics in Biomaterials Science. 1-6 Hour.****CD 692. Advanced Prosthodontic Seminar. 1-12 Hour.****CD 693. Special Topics in OMS. 5 Hours.****CD 694. Advanced General Dentistry Seminars (I-IV). 1 Hour.****CD 695. Literature Review in Pediatric Dentistry. 3 Hours.****CD 696. Dental Radiology. 3 Hours.****CD 697. Advanced Restorative Technique. 3 Hours.****CD 698. Master s Level Non-Thesis Research. 1-6 Hour.****CD 699. Master s Level Thesis Research. 1-6 Hour.**

Prerequisites: GAC M

CD 700. Cranio Deformities. 3 Hours.

Embryology: Review of H&N development. Genetics: Review of H&N disorders. Cleft lip: Diagnosis and management. Common craniofacial disorders; Diagnosis and management of Apert's, Crouzons, and Treacher-Collins, Hemifacial microsomia and other craniofacial disorders.

CD 701. Post-Graduate Micro Surgery. 3 Hours.

To understand the history of microsurgery; materials and instruments; coagulations and anticoagulants; technique or minor repair and vascularized tissue transfer.

CD 702. Post-Graduate Esthetic Surgery. 3 Hours.

Understand basic concepts of facial cosmetic surgery and become competent in diagnosis and treatment planning. The resident should learn surgery techniques of facial cosmetic surgery.

CD 703. Post-Graduate TMJ Disorders. 3 Hours.

To Understand the anatomy and biomechanics of the TMJ; the pathological conditions that affect the TMJ; the imaging modalities that can be utilized to aid in diagnosing TMD; and the various medical treatment options in managing TMD.

CD 704. Post-Grad Surg Implantology. 3 Hours.

Enrich the resident experience by providing in-depth discussion on the various surgical modalities that can aid in proper implant placement.

CD 705. Orthognathic Surgery. 3 Hours.

Understand the principle of orthognathic surgery.

CD 706. Board Exam Topics. 3 Hours.

To allow students tiime for study and laboratory activities in preparation of mock board exam, or the ABP examination.

CD 707. Fundamentals I. 5 Hours.
 CD 708. Fundamentals II. 5 Hours.
 CD 709. Dentistry & Culture. 3 Hours.
 CD 710. Ethics I. 3 Hours.
 CD 711. Dental Gross Anatomy. 6 Hours.
 CD 712. General Pathology. 3 Hours.
 CD 713. Microbiology. 3 Hours.
 CD 714. Pharmacology. 3 Hours.
 CD 715. Systemic Pathology. 3 Hours.
 CD 716. Oral Pathology. 3 Hours.
 CD 717. Multidisciplinary Seminars II. 3 Hours.
 CD 718. Implant Dentistry Case Conf.. 3 Hours.
 CD 719. Implant Evidence Based Dent. 3 Hours.
 CD 720. Surgical Placement of Implants. 3 Hours.
 CD 721. Oral & Skeletal Biology Jour. 2 Hours.
 CD 722. Advanced Craniofacial Growth. 3 Hours.
 CD 723. Neuroanatomy. 6 Hours.
 CD 724. Cardiovascular & Renal Systems. 6 Hours.
 CD 725. Dental Microbiology. 1 Hour.
 CD 726. Genetics. 2 Hours.
 CD 727. Craniofacial Syndrome Series. 3 Hours.
 CD 728. Advanced Oral Pathology. 3 Hours.
 CD 729. TMD Interdisciplinary Problem. 3 Hours.
 CD 730. 3-Dimensional Imaging Ortho. 3 Hours.
 CD 731. Graduate Implantology I. 3 Hours.
 CD 741. Esth & Restorative Dent Lect. 3 Hours.
 CD 742. Contmp Esth & Restorative Prep. 3 Hours.
 CD 746. Micro-Esthetics. 3 Hours.
 CD 749. Macro Esthetics. 3 Hours.
 CD 788. Craniofacial Syndrome SeriesII. 3 Hours.

CDS-Clinical & Diagnostic Science

CDS 500. Fundamentals of Phlebotomy and Body Fluid Collection. 1 Hour.

An in depth course in phlebotomy covering aspects of safety procedures, hygiene, capillary puncture, venipuncture, arterial access and maintenance, intravenous access and maintenance, drug administration via IV, intramuscular and subcutaneous methods and non-blood collections of bodily fluids.

CDS 501. Professional Skills I. 0 Hours.

First course in a sequence focusing on the development of behavioral competencies to address the growing emphasis healthcare is placing on these skills due to their impact on the delivery of quality care.

CDS 502. Professional Skills II. 0 Hours.

Second course in a sequence focusing on the development of behavioral competencies to address the growing emphasis healthcare is placing on these skills due to their impact on the delivery of quality care.

Prerequisites: CDS 501 [Min Grade: P]

CDS 503. Professional Skills III. 1 Hour.

Third course in a sequence focusing on the development of behavioral competencies to address the growing emphasis healthcare is placing on these skills due to their impact on the delivery of quality care.

Prerequisites: CDS 501 [Min Grade: P] and CDS 502 [Min Grade: P]

CDS 520. Competencies in Genetics for Health Professionals. 2 Hours.

Educates health professional students about core competencies in genetics to prepare them to integrate genetics knowledge, skills, and attitudes into routine health care, thereby providing effective and comprehensive services to individuals and families.

CDS 525. First Aid & Healthcare Provider CPR and AED. 1 Hour.

Develops knowledge and skills needed to perform basic first aid and CPR procedures for adult, child and infant victims according to the American Heart Association (AHA) Standards.

CDS 535. Medical Genetics Across the Life Span. 1 Hour.

Medical genetics applications in patient care; genetic family and medical history collection; indications for referral to medical genetics; appropriate use and interpretation of genetic testing; ethical issues in medical genetics.

CDS 540. Physics in Bio-Medical Sciences. 3 Hours.

Qualitative and quantitative applied physical concepts pertaining to medical applications. Selected physical concepts used in biology, human anatomy, physiology, and medical diagnosis and treatment. Topics include mechanics, fluids, waves, heat, sound, optics, electricity and magnetism, radiation, X-rays, MRI, and Nuclear Medicine.

Prerequisites: PH 201 [Min Grade: C] and PH 202 [Min Grade: C]

CDS 545. Genetics and Genomics Applications in Healthcare. 2 Hours.

Introduction for non-clinicians to the basic principles of medical genetics and the applications of genetics and genomics in healthcare.

CDS 550. Introduction to Medical History Taking and Physical Examination. 3 Hours.

This course introduces the learner on how to conduct a comprehensive medical history, perform a physical examination, and report the findings in a systematic and concise format.

CDS 560. Foodborne and Waterborne Outbreak Investigations. 3 Hours.

Analysis of different aspects (basic microbiology, epidemiological analysis, surveillance tools, regulations, environmental and laboratory testing) of foodborne and waterborne outbreak investigations.

CDS 605. Survival Spanish for Health Professionals. 1 Hour.

Health care professionals will be introduced to basic vocabulary, useful questions and expressions in Spanish needed to communicate in practical health care situations. Students will participate in speaking exercises, dialogue, and role-play activities (field-specific scenarios).

CDS 610. Research Design and Statistics. 3 Hours.

This course will introduce the student to clinical research methods and review concepts involved in descriptive and inferential statistics. Topics covered include, overview of the research process, literature review, research hypothesis, research designs, sample selection, measurement methods, descriptive statistics, and inferential statistics.

CDS 625. Analysis of Scientific Publications. 3 Hours.

This course is designed to prepare students to critically evaluate medical/scientific literature and to write a master's level papers. The ability to critically analyze scientific publications will be incorporated into the process of making medical decisions.

CE-Civil Engineering

CE 515. Building Information Modeling (BIM). 3 Hours.

This class provides an introduction to the virtual world of design and construction. Topics covered include uses for technology, what is BIM, and have a focus on AutoCAD and Revit Software. An emphasis is placed on the use of these tools and their practical applications to the real world environment. Students are provided with the software through the Autodesk Student community and are required to complete a Multi-Step term Project.

CE 516. Mechanical Vibrations. 3 Hours.

Free and forced single-degree-of-freedom systems. Multi-degree-of-freedom systems. Damped, forced two-degree-of-freedom systems. Simple continuous systems. CE 215 (Dynamics) and E 220 (Mechanics of Solids) are prerequisites for this course.

CE 520. Advanced Mechanics. 3 Hours.

Variation of stress at point including determination of principal and maximum shear stresses. Basic problems involving symmetrical deformation; thickwall cylinders, spheres, and rotating disk. Torsions of noncircular sections. Curved beams. Failure Theories. Unsymmetrical bending and shear center. CE 220 (Mechanics of Solids) is a prerequisite for this course.

CE 526. Foundation Engineering. 3 Hours.

Application of principles of soil mechanics to: determine bearing capacity and settlement of spread footings, mats, single piles and pile groups; site investigation, evaluate data from field and laboratory tests; estimation of stresses in soil masses; lateral resistance of piles and pile groups; retaining walls, sheetpiles and coffer-dams.

CE 530. Water Supply/Drainage Design. 3 Hours.

Water requirements; wastewater characteristics. Hydraulics and design of sewers; distribution, and reuse of water. Development of water supplies; design considerations. CE 337 (Hydraulics) is a prerequisite for this course.

CE 531. Energy Resources. 3 Hours.

Overview of the various energy resources: oil, natural gas, coal, nuclear, hydro, solar, geothermal, biomass, wind, and ocean energy resources, in terms of supply, distribution, recovery and conversion, environmental impacts, economies, policy, and technology. Concepts and opportunities for energy conservation; including electric power generation, changing role of electric utilities, transportation applications, and energy use in developing countries. Field trips.

CE 533. Solid and Hazardous Wastes Management. 3 Hours.

Overview of waste characterizations, regulations, and management options.

CE 534. Air Quality Modeling and Monitoring. 3 Hours.

Atmospheric pollutants; effects, reactions, and sources. Air pollution meteorology and dispersion modeling. Ambient monitoring. ME 250 (Introduction to Thermodynamic Sciences) is a prerequisite for this course.

CE 537. Environmental Experimental Design and Field Sampling. 3 Hours.

Experimental design, sensitivity analyses, water sampling, and flow monitoring. Receiving water chemical reactions. Field investigations. CE 344 (Civil Engineering Analysis I) is a prerequisite for this course.

CE 537L. Environmental Experimental Design and Field Sampling Lab. 0 Hours.

Lab experiences in environmental experimental design and field sampling.

CE 542. Hwy Materials and Construction. 3 Hours.

Properties of materials used in highway construction. Construction methods and management. CE 332 (Soil Engineering) and CE 345 (Transportation Engineering) are suggested prerequisites for this course.

CE 543. Pavement Design & Construction. 3 Hours.

Analysis of stresses and strains in pavement systems. Design and construction of flexible and rigid pavements, base courses and subgrades. Effects of loading on pavement life.

CE 544. Civil Engineering Analysis II. 3 Hours.

Sampling and experimental design. Hypotheses testing. Decision Analyses. Multiple regression analyses. Nonparametric methods. Analysis of experimental data in civil engineering research; regression, experimental design, non-parametrical analysis. CE 344 (Civil Engineering Analysis I) is suggested as a prerequisite for this course.

CE 553. Design of Wood Structures. 3 Hours.

Design and detailing of timber structures. Properties and specifications for dimension and glulam timber. Design of beams, columns, beam-columns, connections (nails and bolts), roof diaphragms, and shear walls. Design of timber structures to meet the requirements of the National Design Specifications Standards. CE 360 (Structural Analysis) is a prerequisite for this course.

CE 554. Design of Masonry Structures. 3 Hours.

Design and detailing of masonry structures. Nomenclature, properties, and specifications for components. Design of assemblages, simple masonry structures, unreinforced and reinforced elements, and complex masonry structures. CE 360 (Structural Analysis) is a prerequisite for this course.

CE 556. Prestressed Concrete Design. 3 Hours.

Principles and concepts of design in prestressed concrete including elastic and ultimate strength analysis for flexural, shear, bond, and deflections. Principles of concordancy and linear transformation for indeterminate prestressed structures. CE 455 (Reinforced Concrete Design) is a prerequisite for this course.

CE 557. Concrete Technology. 3 Hours.

Properties of concrete in relation to specifying, purchasing, and evaluating concrete materials. Fresh and hardened concrete properties. Concrete mix design procedures. Effects of finishing, curing, weather conditions, and various construction procedures. Ready mix concrete production and field placement techniques. Specifications writing to ensure good quality concrete and field inspection procedures. Case studies of problems in concrete construction. CE 222 (Civil Engineering Materials Laboratory) is a prerequisite for this course.

CE 560. Structural Mechanics. 3 Hours.

Elastic beam deflections, beam columns, lateral torsional buckling, column stability, plastic design, plate bending, yield line theory.

CE 561. Introduction to the Finite Element Method. 3 Hours.

Concepts and applications of the finite element method. Development and applications of basic finite elements. Software use.

CE 562. Advanced Structural Analysis. 3 Hours.

Analysis of indeterminate structures using classical and matrix methods. Use of large-scale computer programs. A grade of C or better in CE 360 (Computer Methods in Civil Engineering) or its equivalent is required.

CE 564. Structural Dynamics. 3 Hours.

Closed form and numerical solutions to single-degree-of-freedom structural models. Analysis of multistory frames. Computer application and seismic analysis. Techniques of modal analysis.

CE 567. Wind and Seismic Loads. 3 Hours.

Methods for calculating loads on structures caused by extreme winds and earthquakes. Calculation of wind loads on various types of structures according to theory and codes. Determination of earthquake loads on structures using structural dynamics and codes. CE 360 (Structural Analysis) is a prerequisite for this course.

CE 568. Bridge Engineering. 3 Hours.

Bridge loads, steel beam bridges, composite beam bridges, bridge bearings, reinforced and prestressed concrete slab and T-beam bridges, bridge evaluations and ratings, upgrade methodologies; computer applications. CE 450 (Structural Steel Design) and CE 455 (Reinforced Concrete Design) are prerequisites for this course.

CE 580. Introduction to Water and Wastewater Treatment. 3 Hours.

Physical unit operations, and chemical/biological unit processes for water and wastewater treatment. Design of facilities for treatment. Treatment and disposal of sludge. CE 236 (Environmental Engineering) is a prerequisite for this course.

CE 585. Engineering Hydrology. 3 Hours.

Hydrologic principles including hydrology cycle, precipitation data, and stream-flow measurements. Applications to engineering problems; stream-flow analysis and watershed management.

CE 590. Special Topics in (Area). 3 Hours.**CE 591. Individual Study in (Area). 1-3 Hour.**

Individual Study in (Area).

CE 600. Sustainable Construction. 3 Hours.

Study of sustainable construction techniques and best practices. Provides an understanding of the interdependencies between planning, designing, building, operating, and demolishing the built environment and their impacts on the natural environment. Course topics will include: (1) issues of resource efficiency, economics, ethics, waste, human health, environmental justice, and industrial ecology; (2) alternative practices that significantly reduce adverse environmental impacts of built infrastructure, and (3) explore past and present thinking of engineering practitioners in this newly emerging discipline.

CE 605. Project Management. 3 Hours.

Presents the theory and practice of project management as a distinct discipline with applications in time, cost, and performance management. Managerial, organizational, behavioral and cost benefit aspects of project management are covered, as well as various applied models for organizing, executing, and monitoring a project. Basic estimating techniques to determine cost and time for construction work packages are discussed followed by scheduling model techniques to include the Critical Path Method (CPM), Precedence Diagramming Method (PDM), Program Evaluation and Review Technique (PERT), and Gantt charts.

CE 607. Engineering Entrepreneurship. 3 Hours.

Course focuses on the entrepreneurial engineer--a new type of engineer who needs a broad range of business skills and knowledge above and beyond a strong science and engineering background. The course will introduce engineering students to the key aspects of engineering entrepreneurship including business planning, solving problems, risk taking, financing, marketing, and entrepreneurial leadership. The students will also be introduced to the many opportunities and challenges that accompany starting and operating an entrepreneurial venture. Entrepreneurial company leaders will present their experiences and share their leadership styles as part of the course.

CE 608. Green Building Design. 3 Hours.

Quantitative introduction to the principles of "Green Building Design". Provides students an understanding of the interdependencies between economics, technology, design, building occupation and the subsequent impact on the natural environment. Course will emphasize green building materials, new technologies, and sustainable construction methods. Course also includes LEED Case Studies (industrial, commercial, residential, and institutional examples).

CE 610. The Engineered Environment. 3 Hours.

Fundamentals of environmental engineering as they apply to the construction of the built environment and contemporary issues faced by engineers in developing nations such as Egypt. Topics include air pollution, solid waste management, water treatment, environmental ethics, etc.

CE 612. Theory of Elasticity. 3 Hours.

Equations of linear reduction to plane stress, plane strain, and generalized plane strain. Airy and Love stress functions in solution of problems.

CE 615. Theory of Elastic Stability. 3 Hours.

Static stability of bars, beams, trusses, and rigid frames. Dynamic stability of bars. Energy method applied to buckling problems. General theory of elastic stability. CE 220 (Mechanics of Solids) is a prerequisite for this course.

CE 617. Theory of Plates and Shells. 3 Hours.

Linear theory and solutions of plates and various shapes. Large deflection theory and solutions of rectangular and circular plates. Membrane and bending theories of shells. Solutions of problems in conical, cylindrical, and spherical shell.

CE 621. Transportation Engineering Seminar. 1 Hour.

Seminar focusing on student research and guest presentations of various topics of interest to graduate transportation engineering students.

CE 622. Traffic Flow Theory. 3 Hours.

Microscopic and macroscopic traffic flow characteristics. Traffic flow analytical techniques including car-following models, traffic stream models, shock wave analysis. Queuing analysis and gap acceptance. Simulation models for network analysis. CE 345 (Transportation Engineering) is a prerequisite for this course.

CE 623. Non-Motorized Transportation Design and Planning. 3 Hours.

Urban planning principles that support non-motorized transportation, local bicycle or pedestrian plans, non-motorized transportation safety related considerations, non-motorized transportation design including traffic calming techniques, procedures for capacity analysis of pedestrian facilities.

CE 624. Simulation Models for Transportation Applications. 3 Hours.

Basic concepts of simulation models for analysis and optimization of transportation systems. Experimentation with planning simulation models and traffic models for signal timing and capacity analysis. CE 345 (Transportation Engineering) is a prerequisite for this course.

CE 625. Intelligent Transportation Systems. 3 Hours.

Legal, institutional and planning issues. System architecture, telecommunication techniques, Advanced User Services, intermodal systems, deployment programs, cost and benefit evaluation.

CE 631. Environmental Law. 3 Hours.

Law as it applies to the practicing environmental engineer. New and emerging regulations.

CE 632. Industrial Waste and Wastewater Treatment. 3 Hours.

Solid wastes and wastewaters from various industries. Assessment of treatability, system design, and equipment selection.

CE 633. Solid and Hazardous Waste Management. 3 Hours.

Provides students a quantitative introduction to solid and hazardous waste characterizations, international regulations, and management options. Course topics to include (1) Solid waste management hierarchy (reduce, reuse, recycle, recovery, responsible disposal); (2) Dry tomb landfill design; and (3) Hazardous waste identification and treatment/disposal.

CE 636. Stormwater Pollution Management. 3 Hours.

Quality and quantity of stormwater. Receiving water problems and sources of pollutants. Runoff quality and quantity characterizations. Erosion control. Selection and design of controls; regulations.

CE 638. Water and Wastewater Chemistry. 3 Hours.

Aquatic chemistry. Chemical behavior of pollutants in receiving waters. Fate of common pollutants. Chemical kinetics in natural waters. Photochemical reactions. Modeling of wastewater discharges.

CE 639. Sediment Sources and Controls. 3 Hours.

Erosion and sediment transport areas; design of common erosion control practices.

CE 640. Wastewater Treatment Engineering. 3 Hours.

Wastewater sources and characteristics. Design and operation of wastewater treatment facilities, including grit removal, oil and grease removal, dissolved air flotation, activated sludge process, trickling filters, and rotating biological contractors, stabilization ponds and aerated lagoons, anaerobic processes for wastewater treatment and sludge digestion. Ultimate disposal of wastewater residues and considerations of discharge criteria.

CE 641. Civil Engineering Seminar. 0 Hours.

Seminar focusing on guest presentations of various civil and environmental engineering topics of interest for CE Masters students. Mandatory enrollment once prior to graduation.

CE 646. Traffic Engineering Operations. 3 Hours.

Highway and Intersection capacity analysis, traffic signal timing and phasing, coordination, freeway operations, non-signalized traffic control techniques. CE 345 (Transportation Engineering) is a prerequisite for this course.

CE 648. Urban and Transportation Planning. 3 Hours.

Land use planning for transportation systems; trip generation, trip distribution, and traffic assignment. CE 345 (Transportation Engineering) or an equivalent is a prerequisite for this course.

CE 649. Engineering Liability. 3 Hours.

Laws related to liability for engineering design in the context of products liability and construction projects; roles and liabilities between various parties involved in construction projects.

CE 650. Advanced Structural Steel. 3 Hours.

Beams, columns, tension members, and connections; current research. CE 450 (Structural Steel Design) or its equivalent is required.

CE 655. Advanced Reinforced Concrete. 3 Hours.

Beam, column, and slab actions; current research. CE 455 (Reinforced Concrete Design) or its equivalency is required.

CE 658. Engineering Management. 3 Hours.

Management techniques for the practicing engineer.

CE 663. Finite Element Methods. 3 Hours.

Theory and applications in structural mechanics. Plane stress, plane strain, axisymmetric problems, solids, plates, shells, nonlinear systems.

CE 669. Advanced Project Management. 3 Hours.

Skills generally required for sound project management in a variety of management settings are studied in addition to specific management issues typically associated with engineering and construction companies. Students are introduced to the Project Management Institute's Body of Knowledge (PMBOK). A discussion of corporate organizational structures and the evolving use of project management processes helps establish an appreciation for the role of a Project Manager. The elements of a project and the role and responsibilities of the Project Manager are studied in depth. Students are also acquainted with risk management concepts, financial, labor, safety, equipment, contracting issues facing managers in the engineering and construction environment. Particular emphasis is placed on individual management strengths and weakness, team building, and characteristics of successful companies. One of the primary vehicles for discussion will be small case studies from real companies and the outside reading of one or two relevant topical books.

CE 670. Const Estimating & Bidding. 3 Hours.

Provides an overview of typical construction delivery systems, and the planning and contracting associated with each. A broad study of estimating methodology ranging from rough ball park estimates to detailed unit pricing is presented focusing on labor, equipment, materials, subcontractors, job conditions, location, overhead and profit. This course is intended to establish a basic understanding of the estimating process, and therefore substantial course focus will be placed on the term group project which consists of the development of a bid estimate for a small construction project.

Prerequisites: CE 669 [Min Grade: C] and CE 672 [Min Grade: C]

CE 671. Constr Liability & Contracts. 3 Hours.

This course provides an overview of the fundamental aspects of the laws that affect construction and engineering companies as well as the project owners. Particular emphasis is placed on contract forms and provisions related to liability for engineering design and construction companies, the roles of the typical participation in the process, and dispute resolution. Students learn the importance of contract language negotiations and the impact of project risk transfer.

Prerequisites: CE 669 [Min Grade: C]

CE 672. Constr Methods and Equipment. 3 Hours.

This course provides students a big-picture understanding of the construction methods employed to bring the concepts and designs of architects and engineers to physical reality. The International Building Code is presented in the course material as are the fundamental principles of green building and sustainable design. Detailed study of typical building materials, design details and construction methods are presented in a logical sequence. Students will understand the planning and deployment of equipment, materials, labor, and subcontractors using a variety of building material and system types. This course provides a necessary baseline knowledge vocabulary and understanding of the role and activities of the designers, engineers, material suppliers, inspectors and constructors in the commercial building process.

Prerequisites: CE 669 [Min Grade: C](Can be taken Concurrently)

CE 673. Construction Contracting Bidding and Estimating. 3 Hours.

This course provides students a big-picture understanding of the construction methods employed to bring the concepts and designs of architects and engineers to physical reality. The International Building Code is presented in the course material as are the fundamental principles of green building and sustainable design. Detailed study of typical building materials, design details and construction methods are presented in a logical sequence. Students will understand the planning and deployment of equipment, materials, labor, and subcontractors using a variety of building material and system types. This course provides a necessary baseline knowledge vocabulary and understanding of the role and activities of the designers, engineers, material suppliers, inspectors and constructors in the commercial building process.

Prerequisites: CE 670 [Min Grade: C] and CE 672 [Min Grade: C]

CE 674. Green Bldg Dsgn/Construction. 3 Hours.

This course provides an introduction to the emerging trends in green building sustainable design and construction. Specific applications for structural engineers will be emphasized. Course includes instruction suitable to prepare students for the Leadership in Energy and Environmental (LEED®) Green Building Rating System certification exam.

Prerequisites: CE 670 [Min Grade: C] and CE 672 [Min Grade: C]

CE 675. Fundamentals of Financial & Managerial Accounting for Non-Financial Managers. 3 Hours.

This course provides an extensive overview of financial and managerial accounting concepts for non-financial managers. Students learn the basic elements of accounting (Generally Accepted Accounting Practices). They will understand how typical financial records and financial statements are established for companies. Once the basics are understood, students study how financial data is used for internal cost controlling, planning, and budgeting. Fundamental financial calculations associated with the time value of money, debt instruments, taxes, inflation, and cash flow estimates are emphasized. Students are expected to demonstrate proficiency in the use of Excel business functions in solving financial problems.

Prerequisites: CE 670 [Min Grade: C] and CE 673 [Min Grade: C]

CE 676. Construction Project Risk Management. 3 Hours.

This course addresses the methodologies employed in the engineering and construction industries to assist in rational decision making in the face of uncertainty. The course reviews the fundamentals of common probabilistic theories and models, data sampling, hypothesis testing and the basics of Bayesian Decision Theory. In addition, basic financial analysis tools will be reviewed. Theoretical models will then be applied to specific examples encountered in engineering and construction decision making with emphasis on engineering economics applications.

Prerequisites: CE 669 [Min Grade: C]

CE 677. Construction Acct & Finance. 3 Hours.

Introduces students to some of the particular accounting needs, practices and methods unique to construction companies. Students will understand the details of budget preparation, cost tracking and reporting systems. Emphasis is placed on understanding the importance of linking detailed project planning, scheduling with cost accounting and reporting in the management of individual construction projects and the company as a whole. A broad overview of financial management of construction companies and the specific tools used to operate the enterprise are discussed. Business planning, financing and contracting strategies suitable for a cyclical demand industry are discussed.

Prerequisites: CE 669 [Min Grade: C]

CE 680. CM Capstone Studies. 3 Hours.

Students review case studies involving project planning and risk assessment; or individual topical study, case studies emphasizing project control and coordination; or individual topical study, case studies emphasizing technology advancements in construction methods and project management; or individual topical study.

Prerequisites: CE 669 [Min Grade: C] and CE 670 [Min Grade: C](Can be taken Concurrently)

CE 681. Environmental Chemistry. 3 Hours.

Chemical equilibrium, acid/base, chemical concepts in pollutant behavior. Chemical kinetics, redox system, hydrolysis, pesticides, chemical wastes.

CE 682. Water Treatment Engineering. 3 Hours.

Water sources and characteristics. Design and operations of water treatment facilities. Topics Include lime softening operations, coagulation, flocculation, clarification dissolved air flotation, filtration, disinfection, absorption, ion exchange and sludge management.

CE 683. Water and Wastewater Treatment Processes Lab. 3 Hours.

Construction and evaluation of bench-scale treatment processes. Treatability of water and wastewater. Coagulation of sedimentation, settleability of biological sludge, aerobic biological treatment, chemical treatment, water softening toxicity, disinfection, and sludge treatment processes.

CE 685. Engineering Hydrology. 3 Hours.

Hydrologic principles including hydrologic cycle, precipitation data, and stream-flow measurements. Applications to engineering problems; stream-flow analysis and watershed management. A grade of C or better in CE 337 (Hydraulics) or its equivalency is required.

CE 686. Engineering Hydrogeology. 3 Hours.

Groundwater movement, natural quality, contamination, and restoration. Physical and chemical properties of groundwater. Well hydraulics and flow net analyses. Prevention and control of groundwater contamination. CE 485 (Engineering Hydraulics) and MA 252 (Differential Equations) are required.

CE 687. Stormwater Detention Pond Design. 3 Hours.

Stormwater problems and control methods. Urban hydrology prediction procedures for drainage and water quality studies. Detention pond design basics, limitations and multiple benefits.

CE 688. Strategic Management and Leadership Applications in a Global Environment. 3 Hours.

This course is designed to prepare students to face the demanding management and leadership challenges facing construction and engineering industry leaders as competition becomes ever more globalized. The necessity to personally remain trained and relevant in the changing business environment is emphasized. Strong resume writing and oral interview skills are emphasized as a necessary skill for job seekers as well as job providers. Strategic planning, management and leadership in the built environment requires savvy leaders with exceptionally developed analytical and communications skills suitable for multi-disciplinary and multi-national ventures. Every individual and organization must continually innovate and reinvent to stay competitive. In a competitive environment, a strong working knowledge of the financial markets is essential and students are exposed to multiple lessons presented by financial industry practitioners. Students participate in a group project designed to reinforce the methodology associated with preparing and presenting a dynamic business plan. This course provides the opportunity for students to discuss and research these concepts and to recognize the necessity to think independently, challenge conventional thinking, and visualize alternatives.

Prerequisites: CE 669 [Min Grade: C]

CE 689. Building Information modeling (BIM) Techniques. 3 Hours.

This course provides students with an overview of the evolution of BIM technology in the construction industry followed by hands-on training in the basic application of contemporary BIM software. Students will learn basic modeling skills and how to produce graphical presentations. Advanced applications of BIM technology are discussed and demonstrated. Students will be provided with BIM software and are required to complete a multi-step BIM model as a term project.

Prerequisites: CE 669 [Min Grade: C]

CE 690. Special Topics in (Area). 1-3 Hour.

Special Topics (Area).

CE 691. Individual Study in (Area). 1-4 Hour.

Individual Study (Area).

CE 692. CE Capstone Project. 3 Hours.

This course covers specific contemporary topics related to civil engineering practice and knowledge. Capstone project using case studies to apply skills, knowledge, techniques, and concepts developed in prior courses.

CE 693. Applied Research in CEE. 3-9 Hours.

Research tools, including elements of experimental design and proposal preparation. Effective communication, literature searches, and exploratory data analysis. Prerequisite: permission of instructor.

CE 694. Sustainable Construction. 3 Hours.

Provides students an understanding of the interdependencies between planning, designing, building, operating, and demolishing the built environment and their impacts on the natural environment. Course topics include: (1) Issues of resource efficiency, economics, ethics, waste, human health, environmental justice, and industrial ecology; (2) Alternative practices that significantly reduce adverse environmental impacts of built infrastructure, and (3) Explore past and present thinking of engineering practitioners in this newly emerging discipline.

CE 695. International Construction Contracts/Liability. 3 Hours.

Provides an overview of the fundamental aspects of the law that affects construction and engineering companies as well as the project owners. Particular emphasis is placed on contract forms and provisions related to liability for engineering design and construction companies, the roles of the typical participation in the process, and dispute resolution.

CE 697. Master's Project. 3-9 Hours.

A UAB Master's Project must demonstrate evidence of scholarly study and writing that ultimately contributes to the scientific knowledge base. This course is designed to allow students the opportunity to develop original ideas or seek to advance knowledge through theory, conceptualization, design, testing of tools, instruments, or procedures relevant to the practice of civil engineering.

CE 698. Non-Thesis Research. 1-12 Hour.**CE 699. Thesis Research. 1-12 Hour.**

Prerequisites: GAC M

CE 712. Theory of Elasticity. 3 Hours.

Equations of linear reduction to plane stress, plane strain, and generalized plane strain. Airy and Love stress functions in solution of problems.

CE 715. Theory of Elastic Stability. 3 Hours.

Static stability of bars, beams, trusses, and rigid frames. Dynamic stability of bars. Energy method applied to buckling problems. General theory of elastic stability.

CE 717. Theory of Plates and Shells. 3 Hours.

Linear theory and solutions of plates of various shapes. Large deflection theory and solutions of rectangular and circular plates. Membrane and bending theories of shells. Solutions of problems in conical, cylindrical, and spherical shell.

CE 721. Transportation Engineering Seminar. 1 Hour.

Seminar focusing on student research and guest presentation of various topics of interest to graduate transportation engineering students.

CE 722. Traffic Flow Theory. 3 Hours.

Microscopic and macroscopic traffic flow characteristics. Traffic flow analytical techniques including car-following models, traffic stream models, shock wave analysis. Queuing analysis and gap acceptance. Simulation models for network analysis.

CE 723. Non-Motorized Transportation Design and Planning. 3 Hours.

Urban planning principles that support non-motorized transportation, local bicycle or pedestrian plans, non-motorized transportation safety related considerations, non-motorized transportation design including traffic calming techniques, procedures for capacity analysis of pedestrian facilities.

CE 724. Simulation Models for Transportation Applications. 3 Hours.

Basic concepts of simulation models for analysis and optimization of transportation systems. Experimentation with planning simulation models and traffic models for signal timing and capacity analysis.

CE 725. Intelligent Transportation Systems. 3 Hours.

Legal, institutional and planning issues related to Intelligent Transportation Systems. System architecture, telecommunication technologies. Advanced User Services, intermodal systems, deployment, cost benefit evaluation.

CE 731. Environmental Law. 3 Hours.

Law as it applies to the practicing environmental engineer. New and emerging regulations.

CE 732. Industrial Waste and Wastewater Treatment. 3 Hours.

Solid wastes and waste waters from various industries; assessment of treatability, system design, and equipment selection.

CE 736. Stormwater Pollution Management. 3 Hours.

Quality and quantity of stormwater. Receiving water problems and sources of pollutants. Runoff quality and quantity characterizations. Erosion control. Selection and design of controls; regulations.

CE 738. Water and Wastewater Chemistry. 3 Hours.

Aquatic chemistry. Chemical behavior of pollutants in receiving waters. Fate of common pollutants. Chemical kinetics in natural waters. Photochemical reactions. Modeling of wastewater discharges.

CE 739. Sediment Sources and Controls. 3 Hours.

Erosion and sediment transport in urban areas, design of common erosion control practices.

CE 740. Wastewater Treatment Engineering. 3 Hours.

Wastewater sources and characteristics. Design and operation of wastewater treatment facilities, including grit removal, oil and grease removal, dissolved air flotation, activated sludge process, trickling filters, and rotating biological contactors, stabilization ponds and aerated lagoons, anaerobic processes for wastewater treatment and sludge digestion. Ultimate disposal of wastewater residues and considerations of discharge criteria.

CE 741. Civil Engineering Seminar. 0 Hours.

Seminar focusing on guest presentations on various civil and environmental engineering topics of interest for CE Ph.D. students. Mandatory enrollment at least once prior to graduation.

CE 749. Engineering Liability. 3 Hours.

Laws related to liability for engineering design in the context of products liability and construction projects; roles and liabilities between various parties involved in construction projects.

CE 750. Advanced Structural Steel. 3 Hours.

Beams, columns, tension members, and connections; current research.

CE 755. Advanced Reinforced Concrete. 3 Hours.

Beam, column, and slab actions; current research.

CE 758. Engineering Management. 3 Hours.

Management techniques for practicing engineers.

CE 763. Finite Element Methods. 3 Hours.

Theory and applications in structural mechanics. Plane stress, plane strain, axisymmetric problems, solids, plates, shells, nonlinear systems.

CE 781. Environmental Chemistry. 3 Hours.

Chemical equilibrium, acid/base, chemical concepts in pollutant behavior. Chemical kinetics, redox system, hydrolysis, pesticides, chemical wastes.

CE 782. Water Treatment Engineering. 3 Hours.

Water sources and characteristics. Design and operation of water treatment facilities including lime softening operations, coagulation, flocculation, clarification, dissolved air flotation, filtration, disinfection, absorption, ion exchange, and sludge disposal.

CE 783. Water and Wastewater Treatment Processes Lab. 3 Hours.

Construction and evaluation of bench-scale treatment processes. Treatability of water and wastewater. Coagulation of sedimentation, settleability of biological sludge, aerobic biological treatment, chemical treatment, water softening toxicity, disinfection, and sludge treatment processes.

CE 786. Engineering Hydrogeology. 3 Hours.

Groundwater movement, natural quality, contamination, and restoration. Physical and chemical properties of groundwater. Well hydraulics and flow net analyses. Prevention and control of groundwater contamination.

CE 787. Stormwater Detention Pond Design. 3 Hours.

Stormwater problems and control methods. Urban hydrology prediction procedures for drainage and water quality studies. Detention pond design basics, limitations and multiple benefits.

CE 790. Special Topics in (Area). 1-3 Hour.

Special Topics(In Area).

CE 791. Individual Studies (In Area). 1-4 Hour.

Individual Studies(In Area).

CE 793. Applied Research in Civil and Environmental Eng.. 3 Hours.

Research tools, including elements of experimental design and proposal preparation. Effective communication, literature searches, and exploratory data analysis.

CE 797. CCEE Internship. 6 Hours.

Off-campus internship experience working with industries, utilities or government agencies.

CE 798. Non-Dissertation Research. 1-12 Hour.**CE 799. Dissertation Research. 1-16 Hour.**

Prerequisites: GAC Z

CECM-Construction Engineering Management

CECM 669. Advanced Project Management. 3 Hours.

Skills generally required for sound project management in a variety of management settings are studied in addition to specific management issues typically associated with engineering and construction companies. Students are introduced to the Project Management Institute's Body of Knowledge (PMBOK). A discussion of corporate organizational structures and the evolving use of project management processes helps establish an appreciation for the role of a Project Manager. The elements of a project and the role and responsibilities of the Project Manager are studied in depth. Students are also acquainted with risk management concepts, financial, labor, safety, equipment, contracting issues facing managers in the engineering and construction environment. Particular emphasis is placed on individual management strengths and weakness, team building, and characteristics of successful companies. One of the primary vehicles for discussion will be small case studies from real companies and the outside reading of one or two relevant topical books.

CECM 670. Construction Estimating and Bidding. 3 Hours.

Provides an overview of typical construction delivery systems and the planning and contracting associated with each. A broad study of estimating methodology ranging from rough "ball park" estimates to detailed unit pricing is presented focusing on labor, equipment, materials, subcontractors, job conditions, location, overhead and profit. This course is intended to establish a basic understanding of the estimating process; and therefore, substantial course focus will be placed on the term group project.

CECM 671. Construction Liability & Contracts. 3 Hours.

Provides an overview of typical construction delivery systems and the planning and contracting associated with each. A broad study of estimating methodology ranging from rough "ball park" estimates to detailed unit pricing is presented focusing on labor, equipment, materials, subcontractors, job conditions, location, overhead and profit. This course is intended to establish a basic understanding of the estimating process; and therefore, substantial course focus will be placed on the term group project.

Prerequisites: CECM 669 [Min Grade: C] or CE 669 [Min Grade: C]

CECM 672. Construction Methods and Equipment. 3 Hours.

This course provides students a big-picture understanding of the construction methods employed to bring the concepts and designs of architects and engineers to physical reality. The International Building Code is presented in the course material as are the fundamental principles of green building and sustainable design. Detailed study of typical building materials, design details and construction methods are presented in a logical sequence. Students will understand the planning and deployment of equipment, materials, labor, and subcontractors using a variety of building material and system types. This course provides a necessary baseline knowledge vocabulary and understanding of the role and activities of the designers, engineers, material suppliers, inspectors and constructors in the commercial building process.

CECM 673. Project Planning and Control. 3 Hours.

This course provides students a big-picture understanding of the construction methods employed to bring the concepts and designs of architects and engineers to physical reality. The International Building Code is presented in the course material as are the fundamental principles of green building and sustainable design. Detailed study of typical building materials, design details and construction methods are presented in a logical sequence. Students will understand the planning and deployment of equipment, materials, labor, and subcontractors using a variety of building material and system types. This course provides a necessary baseline knowledge vocabulary and understanding of the role and activities of the designers, engineers, material suppliers, inspectors and constructors in the commercial building process.

CECM 674. Green Building Design/Construction. 3 Hours.

This course provides an introduction to the emerging trends in green building sustainable design and construction. The Course will include instruction suitable to prepare students for the Leadership in Energy and Environmental (LEED®) Green Building Rating System certification exam.

CECM 675. Advanced Construction and Engineering Economics. 3 Hours.

This course provides an extensive overview of financial and managerial accounting concepts for non-financial managers. Students will learn the basic elements of accounting (Generally Accepted Accounting Practices). They will understand how typical financial records and financial statements are established for companies. Once the basics are understood, students will study how financial data is used for internal cost controlling, planning, and budgeting. Fundamental financial calculations associated with the time value of money, debt instruments, taxes, inflation, and cash flow estimates are emphasized. Students will be expected to demonstrate proficiency in the use of Excel business functions in solving financial problems.

CECM 676. Construction Project Risk Management. 3 Hours.

This course addresses the methodologies employed in the engineering and construction industries to assist in rational decision making in the face of uncertainty. The course reviews the fundamentals of common probabilistic theories and models, data sampling, hypothesis testing and the basics of Bayesian Decision Theory. In addition, basic financial analysis tools will be reviewed. Theoretical models will then be applied to specific examples encountered in engineering and construction decision making with emphasis on engineering economics applications.

CECM 677. Construction Accounting and Finance. 3 Hours.

Introduces students to some of the particular accounting needs, practices and methods unique to construction companies. Students will understand the details of budget preparation, cost tracking and reporting systems. Emphasis is placed on understanding the importance of linking detailed project planning, scheduling with cost accounting and reporting in the management of individual construction projects and the company as a whole. A broad overview of financial management of construction companies and the specific tools used to operate the enterprise are discussed. Business planning, financing and contracting strategies suitable for a cyclical demand industry are discussed.

CECM 688. Strategic Management and Leadership Applications in a Global Environment. 3 Hours.

This course is designed to prepare students to face the demanding management and leadership challenges facing construction and engineering industry leaders as competition becomes ever more globalized. The necessity to personally remain trained and relevant in the changing business environment is emphasized. Strong resume writing and oral interview skills are emphasized as a necessary skill for job seekers as well as job providers. Strategic planning, management and leadership in the built environment requires savvy leaders with exceptionally developed analytical and communications skills suitable for multi-disciplinary and multi-national ventures. Every individual and organization must continually innovate and reinvent to stay competitive. In a competitive environment, a strong working knowledge of the financial markets is essential and students are exposed to multiple lessons presented by financial industry practitioners. Students participate in a group project designed to reinforce the methodology associated with preparing and presenting a dynamic business plan. This course will provide the opportunity for students to discuss and research these concepts and to recognize the necessity to think independently, challenge conventional thinking, and visualize alternatives.

CECM 689. Building Information Modeling (BIM) Techniques. 3 Hours.

This course provides students with an overview of the evolution of BIM technology in the construction industry followed by hands-on training in the basic application of contemporary BIM software. Students will learn basic modeling skills and how to produce graphical presentations. Advanced applications of BIM technology will be discussed and demonstrated. Students will be provided with BIM software and will be required to complete a multi-step BIM model as a term project.

CESC-Sustainable Smart Cities

CESC 600. Principles of Sustainable Development. 3 Hours.

The course will begin by discussing the concepts, viewpoints and fundamentals essential for understanding urban sustainable development agenda. This will be followed by the evaluation of international conferences and action items proposed by the scientific / professional community to advance sustainable smart cities development. You will review basic earth sciences to better evaluate the impact our anthropogenic activities have on the natural environment and therefore how to minimize adverse future outcomes. Throughout the course case studies of sustainable developments will be used to illustrate the value, challenges and limitations of this concept. In the end, you will possess the knowledge base needed to help advance sustainable smart cities development.

CEC 602. Introduction to Sustainable Smart Cities. 3 Hours.

This course introduces the issues surrounding sustainable development within cities and explores how the smart city concept can contribute to the urban sustainable development agenda. The course begins by considering the key characteristics of contemporary urbanization and the issues and challenges that these present for sustainability and urban environmental management. The meaning and nature of sustainability for cities will be discussed, followed by a consideration of the definitions of a smart city and a discussion of the key elements of a smart city including its contribution to both urban governance and the more effective and efficient management of natural resources. With reference to case studies the final part of the course will explore and evaluate the role that smart city processes and applications can play in enhancing the social, economic and environmental aspects of sustainable development within urban areas.

CEC 604. Low-Carbon and Renewable Energy Systems for Smart Cities. 3 Hours.

As the energy infrastructure is arguably the most important feature in any city energy efficiency and integration of renewable energy sources within urban areas are central to the smart city concept. This course will firstly explore why there is a need for the greater use of low carbon and renewable energy systems within cities, followed by an introduction to the range of low carbon and renewable energy technologies currently available. The course will then move on to introduce the concept of the smart grid and then explore the potential to integrate low carbon and renewable energy systems into smart grids in order to move towards cost-effective, efficient and more environmentally friendly energy provision within cities. Challenges and issues associated with the greater integration of low carbon and renewable energy systems into energy infrastructure within large urban areas will also be considered.

CEC 606. Managing Natural Resources and Sustainable Smart Cities. 3 Hours.

The course examines the challenges of resource use and management within the context of an urbanizing world, exploring how new concepts within the smart and sustainable city agenda may contribute to addressing these challenges. The course begins by considering contemporary patterns of resource use created by cities in the modern world at a variety of scales from the local to the global. New approaches in the form of ecosystem services and urban metabolism in relation to natural resource management are examined in terms of their contribution to developing a smart and sustainable city agenda. The course continues by exploring a selection of key natural resources challenges (e.g. water, energy, air quality and climate) and the development of new management approaches and strategies in these areas. The course concludes by examining the development of integrated environmental management systems and governance structures within which these new approaches can be implemented with reference to a series of case studies.

CEC 608. Green Infrastructure and Transportation. 3 Hours.

The course covers policy and technical issues related to sustainable transportation. The course begins by discussing the concepts, viewpoints and fundamentals essential for understanding sustainable transportation planning. Tools used to assess sustainability of transportation facilities and neighborhoods are introduced next. The course also presents design options in support of green infrastructure and transportation, including livable street design, and traffic calming applications. The course is expected to expand students' knowledge base on sustainable transportation issues and help them understand the concept of sustainable transportation toward the development of sustainable smart cities.

CEC 610. Health and Liveability. 3 Hours.

This course will address the multidisciplinary aspects of urban environmental quality and its impact on human well-being. It will provide a critical appreciation of the factors which influence health, well-being and quality of life within contemporary urban environments, demonstrate the importance of genomics and health informatics in developing strategies for improving the health and well-being of urban citizens, explore the importance of urban design and the contribution of the development of food smart cities in improving both urban health and liveability, and understand the increasingly important role of ICT in facilitating delivery of effective and responsive urban health, well-being and quality of life strategies.

CEC 612. Green Buildings. 3 Hours.

The course will begin by discussing the concepts, viewpoints and fundamentals essential for understanding green building and construction. Discussions will then be focused on how key stakeholders and their future collaborations can begin to incorporate sustainable construction practices for the betterment of the project (new construction and inventory rehabilitation). This will be followed by the evaluation of sustainable construction rating systems (LEED, BREEAM, etc.) and how they can be applied to occupied buildings throughout an urban environment. Modular case studies of sustainable construction projects (individual structures to entire community developments) will be used to illustrate the value, challenges and limitations of this concept. In the end, students will possess an expanded knowledge base needed to help advance sustainable smart cities development.

CEC 614. Smart Cities Technologies. 3 Hours.

Smart Technologies.

CEC 616. Big Data and Smart Cities. 3 Hours.

The world is becoming increasingly digitally interconnected and this instrumentation, data collection, interconnection, storage, and analysis can provide the capacity to radically transform how cities monitor, manage and enhance their environmental quality and liveability. This course will provide an introduction to what big data is and how it can contribute to the smarter, more sustainable management of cities. The course will begin by discussing the concepts of big data and the big data revolution, and an overview of the ways in which data can be captured, stored and analyzed. This will be followed by a consideration of how big data can be used by city managers to optimize: their use of physical and digital infrastructures; their sustainable use of natural resources; citizen service delivery; and citizen engagement, participation and urban governance. You will also be introduced to some of the challenges presented by big data, both the technological challenges and the ethical and social implications associated with collecting, storing and using big data. Throughout the course case studies of big data in action will be used to illustrate the value, challenges and limitations of big data in the smarter, more sustainable management of cities.

CESE 618. Research Methods and Project Planning. 3 Hours.

As a student of smart city processes and urban environmental management you need to understand the research process which enables you to take the knowledge and skills which you have learned and apply it to a specific urban sustainability / environmental management issue. This course is not intended to provide a training in research techniques, but rather to make you aware of a wide range of investigative and analytical methods and techniques using examples drawn from the areas of smart city approaches, urban sustainability and environmental management. Both quantitative and qualitative methodologies and primary and secondary data collection will be covered. You will be encouraged to reflect on the research process and its outcomes by critiquing research papers written from methodological standpoints. You will then apply this knowledge to create a viable research proposal for your own Sustainable Smart Cities Masters project. This proposal will require you to identify and justify for your chosen topic: (i) appropriate research questions, (ii) methodologies and data sampling / collection techniques, (iii) ethical and health and safety implications and, (iv) a timetable of action.

CESE 620. Sustainable Smart Cities Research Project. 0 Hours.

This course will develop skills in both research and technical writing in the area of applying and/or evaluating sustainable smart cities processes and policies to a specific urban environmental or sustainability issue. The research proposal produced as part of the Research Methods and Project Planning course will be implemented. This will involve further research into the relevant background and context of a chosen project topic, implementation and evaluation of appropriate methods for collecting and analyzing data, observations and information, the ability to present findings clearly and concisely, and appreciate their significance in relation to the smart city and sustainable urban management agendas. Research should be at the forefront of student's chosen sustainable smart cities research topic and be at a level similar to that required for acceptance and presentation at a national level conference or symposium on smart and sustainable cities. For students in relevant employment, projects may be carried out in your place of work subject to discussions between you, your employer/line manager, and your project supervisor.

CESE-Structural Engineering

CESE 653. Wood and Masonry Design. 3 Hours.

Design of wood structures to meet the requirements of the National Design Specification including beams, columns, and shear walls. Design and detailing of masonry structures. Nomenclature, properties, and specifications for components. Design of assemblages and masonry elements in simple masonry structures.

Prerequisites: CE 455 [Min Grade: C]

CESE 656. Advanced Mechanics of Materials for Structural Engineering. 3 Hours.

This course will review the basic fundamentals of mechanics of materials and will extend the concepts to include 3 dimensional stress and strain, plastic behavior, energy methods, nonlinear behavior, fatigue and fracture, rectangular linear elastic plates, indeterminate structures and stability.

CESE 657. Advanced Design of Steel Structures. 3 Hours.

Design of major components in steel-framed buildings, including composite beams and slabs, beam-columns, moment connections, bracing members, bracing connections, and column base plates.

CESE 659. Advanced Reinforced Concrete. 3 Hours.

In this course students will study the behavior and design of continuous reinforced concrete structures submitted to gravity and lateral loads. The study will include biaxial loading of columns, continuous one-way beams and slabs two-way floor systems, and torsion loading.

CESE 660. Prestressed Concrete Behavior and Design. 3 Hours.

The course will explore the characteristics and design of pre-stressed concrete structural components to include elastic and ultimate strength analyses for flexural, shear, torsion, deflection, strand bond, and pre-stress loss.

CESE 662. Advanced Structural Analysis. 3 Hours.

This course explores the structural analysis of indeterminate structures using classical and approximate methods and structural analysis software. Specific emphasis is placed on the determination of forces in typical multistory, rectilinear frames subject to gravity and lateral loads. In addition to first order analysis, the course included analysis for second order effects and plastic analysis.

CESE 664. Bridge Engineering. 3 Hours.

This course includes the study of bridge loads, including moving load analysis; methods for approximate structural analysis, preliminary bridge design methods, and the structural design of bridge decks and girders.

CESE 665. Structural Dynamics and Earthquake Engineering. 3 Hours.

This course includes the study of earthquake-induced vibrations of single and multi-degree-of-freedom systems, such as single and multistory frames. Emphasis will be placed on structural steel and reinforced concrete building frames. Response spectrum analysis will be investigated as well as building codes and static and dynamic lateral load force procedures.

CESE 676. Design of Structural Steel Connections. 3 Hours.

Design of bolted and welded steel connections, including shear, moment and brace connections using the AISC Specifications requirements and fundamental engineering principals. Design procedures will be discussed for various structural steel connections. The background and limitations of the design procedures will be reviewed and practical solutions will be provided.

CESE 690. Special Topics (Area). 1-3 Hour.

Special Topics (Area).

CESE 698. Non Thesis Research. 3 Hours.

No syllabus for non-thesis research hours.

CH-Chemistry

CH 525. Physical Chemistry I for Graduate Study. 3 Hours.

Thermodynamics and chemical equilibria; and chemical kinetics.

Prerequisites: Calculus II, College Physics II and General Chemistry II.

CH 526. Physical Chemistry II for Graduate Study. 3 Hours.

Quantum mechanics, chemical bonding, and molecular spectroscopy.

Prerequisites: Calculus II, College Physics II and General Chemistry II.

CH 535. Organic Chemistry I for Graduate Study. 3 Hours.

Structure, nomenclature, properties, and reactivity of compounds with various organic functional groups: alkanes, alkenes, alkynes, alkyl halides and alcohols. Emphasis on the mechanisms of organic reactions and problem solving. **Prerequisite:** General Chemistry II.

CH 537. Organic Chemistry II for Graduate Study. 3 Hours.

Reactions of aromatic compounds and carbonyl containing functional groups: aldehydes, ketones, acids, esters and amides. Molecules of biological interest, such as proteins and carbohydrates. Prerequisite: Organic Chemistry I.

CH 540. Inorganic Chemistry I for Graduate Study. 3 Hours.

Chemical reactivity and descriptive chemistry in terms of structural and electronic parameters. Prerequisites: Organic Chemistry II and Organic Chemistry II laboratory with a grade of C or better.

CH 541. Transition Metal Chemistry. 3 Hours.

Atomic structure, chemical bonding characterization and reactivity of transition metal complexes. Prerequisites: Inorganic Chemistry and Physical Chemistry II.

CH 550. Instrumental Analysis for Graduate Study. 4 Hours.

Focus on modern analytical chemistry instrumentation including chemical separations, spectroscopies (atomic absorption, infrared, UV-visible, fluorescence), nuclear magnetic resonance spectroscopy, mass spectroscopy, and thermal analysis. Concurrent enrollment in CH 550L Instrumental Analysis Laboratory is required and correlated with lecture material. Prerequisites: Quantitative Analysis Techniques.

CH 550L. Instrumental Analysis Laboratory for Graduate Study. 0 Hours.

Instrumental Analysis Laboratory. Concurrent enrollment in CH 550 Instrumental Analysis for Graduate Study required.

CH 555. Quantitative Analysis for Graduate Study. 4 Hours.

Principles of analytical measurements, gravimetric analysis, spectrophotometric analysis, and chromatography, with emphasis on equilibrium and applications. Lecture and laboratory. Concurrent enrollment in CH 555L Quantitative Analysis Lab required. Prerequisite: General Chemistry II.

Prerequisites: CH 550 [Min Grade: C]

CH 555L. Quantitative Analysis I for Graduate Study Lab. 0 Hours.

Emphasizing quantitative analysis laboratory. Concurrent enrollment in CH 555 Quantitative Analysis required.

CH 560. Fundamentals of Biochemistry. 3 Hours.

Overview of biochemical principles; chemistry of aqueous solutions, biochemical building blocks including amino acids, carbohydrates, lipids, and nucleotides; structure and function of proteins, membranes and nucleic acids; enzyme kinetics. Catabolic and anabolic metabolism in biomolecules, regulation of metabolic processes.

CH 561. Advanced Biochemistry I. 3 Hours.

Advanced study of protein structure and function, enzymology, DNA structure, prokaryotic replication, transcription, and protein synthesis. Membrane structure and function, carbohydrate structure and function. Methods for isolating and characterizing macromolecule structure and function including chromatography, gel electrophoresis, CD, UV, and fluorescence spectroscopy, mass spectroscopy, X-ray crystallography and nuclear magnetic resonance spectroscopy.

Prerequisites: CH 560 [Min Grade: C]

CH 562. Advanced Biochemistry II. 3 Hours.

Continuation of Advanced Biochemistry I focusing on eukaryotic replication, transcription, translation, regulation of gene expression, genomics, proteomics, biological signaling. Prerequisites: Successful completion of CHEM 561.

Prerequisites: CH 561 [Min Grade: C]

CH 563. Biochemistry Laboratory. 3 Hours.

Introduction to modern bioanalytical techniques used for the expression, isolation and characterization of proteins and other biological macromolecules. Prerequisites: Quantitative Analysis and Biochemistry and permission of instructor.

CH 564. Physical Biochemistry Laboratory. 3 Hours.

Physical/analytical approaches (including mass spectroscopy and NMR) toward determination of macromolecular structures, ligand binding, and enzymology. Prerequisites: Background in physical chemistry I and II, quantitative analysis, and biochemistry. Permission of instructor required.

Prerequisites: CH 325 [Min Grade: C] and CH 355 [Min Grade: C] and CH 461 [Min Grade: C]

CH 565. Structural Biochemistry. 3 Hours.

Principles of macromolecular structure, emphasizing proteins, nucleic acids, and macromolecular assemblies. Computational methods used to teach principles and modeling software used for construction of computer models of proteins and nucleic acids. Lecture and computer Laboratory.

CH 571. Medicinal Chemistry & Drug Discovery. 3 Hours.

An advanced organic course with emphasis on design strategies for discovering small organic molecule drugs using common macromolecular drug targets. Examples of successful design for clinically used drug classes will be presented.

CH 573. Electron Pushing and Total Synthesis. 3 Hours.

The advanced organic course is aimed to enhance students' comprehension of advanced organic chemistry theory and principles, and apply them to understand reaction mechanisms and tactic of total synthesis. It will cover different types of common organic reactions each week, for example, reactions involving anion intermediates, cation intermediates, rearrangement, photochemical process, carbonyl compounds, and other reactive intermediates. Using electron pushing for mechanistic reasoning will be emphasized.

CH 574. X-Ray Crystallography. 3 Hours.

Fundamental principles of X-ray crystallography. Students gain enough information to be able to collect meaningful data and analyze and refine structures. Students learn how to collect, process and analyze x-ray data, focus on heavy atom phasing techniques and use state of the art software for refinement. Permission of instructor.

CH 580. Polymer Chemistry I. 3 Hours.

Basic chemical principles of polymers with the focus on synthesis, characterization, and applications of synthetic and biological macromolecules. Includes laboratory. Prerequisites: undergraduate organic chemistry and permission of instructor and concurrent enrollment in CH 580L.

CH 580L. Polymer Chemistry I for Graduate Study Laboratory. 0 Hours.

Polymer Chemistry I Laboratory.

CH 581. Polymer Chemistry II. 3 Hours.

Fundamentals of chemical, physical, and molecular aspects of polymers in bulk and solutions. Prerequisites: undergraduate organic chemistry and permission of instructor and concurrent enrollment in CH 580L.

Prerequisites: CH 580 [Min Grade: C]

CH 581L. Polymer Chemistry II Laboratory. 0 Hours.

Laboratory to accompany CH 581 (Polymer Chemistry II). Prerequisites: Concurrent enrollment in CH 581.

CH 583. Chemistry of Polymers and Polymeric Materials I. 3 Hours.

Basic chemical principles of polymers with the focus on synthesis, characterization, and applications of synthetic and biological macromolecules. No laboratory is required. This course sequence is for BME or Material Science Graduate Students. The laboratory accompanying Polymer Chemistry I is NOT required for these students.

CH 584. Chemistry of Polymers and Polymeric Materials II. 3 Hours.

Fundamentals of chemical, physical and molecular aspects of polymers in bulk and solutions. No laboratory is required. The laboratory accompanying Polymer Chemistry II is NOT required.

CH 602. Principles of Chemical Instruction. 3 Hours.

Responsibilities of laboratory instructors, safety regulations, grading, teaching styles and formats, and instructional objectives.

CH 609. Chemical Safety. 3 Hours.

Principles involved in the potential hazards of storing, using, and disposal of chemicals for chemical educators.

CH 610. Laboratory Experiences in Chemistry. 3 Hours.

Application of chemical experiments to high school science programs. Experiments and emphasis may change depending on instructor. Course may be repeated for credit.

CH 611. Atomic Structure and Periodicity for the 7-12 Classroom. 3 Hours.

Exploration of the historical development of atomic structure. Developing instructional strategies to analyze and predict patterns from atomic structure.

CH 612. Valence Electrons and Bonding Models for the 7-12 Classroom. 3 Hours.

Describes how to use the periodic table as a systematic representation to predict and explain physical properties. Explores ionic and covalent bonding models. Predicts molecular shapes and investigates how these predictions are related to macroscopic properties.

CH 613. Introductory Organic Chemistry for Teachers. 3 Hours.

A laboratory, lecture, demonstration course on the nature of carbon compounds including hydrocarbons, functional groups and their reactions. Emphasis given to laboratory experiments and demonstrations suitable for high school students.

CH 614. Introductory Biochemistry for Teachers. 3 Hours.

Lecture series covering carbohydrates, lipids, and proteins. Emphasis given to practical applications and relationship between chemistry and biology.

CH 615. Chemical Reactions and the Conservation of Mass for the 7-12 Classroom. 3 Hours.

Exploration of the types of intensive and extensive properties that allow scientists to identify a compound. Common chemical reaction types will be investigated, and activities showing how chemists use chemical equations to analyze and interpret reaction outcomes will be included. Exploration of the mathematical description of grams, moles, molecules, and atoms are presented. Solution concentration and the use of solutions in chemical reactions will also be investigated. Simple acid-base phenomena will be studied.

CH 616. Gases and the Kinetic Molecular Theory for the 7-12 Classroom. 3 Hours.

An exploration into the molecular level view of gases and how changes in pressure, temperature, and volume of a gas affect the particles of a gas. The mathematical relationships between these properties will be investigated. Applications of the Ideal Gas Law to real-world problems will be explored.

CH 617. Dynamic Equilibria for the 7-12 Classroom. 3 Hours.

The study of dynamic equilibria including the application of LeChatelier's Principle. Practical applications of LeChatelier's Principle and calculations related to the effects of these macroscopic changes on solution concentrations. Classroom investigations into gas phase, acid-base, and solubility equilibria will be included.

CH 619. Special Topics in Chemical Education. 3 Hours.

Topics determined by interest of students and faculty.

CH 625. Molecular Structure and Spectroscopy. 3 Hours.

Classical and quantum mechanical descriptions of molecular structure and bonding. Basic principles and techniques of molecular spectroscopic methods. Exercises and experiments with computational software and spectroscopic instrumentation will be conducted.

CH 629. Special Topics in Physical Chemistry. 3 Hours.

Topics determined by interest of s students and faculty. Typical are computational chemistry, molecular spectroscopy, nuclear magnetic resonance. Topics determined by interest of students and faculty.

Prerequisites: CH 600 [Min Grade: C]

CH 630. Physical Organic Chemistry. 3 Hours.

Localized and delocalized chemical bonds, stereochemistry, acidity and basicity, determining organic mechanisms and structure. Fall.

CH 631. Organic Reactions and Their Mechanisms. 3 Hours.

Nucleophilic and electrophilic substitution, free radical substitutions, additions to carbon-carbon and carbon-hetero multiple bonds, elimination reactions. Prerequisite: Spring.

Prerequisites: CH 630 [Min Grade: C]

CH 632. Organic Reactions and Synthesis. 3 Hours.

Strategy of synthesis, carbon skeletal assembly, selective functional group interconversion, blocking groups, stereochemical control. Spring.

Prerequisites: CH 631 [Min Grade: C]

CH 633. Reactive Intermediates and Conservation of Bonding. 3 Hours.

Behavior of organic molecules in static and reactive situations. Spring.

Prerequisites: CH 631 [Min Grade: C]

CH 639. Special Topics in Organic Chemistry. 1-3 Hour.

Topics determined by interest of students and faculty.

Prerequisites: CH 327 [Min Grade: C]

CH 640. Bonding and Structure in Inorganic Compounds. 3 Hours.

Advanced treatment of bonding in main group and transition metal compounds, and a study of its relationship properties of compounds. Spring.

Prerequisites: CH 540 [Min Grade: C]

CH 642. Organometallic Chemistry and Catalysis. 3 Hours.

Study of transition metal organometallic compounds and their applications as homogeneous catalysts for organic and polymer syntheses. Summer (alternate years).

Prerequisites: CH 640 [Min Grade: C] or CH 740 [Min Grade: C]

CH 649. Special Topics in Inorganic Chemistry. 1-3 Hour.

Topics determined by interest of students and faculty.

CH 651. Chemometrics. 3 Hours.

Introduction to basic data analysis techniques that include testing hypotheses, establishing tendencies and correlations, experimental design, etc. This course is designed to provide a support to a research chemist in effectively solving everyday problems associated with production and interpretation of experimental data.

CH 652. Analytical Spectroscopy. 3 Hours.

Instrumentation and methodology used in modern analytical spectrometry. Emphasis and examples taken primarily from vibrational spectroscopy (infrared and Raman), however, principles are applicable to many types of spectrometric measurements. Physical theory, optical principles, experimental methodology, instrument design, and numerical data processing are covered.

CH 654. Multivariate Analysis in Analytical Chemistry. 3 Hours.

Theoretical and practical concepts of multivariate statistical methods applied to data obtained from analytical measurements, including advanced data analysis in experimental spectroscopy. Systematic evaluation of high-dimensional data sets through multivariate means of calibration and classification. The course is intended for graduate students in chemistry, or related fields such as the physical or biochemical sciences, or engineering, who wish to understand the application of informatics methods and numerical analysis techniques to complex data sets.

CH 656. Analytical Separations. 3 Hours.

Advanced treatment of distillation, extraction, gas chromatography, HPLC, TLC, and GC-MS.

Prerequisites: CH 551 [Min Grade: C]

CH 659. Special Topics in Analytical Chemistry. 3 Hours.

Introduction to thermally initiated physical and chemical processes in the condensed phase systems such as liquids, crystalline solids, and glasses (amorphous solids). The course covers the use of calorimetry, thermogravimetry, and thermomechanical methods for exploring thermodynamics and kinetics of crystallization, glass transition, solid-solid and helix-coil transitions, decomposition, polymerization, etc.

CH 660. Fundamentals of Biochemistry. 3 Hours.

Overview of biochemical principles; chemistry of aqueous solutions, biochemical building blocks including amino acids, carbohydrates, lipids, and nucleotides; structure and function of proteins, membranes and nucleic acids; enzyme kinetics. Catabolic and anabolic metabolism in biomolecules, regulation of metabolic processes.

CH 661. Biochemistry II. 3 Hours.

Biochemistry II: Structure and function of proteins, membranes, membrane proteins, and nucleic acids. Ligand binding and enzyme kinetics. Molecular genetics (replication, transcription, translation) and the control of gene expression and protein synthesis.

CH 663. Biochemistry Laboratory. 3 Hours.

Introduction to modern analytical techniques used for the isolation and characterization of biological macromolecules.

CH 664. Biophysical Chemistry. 3 Hours.

Common physical methods for understanding the structure and stability of macromolecules that include several spectroscopic, thermodynamic and computational methods. Underlying physical principle described, instrumentation discussed, and examples cited from the literature. Spring.

Prerequisites: CH 323 [Min Grade: C]

CH 665. Structural Biochemistry. 3 Hours.

Principles of macromolecular structure, emphasizing proteins, nucleic acids, and macromolecular assemblies. Computational methods used to teach principles and modeling software used for construction of computer models of proteins and nucleic acids. Lecture and computer Laboratory.

CH 669. Special Topics in Biochemistry. 3 Hours.

Detailed consideration of areas of special interest.

Prerequisites: CH 462 [Min Grade: C]

CH 670. Chemical Literature. 3 Hours.

Use of on-line literature and development of searching techniques.

CH 671. Medicinal Chemistry and Drug Discovery. 3 Hours.

Description. Emphasis on design strategies for small organic drugs using common macromolecular drug targets. Examples of successful design for clinically used drug classes will be presented. Prerequisites include undergraduate organic chemistry (CH235 and CH237) and undergraduate biochemistry (CH461) or equivalent. 999999.

Prerequisites: CH 325 [Min Grade: C] and CH 237 [Min Grade: C] and CH 461 [Min Grade: C]

CH 672. Chemistry of Natural Products. 3 Hours.

The principal focus of this course will be the introduction of synthesis and medicinal chemistry of natural products. Drugs discovery using natural products, with specific examples in the areas of antibacterials, anticancer, and analgesic drugs will be introduced. An overview of structural classes, biosynthetic pathways and application of asymmetric synthesis in the synthesis of specific examples from each class will be discussed. This course is intended for undergraduate students at the senior level.

CH 673. Electron Pushing and Total Synthesis. 3 Hours.

The advanced organic course is aimed to enhance students' comprehension of advanced organic chemistry theory and principles, and apply them to understand reaction mechanisms and tactic of total synthesis. It will cover different types of common organic reactions each week, for example, reactions involving anion intermediates, cation intermediates, rearrangement, photochemical process, carbonyl compounds, and other reactive intermediates. Using electron pushing for mechanistic reasoning will be emphasized.

CH 674. X-Ray Crystallography. 3 Hours.

Fundamental principles of X-ray crystallography. Students gain enough information to be able to collect meaningful data and analyze and refine structures. Students learn how to collect, process and analyze x-ray data, focus on heavy atom phasing techniques and use state of the art software for refinement. Permission of instructor.

CH 677. Radiochemistry for the life sciences. 3 Hours.

This course is intended to act as an introduction to radiochemistry. It will cover production, instrumentation, and radiochemistry techniques to make use of radiotracers in the life sciences from basic biological and environmental applications to medical imaging and therapy.

CH 680. Polymer Chemistry I. 4 Hours.

Basic chemical principles of polymers with the focus on synthesis, characterization, and applications of synthetic and biological macromolecules. Includes laboratory. Prerequisites: undergraduate organic chemistry and permission of instructor and concurrent enrollment in CH 580L.

CH 680L. Polymer Chemistry I Laboratory. 0 Hours.

Polymer Chemistry I Laboratory required with CH 680 lecture.

CH 681. Polymer Chemistry II. 4 Hours.

Fundamentals of chemical, physical, and molecular aspects of polymers in bulk and solutions. Prerequisites: undergraduate organic chemistry and permission of instructor and concurrent enrollment in CH 680L.

Prerequisites: CH 680 [Min Grade: C]

CH 681L. Polymer Chemistry II Laboratory. 0 Hours.

Laboratory to accompany CH 681 (Polymer Chemistry II). Prerequisites: Concurrent enrollment in CH 681.

CH 683. Chemistry of Polymers and Polymeric Materials I. 3 Hours.

Basic chemical principles of polymers with the focus on synthesis, characterization, and applications of synthetic and biological macromolecules. No laboratory is required. This course sequence is for BME or Material Science Graduate Students. The laboratory accompanying Polymer Chemistry I is NOT required for these students.

CH 684. Polymer Chemistry II. 3 Hours.

Fundamentals of chemical, physical and molecular aspects of polymers in bulk and solutions. No laboratory is required. This course sequence is for BME or Material Science Graduate Students. The laboratory accompanying Polymer Chemistry II is NOT required for these students.

CH 689. Special Topics in Polymer Chemistry. 3 Hours.

Detailed consideration of areas of special interests in polymer chemistry.

Prerequisites: CH 580 [Min Grade: C] and CH 581 [Min Grade: C]

CH 691. Seminar. 1 Hour.

Seminars on current topics in chemical research.

CH 692. Seminar Presentation. 2 Hours.

Seminar given by graduate students on current topics in chemical research.

CH 698. Graduate Research. 1-12 Hour.

Prerequisite: Permission of graduate faculty member. Research hours.

CH 699. Thesis Research. 1-12 Hour.

Prerequisites: Admission to candidacy and permission of graduate faculty member. Must have approved 3 member committee and approved candidacy by the graduate dean before registering for 699.

Prerequisites: GAC M

CH 715. Introductory Biochemistry for Teachers II. 3 Hours.

Lecture series covering vitamins, minerals, enzymes, biochemical energy and metabolism. Strong connections between chemistry and biology. Practical applications are emphasized.

CH 725. Molecular Structure and Spectroscopy. 3 Hours.

Classical and quantum mechanical descriptions of molecular structure and bonding. Basic principles and techniques of molecular spectroscopic methods. Exercises and experiments with computational software and spectroscopic instrumentation will be conducted.

CH 729. Special Topics in Physical Chemistry. 3 Hours.

Topics determined by mutual student-faculty interest. Typical are computational chemistry, molecular spectroscopy, nuclear magnetic resonance.

Prerequisites: CH 700 [Min Grade: C]

CH 730. Physical Organic Chemistry. 3 Hours.

Localized and delocalized chemical bonds, stereochemistry, acidity and basicity, determining organic mechanisms and structure. Fall.

CH 731. Organic Reaction and Their Mechanisms. 3 Hours.

Nucleophilic and electrophilic substitution, free radical substitutions, additions to carbon-carbon and carbon-hetero multiple bonds, elimination reactions. Spring.

CH 732. Organic Reaction and Synthesis. 3 Hours.

Strategy of synthesis, carbon skeletal assembly, selective functional group interconversion, blocking groups, stereochemical control. Spring.

Prerequisites: CH 731 [Min Grade: C]

CH 733. Reactive Intermediates and Conservation of Bonding. 3 Hours.

Behavior of organic molecules in static and reactive situations. Spring.

Prerequisites: CH 731 [Min Grade: C]

CH 739. Special Topics in Organic Chemistry. 3 Hours.

Topics determined by interest of students and faculty.

CH 740. Bonding and Structure in Inorganic Compounds. 3 Hours.

Advanced treatment of bonding in main group and transition metal compounds, and a study of its relationship to the properties of compounds. Spring.

Prerequisites: CH 540 [Min Grade: C]

CH 742. Organometallic Chemistry and Catalysis. 3 Hours.

Study of transition metal organometallic compounds and their applications as homogeneous catalysts for organic and polymer syntheses. Summer (alternate years).

Prerequisites: CH 640 [Min Grade: C] or CH 740 [Min Grade: C]

CH 749. Special Topics in Inorganic Chemistry. 1-3 Hour.

Topics determined by interest of students and faculty.

CH 751. Chemometrics. 3 Hours.

Introduction to basic data analysis techniques that include testing hypotheses, establishing tendencies and correlations, experimental design, etc. This course is designed to provide a support to a research chemist in effectively solving everyday problems associated with production and interpretation of experimental data.

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Instrumentation and methodology used in modern analytical spectrometry. Emphasis and examples taken primarily from vibrational spectroscopy (infrared and Raman), however, principles are applicable to many types of spectrometric measurements. Physical theory, optical principles, experimental methodology, instrument design, and numerical data processing are covered.

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Theoretical and practical concepts of multivariate statistical methods applied to data obtained from analytical measurements, including advanced data analysis in experimental spectroscopy. Systematic evaluation of high-dimensional data sets through multivariate means of calibration and classification. The course is intended for graduate students in chemistry, or related fields such as the physical or biochemical sciences, or engineering, who wish to understand the application of informatics methods and numerical analysis techniques to complex data sets.

CH 759. Special Topics in Analytical Chemistry. 3 Hours.

Topics of interest to faculty and students.

CH 760. Fundamentals of Biochemistry. 3 Hours.

Overview of biochemical principles; chemistry of aqueous solutions, biochemical building blocks including amino acids, carbohydrates, lipids, and nucleotides; structure and function of proteins, membranes and nucleic acids; enzyme kinetics. Catabolic and anabolic metabolism in biomolecules, regulation of metabolic processes.

CH 761. Biochemistry II. 3 Hours.

Biochemistry II: Structure and function of proteins, membranes, membrane proteins, and nucleic acids. Ligand binding and enzyme kinetics. Molecular genetics (replication, transcription, translation) and the control of gene expression and protein synthesis.

CH 763. Biochemistry Laboratory. 3 Hours.

Introduction to modern analytical techniques used for the isolation and characterization of biological macromolecules.

CH 764. Biophysical Chemistry. 3 Hours.

Common physical methods for understanding the structure and stability of macromolecules that include several spectroscopic, thermodynamic, and computational methods. Underlying physical principle described, instrumentation discussed, and examples cited from the literature. Spring.

Prerequisites: CH 325 [Min Grade: C]

CH 765. Structural Biochemistry. 3 Hours.

Principles of macromolecular structure, emphasizing proteins, nucleic acids, and macromolecular assemblies. Computational methods used to teach principles and modeling software used for construction of computer models of proteins and nucleic acids. Lecture and computer Laboratory.

CH 769. Special Topics in Biochemistry. 1-3 Hour.

Detailed consideration of areas of special interest.

Prerequisites: CH 462 [Min Grade: C]

CH 770. Chemical Literature. 3 Hours.

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CH 771. Medicinal Chemistry and Drug Discovery. 3 Hours.

Description. Emphasis on design strategies for small organic drugs using common macromolecular drug targets. Examples of successful design for clinically used drug classes will be presented. Prerequisites include undergraduate organic chemistry (CH235 and CH237) and undergraduate biochemistry (CH461) or eq.

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Fundamental principles of X-ray crystallography. Students gain enough information to be able to collect meaningful data and analyze and refine structures. Students learn how to collect, process and analyze x-ray data, focus on heavy atom phasing techniques and use state of the art software for refinement. Permission of instructor.

CH 777. Radiochemistry for the life sciences. 3 Hours.

This course is intended to act as an introduction to radiochemistry. It will cover production, instrumentation, and radiochemistry techniques to make use of radiotracers in the life sciences from basic biological and environmental applications to medical imaging and therapy.

CH 780. Polymer Chemistry I. 4 Hours.

Basic chemical principles of polymers with the focus on synthesis, characterization, and applications of synthetic and biological macromolecules. Includes laboratory. Prerequisites: undergraduate organic chemistry and permission of instructor and concurrent enrollment in CH 780L.

CH 780L. Polymer Chemistry I Laboratory. 0 Hours.

Polymer Chemistry I Laboratory required with CH 780 lecture.

CH 781. Polymer Chemistry II. 4 Hours.

Fundamentals of chemical, physical, and molecular aspects of polymers in bulk and solutions. Prerequisites: undergraduate organic chemistry and permission of instructor and concurrent enrollment in CH 781L.

Prerequisites: CH 780 [Min Grade: C]

CH 781L. Polymer Chemistry II Laboratory. 0 Hours.

Laboratory to accompany CH 781 (Polymer Chemistry II). Prerequisites: Concurrent enrollment in CH 781.

CH 783. Chemistry of Polymers and Polymeric Materials I. 3 Hours.

Basic chemical principles of polymers with the focus on synthesis, characterization, and applications of synthetic and biological macromolecules. No laboratory is required. This course sequence is for BME or Material Science Graduate Students. The laboratory accompanying Polymer Chemistry I is NOT required for these students.

CH 784. Chemistry of Polymers and Polymeric Materials II. 3 Hours.

Fundamentals of chemical, physical and molecular aspects of polymers in bulk and solutions. No laboratory is required. This course sequence is for BME or Material Science Graduate Students. The laboratory accompanying Polymer Chemistry II is NOT required for these students.

CH 789. Special Topics in Polymer Chemistry. 3 Hours.

Detailed consideration of areas of special interests in polymer chemistry. **Prerequisites:** CH 580 [Min Grade: C] and CH 581 [Min Grade: C]

CH 790. Introduction to Graduate Research. 1 Hour.

The purpose of this course is to acquaint incoming graduate student with departmental, school and university policies and procedures for conducting research and teaching undergraduate students. Pass/Fail.

CH 791. Seminar. 1 Hour.

Seminars on current topics in chemical research.

CH 792. Seminar Presentation. 2 Hours.

Seminar given by graduate students on current topics in chemical research.

CH 798. Non-Dissertation Research. 1-12 Hour.

Prerequisite: Permission of graduate faculty member.

CH 799. Dissertation Research. 1-12 Hour.

Prerequisite: Admission to candidacy and permission of graduate faculty member. Must have graduate dean's approval of 5 member committee. Must have IRB and graduate dean's approval of candidacy. Need at least 2 semesters of candidacy to graduate.

Prerequisites: GAC Z

CHHS-Community Health & Human Services

CHHS 526. Wellness Promotion Peer Educators Part 1. 3 Hours.

The intent of this course is to provide students with the skills to facilitate group presentations on health-related content to their peers. Students will complete the Certified Peer Education Training a comprehensive, interactive, and skills-based training. Students will learn about the programs and services offered at the UAB Student Health and Wellness Center and will be able to articulate this to new student users. Students will learn basic alcohol and other drug information in preparation for presentation to their peers.

CHHS 527. SHAPE Peer Education. 3 Hours.

This course is designed to provide students with the knowledge and skills needed to effectively communicate accurate information related to sexual health and decision-making. The concept of total health and the effects of lifestyle and decision-making on the quality of life will be emphasized.

CHHS 528. Wellness Promotion Peer Education Part 2. 3 Hours.

This course involves course students active engagement in the delivery of peer education programs and services to the UAB campus community. The purpose of the Wellness Promotion Peer Education Part 2 course is to provide candidates with a supervised, field-based, work experience in a wellness promotion setting.

Prerequisites: CHHS 426 [Min Grade: C] and CHHS 526 [Min Grade: C]

CHHS 598. Lifespan Dimensions in Women's Health and Nutrition. 3 Hours.

Highlights will include health issues specific to women, chronic diseases, body image and eating disorders, health promotion and disease prevention, pregnancy, childbirth and lactation, weight loss/maintenance, menopause and ageing, fitness management and stress management.

CHHS 601. Current Readings in Health Education. 1-3 Hour.

Review of literature in health education. Development of annotated bibliography pertinent to professional practice.

CHHS 602. Mental Health, Stress, & Well-being. 3 Hours.

This course explains how an individual can manage their internal and external stressors to optimize their mental and emotional well-being. Topics span the discipline of health promotion and wellness, including theoretical models, discussions on the importance of relationships and social support, personality differences and risk of disease, how attitudes and emotions can change body chemistry, heart rates, hormone levels, and immunity against disease.

CHHS 606. Advanced Issues of Disease Prevention in Health Education/Promotion. 3 Hours.

HE 606 is an introductory course designed to teach graduate-level health promotion students, the basic principles, methods, and applications of epidemiology and issues in disease control.

Prerequisites: CHHS 610 [Min Grade: C]

CHHS 608. Substance Abuse Prevention and Education. 3 Hours.

This course provides an overview of major drug classifications and their effects, behavioral theories giving explanation to substance use, societal norms, and different pathways of addiction. Prevention strategies, intervention modalities, and treatment options are explored within the context of the community health and human services professions.

CHHS 610. The Advanced Health Education/Promotion Specialist. 3 Hours.

This course emphasizes application of advanced Health Education/Promotion competencies corresponding to the Master Certified Health Education Specialist. Topics include the significant historical contributions, application of theories and planning models, advanced professional ethics, advanced administrative tasks, advanced literature reviews, and emphasis on advanced levels of health communication and advocacy.

CHHS 611. Interdisciplinary Approaches to School Health Education/Promotion. 3 Hours.

This course is designed to provide students with a fundamental knowledge base on contemporary issues related to school health programs; national, state, and local factors influencing school health programs; importance of collaboration between school administration, teachers and parents. The Whole School, Whole Community, Whole Child Model (WSCC) will be a reference point for class discussion.

CHHS 621. Health Communications & Health Coaching. 3 Hours.

This course promotes skills appropriate for selected health problems, problem solving, and referrals. It also promotes skills to enhance communication with clients, peers, and community members at large. Health-related theories, communication theories, and marketing strategies are discussed in this course.

Prerequisites: CHHS 610 [Min Grade: C] or HE 610 [Min Grade: C]

CHHS 623. Human Sexuality. 3 Hours.

This course provides an overview of biological, sociological, psychological, and ethical aspects of human sexuality as encountered by health education specialists and human services practitioners. Content related to an anatomical overview, sexual decision-making process, harm reduction approaches, social norms, societal issues, gender stereotypes, sexual complications, and the sexuality of special populations are emphasized.

CHHS 626. Student Health and Wellness Center Peer Educators. 3 Hours.

The intent of this course is to provide students with the skills to facilitate group presentations on health related content to their peers. Students will complete the Certified Peer Education Training, a comprehensive, interactive, and skills-based training. Students will learn about the programs and services offered at the UAB Student Health and Wellness Center and be able to articulate this to new student users. Students will learn basic alcohol and other drug information in preparation for presentation to their peers.

CHHS 631. Applied Planning and Implementation of Health Education/Promotion Programs. 3 Hours.

Content and process planning and implementing programs in health education and health promotion. Sociological, psychological, and epidemiological foundations of health promotion programs. Development of practical skills for school, occupational, clinical, and community settings. A comprehensive program planning assessment will reinforce quantitative literacy in the profession. Quantitative Literacy is a significant component of this course.

CHHS 632. Advanced Administration of Health Education/Promotion Programs. 3 Hours.

This course focuses on issues related to the advanced practice of administration and management of health education/promotion programs. Topics include leadership theory and development, staff development and training, ethical issues and human resources, fiscal responsibility, and emphasis on data driven decision-making.

CHHS 640. Content Issues I. 3 Hours.

The content issues course allows the student to explore a topic, of his/her choice, in depth. The resulting document(s) must be thorough including a detailed, complete review of historical and current literature related to the topic.

CHHS 641. Content Issues II. 3 Hours.

The Content Issues II course allows a student to build upon information gathered in Content Issues I or can be developed as a new project. A general outline is provided below. Identification of the health issue or problem Description of who is being affected (including their risk factors) Discussion of national, state, and local initiatives and interventions aimed at reducing the problem and/or risks.

CHHS 642. Applied Behavioral Theory and Health Education/Promotion. 3 Hours.

This course provides students with a better understanding of how to use health behavior theory in guiding health behavior change. The student will examine theories and models that assist in increasing healthy behaviors of youth and adults of all ages.

CHHS 689. Intervention Strategies for Health Education/Promotion. 3 Hours.

The purpose of this course is to present the interrelationship of intervention planning to promote health behavior change and the selection and use of teaching aids, methods and materials to facilitate helping relationships. Special problems associated with health interventions are discussed. Students will learn ethical, theoretical and practical aspects of health education, teaching techniques, curricular development, organization skills and techniques.

CHHS 690. Ethical Problems and Principles in Health Education. 3 Hours.

This course is designed to provide students with opportunities to review and discuss case studies involving ethical decisions.

CHHS 691. Special Topics in Health Education. 3-6 Hours.

HE 691 is offered to advanced students who display a high level of commitment to their studies, willingness to work flexible hours, a desire to become involved in research and training, and the ability to work independently under faculty supervision. At least 4 goals will be accomplished during this semester: 1. To complete a review of professional literature related to educator's knowledge of, and response to body dysmorphic disorders; 2. To prepare a detailed summary of the Steps to a HealthierUS fitness and nutrition initiative; 3. To offer technical assistance to staff and volunteers of the Steps to a HealthierUS – River Region consistent with the logic model and Year Two Community Action Plan aimed at goal achievement; 4. To prepare an objective typewritten summary of accomplishments completed in this course during the semester.

CHHS 692. Supervised Research in Health Education. 3-6 Hours.

CHHS 692 is offered to advanced students who display a high level of commitment to their studies, willingness to work flexible hours, a desire to become involved in research and training, and the ability to work independently under faculty supervision.

Prerequisites: EPR 608 [Min Grade: C] or EPR 609 [Min Grade: C]

CHHS 693. Advanced Field Experience in Community Health Education. 3-6 Hours.

The internship experience is designed to enhance the student's skills in planning, implementing, and evaluating health promotion interventions.

CHHS 696. Ethical Problems and Principles in Health Education/Promotion. 3 Hours.

This course is designed to provide students with opportunities to review and discuss case studies involving ethical decisions.

CHHS 697. Community-Based Approaches to Evaluation and Grantsmanship of Health Education/Promotion Programs. 3 Hours.

This course enhances knowledge, competencies and skills required to obtain funding and to evaluate community-based health education/promotion programs for defined health issues. The course emphasizes elements of evaluating community-based intervention activities at macro-levels including determining needs and assets, writing realistic goals and measurable objectives, incorporating quantitative and qualitative data, and evaluating behavior change at the community level. The course also focuses on grant preparation, including topics such as engaging funders, establishing grant need, planning grant activities, creating a budget, and program sustainability.

Prerequisites: CHHS 610 [Min Grade: C] or HE 610 [Min Grade: C]

CHHS 699. Thesis Research. 1-3 Hour.

Research and completion of the thesis.

Prerequisites: GAC M

CHHS 730. Special Topics in Health Education. 3-6 Hours.

Special Topics in Health Education.

CHHS 731. Advanced Theoretic/Scientific Basis of Health Education/Promotion. 3 Hours.

This course facilitates integration, application and evaluation of specific information regarding health education and health promotion theory, research, and practice. This course will guide analysis of current issues in health science specifically those related to behavior change. Health behavior theories are emphasized.

CHHS 732. Advanced Planning and Implementation of Health Education/Promotion Programs. 3 Hours.

This course emphasizes content and process of advanced planning and implementation of health education/promotion programs. Advanced topics include application of the Precede-Procede Model to multiple health issues; application of health behavior theory; examination of advanced program evaluation measures; and advanced constituent engagement.

CHHS 733. Evaluation of Health Education/Promotion Programs. 3 Hours.

This course provides the graduate health education student with the competencies, knowledge and skills to plan and to implement an evaluation of health promotion-disease prevention intervention for a defined population at risk.

CHHS 734. Health Education Seminar I. 1 Hour.

Seminars introduce doctoral students to various topics related to professionalism.

CHHS 735. Health Education Seminar II. 1 Hour.

Seminars introduce doctoral students to various topics related to professionalism.

CHHS 736. Health Education Seminar III. 1 Hour.

Seminars introduce doctoral students to various topics related to professionalism.

CHHS 740. Evaluation and Research Methods in Health Education/Promotion Programs. 3 Hours.

This course promotes understanding at the doctoral level of the knowledge, competencies and skills required to plan a research approach and evaluation strategy for health education/promotion research programs for defined health issues among specific audiences. The course emphasizes elements of evaluating community-based research and intervention activities at micro- and macro-levels including examining previous published literature, writing specific aims and measurable objectives, incorporating quantitative and qualitative data, evaluating behavioral impacts, and assessing health outcomes. The course also focuses on federal grant preparation, including topics such as engaging funders, using federal grant formatting, creating a grant budget, and assessing research impact.

CHHS 741. Evaluation of Health Education/Promotion Programs. 3 Hours.

This course provides the doctoral health education student with the competencies, knowledge and skills to plan and to implement an evaluation of health promotion-disease prevention intervention for a defined population at risk. Developing competencies through applied evaluation assignments will transfer to thesis and dissertation research projects and future employment. Students will become familiar with Healthy People 2020: The National Health Promotion and Disease Prevention Objectives for the Year 2020, Healthy Alabama 2010, NCHCEC Responsibilities and Competencies and current professional literature. Each class session is structured to provide a detailed explanation and examples of appropriate theory, methods and their application to evaluate health promotion and disease prevention programs.

CHHS 742. Health Disparities in Diverse Populations. 3 Hours.

This course is designed to provide students with a fundamental knowledge base on contemporary issues related to health, disparities in health outcomes and social determinants of health. It is intended to provide students with a broader understanding of the structural and psychosocial factors related to health disparities. To do so, the course will focus on theoretical frameworks that draw on an ecological perspective and examine how factors associated with families, peers, schools, neighborhoods, and communities influence health.

CHHS 798. Supervised Research in Health Education/Promotion. 1-6 Hour.

The purpose of this course is for students to engage in meaningful research and writing activities.

CHHS 799. Dissertation Research. 1-12 Hour.

Design and completion of the dissertation.

Prerequisites: GAC Z

CJ-Criminal Justice

CJ 100. Introduction to the Criminal Justice System. 3 Hours.

Introduction to criminal justice as a system consisting of interactions among three main components: police, courts, and corrections and the processes involving those components.

CJ 101. Crime and Criminality. 3 Hours.

Examination of the causes and consequences in society of crime/delinquency, including theoretical explanations, sources of data on crime/delinquency, and efforts at controlling the behavior.

CJ 110. Introduction to Forensic Science. 3 Hours.

Overview of the major components of forensic science including death investigation, toxicology, osteology, questioned documents, law, and criminalistics.

CJ 115. Comparative Criminal Justice Systems. 3 Hours.

Analysis of police, judicial, and correctional components found in the world's four major legal systems: Common Law, Islamic, Napoleonic and Socialist.

CJ 125. Introduction to Forensic Psychology. 3 Hours.

Overview of issues involving the intersection of law and psychology. Focus on role of clinical assessment of competency, scientific jury selection, expert witnesses in court, punishment and sentencing, and related issues.

CJ 150. Foundations of Law. 3 Hours.

Examination and analysis of the evolution, function, and sources of law and legal systems in Western culture.

CJ 160. Introduction to Private Security. 3 Hours.

Survey of the field of private security, including organizational, administrative, operational, and liability issues common to it.

CJ 170. Introduction to Crime Scene Analysis. 3 Hours.

Overview of crime scene investigation (CSI), including history of crime scene investigation; processing techniques and methods used to document and preserve evidence found at crime scenes.

CJ 210. Introduction to Digital Forensics. 3 Hours.

This course provides a general introduction to the concepts, theories, principles, and practice of digital forensics. Topics include types of digital forensics, DOS/LINUX commands and DF, forensic acquisition and validation, forensic methodologies, file systems and file examination, expert testimony, legal issues, and challenges for the field. This course prepares students for advanced courses in program and in digital forensics.

CJ 220. Police in America: An Overview. 3 Hours.

Introduction to the history and evolution of modern law enforcement in the United States, including the role and functions of police in the community.

Prerequisites: CJ 100 [Min Grade: C](Can be taken Concurrently) or JS 100 [Min Grade: C]

CJ 230. The Judicial Process in America: An Overview. 3 Hours.

Introduction to the structure and function of American courts, including judicial selection and behavior, the prosecution function, jury system, and the role of lawyers.

Prerequisites: CJ 100 [Min Grade: C] or JS 100 [Min Grade: C]

CJ 240. Corrections in America: An Overview. 3 Hours.

Introduction to history and evolution of probation, prisons, parole, and community-based programs for adult and juvenile offenders.

Prerequisites: CJ 100 [Min Grade: C] or JS 100 [Min Grade: C]

CJ 250. Criminalistics: An Overview. 3 Hours.

Introduction to identification and application of major types of physical trace evidence in criminal cases involving analysis and comparison. Laboratory component included; Laboratory fee is charged.

Prerequisites: JS 110 [Min Grade: C] or CJ 110 [Min Grade: C]

CJ 300. Research Methods in Criminal Justice. 3 Hours.

Introduction to ideas, techniques, and problems associated with social research with an emphasis on criminal justice/criminology applications. Writing assignments emphasize ability to make a logical argument and respond to counter claims; incorporating outside sources into written materials; and use conventions appropriate for the discipline. Writing is a significant component of this course.

Prerequisites: (JS 100 [Min Grade: C] or CJ 100 [Min Grade: C]) and (JS 101 [Min Grade: C] or CJ 101 [Min Grade: C])

CJ 302. Introduction to Statistics. 3 Hours.

Introduction to basic statistical theory and analysis. Course emphasizes computation, units of measurement, and evaluation of quantitative assertions; interpretation of quantitative data; use of quantitative data for problem-solving; and communication of information using numbers/words appropriate for the audience. Quantitative Literacy is a significant component of this course.

CJ 307. Crime and Everyday Life. 3 Hours.

Examines everyday aspects of crime, including different forms of crime, media involvement, crime patterns, and policy responses.

CJ 320. Police Organization and Administration. 3 Hours.

Analysis of organizational and administrative structure and function of police departments in the U.S.

Prerequisites: JS 100 [Min Grade: C] or CJ 100 [Min Grade: C]

CJ 321. Police-Community Relations. 3 Hours.

Overview and analysis of historical and contemporary relationship between police agencies and the public; legal issues; analysis of crime prevention programs, community participation, and police discretion.

Prerequisites: JS 100 [Min Grade: C] or CJ 100 [Min Grade: C]

CJ 322. Legal Aspects of Private Security. 3 Hours.

Introduction to and examination of critical legal aspects of private security, especially liability issues.

Prerequisites: JS 160 [Min Grade: C] or CJ 160 [Min Grade: C]

CJ 330. Criminal Law. 3 Hours.

Analysis of the development of criminal law, including legal elements of a crime, defenses in criminal cases, appellate case analysis, and legal terminology.

CJ 331. Criminal Procedure. 3 Hours.

Introduction to legal rules relating to the criminal process from investigation through punishment.

CJ 332. Criminal Evidence. 3 Hours.

Examination of the system of rules and standards, both state and federal, by which admission of proof at criminal trial is regulated.

CJ 333. Trial Advocacy. 3 Hours.

Overview of preparations for civil and criminal litigation including courtroom procedure, evidence, and the art of advocacy.

CJ 336. Criminal Investigation: Techniques and Analysis. 3 Hours.

Examination of both technical and analytical aspects of the criminal investigative process.

CJ 337. Introduction to the Intelligence Community. 3 Hours.

Overview of the Office of the Director of National Intelligence (ODNI) and its role in the intelligence community; Examination of the development and expansion of state and local fusion centers and first responder roles in evolving federal, state, and local intelligence community enterprise.

CJ 339. Methodologies in Intelligence Analysis. 3 Hours.

Introduction to analytical tactics, techniques, and procedures used by and in the intelligence community.

Prerequisites: JS 337 [Min Grade: C] or CJ 337 [Min Grade: C]

CJ 340. Terrorism and the Intelligence Community. 3 Hours.

Examines application of the intelligence cycle (collection, analysis, management & dissemination of information) to the war on terrorism using case studies of successes and failures.

Prerequisites: JS 337 [Min Grade: C] or CJ 337 [Min Grade: C]

CJ 341. Correctional Institutions. 3 Hours.

Introduction to prisons, jails, and juvenile institutions in the U.S.; evolution of penology and correctional change strategies; inmate social system; prison stress, violence, and reform.

Prerequisites: JS 100 [Min Grade: C] or CJ 100 [Min Grade: C]

CJ 342. Probation and Parole. 3 Hours.

Analysis of history, structure, and function of probation and parole systems in the United States; pre-sentence investigations; offender selection and classification; offender supervision; and agency administration.

Prerequisites: JS 100 [Min Grade: C] or CJ 100 [Min Grade: C]

CJ 343. Community-Based Corrections. 3 Hours.

Examination of contemporary redefinition of correctional functions emphasizing development and use of community resources; diversion of offenders from criminal justice system; nontraditional correctional programs.

Prerequisites: (JS 100 [Min Grade: C] or CJ 100 [Min Grade: C]) and (JS 240 [Min Grade: C] or CJ 240 [Min Grade: C])

CJ 350. Advanced Criminalistics. 3 Hours.

Examination of advanced criminalistics, including biological or genetic properties of evidence, trace evidence analytics, and firearm and tool-mark examinations.

Prerequisites: JS 110 [Min Grade: C] or CJ 110 [Min Grade: C]

CJ 352. Forensic Science Laboratory II. 3 Hours.

Basic identification and individualization of common, frequently occurring physical evidence materials, with emphasis on biological materials.

Prerequisites: JS 110 [Min Grade: C] or CJ 110 [Min Grade: C]

CJ 360. Criminology. 3 Hours.

Identification and assessment of early and modern theories concerning the causes of crime in society.

Prerequisites: JS 101 [Min Grade: C] or CJ 101 [Min Grade: C]

CJ 362. Victimology. 3 Hours.

Examination of the criminal-victim relationship and societal reaction to victims including victim services, restitution, and compensation.

Prerequisites: (JS 100 [Min Grade: C] or CJ 100 [Min Grade: C]) and (JS 101 [Min Grade: C] or CJ 101 [Min Grade: C])

CJ 380. Media, Crime & Justice. 3 Hours.

Examination of issues in crime and justice as depicted in popular media, including motion pictures, television, video, and other media.

CJ 390. The Death Penalty in America. 3 Hours.

Overview of capital punishment in America including its history and justification, major Supreme Court rulings, current issues, and future directions.

CJ 400. Drugs and Society. 3 Hours.

This course teaches students the pharmacological effects of and different categories of drugs. Different theories of drug use are discussed as well as the historical development of drug laws. Various harms associated with drug use are discussed as well as the consequences of drug prohibition. Lastly, students are expected to understand the different methods of drug research.

CJ 402. Computer Forensics. 3 Hours.

Use of analytical and investigative techniques in criminal or civil litigation to identify, collect, examine and preserve evidence/information magnetically stored or encoded.

CJ 403. Restorative Justice. 3 Hours.

Introduction to, and analysis of, movement in criminal justice to institutionalize peaceful approaches to harm, problem-solving and violations of legal and human rights. Includes discussion of specific programs, critical evaluation of these programs, and analysis of future directions of the movement.

CJ 404. Serial Killers. 3 Hours.

Examination of the psychology and sociology of serial killers, including case studies, agency responses and related issues.

CJ 407. Special Topics in Criminal Justice. 3 Hours.

In-depth analysis of substantive topic in criminal justice or criminology including contemporary issues, ethics, historical review, or related topics. Varies by semester and by Instructor. May be repeated twice for credit.

CJ 408. Juvenile Delinquency. 3 Hours.

Introduction to the nature, scope, and causes of illegal behavior by juveniles, and societal responses to that behavior.

CJ 410. Criminal Justice Ethics. 3 Hours.

Analysis of systems of ethics and their applicability to problems in the administration of the justice system including those facing police officials, lawyers, judges, and correctional professionals. Writing and Ethics and Civic Responsibility are significant components of this course.

Prerequisites: JS 100 [Min Grade: C] or CJ 100 [Min Grade: C]

CJ 411. Juvenile Justice System. 3 Hours.

Introduction to the evolution and operation of specialized agencies and procedures to address juvenile law-breaking, including emerging problems and solutions.

CJ 412. Juvenile Law. 3 Hours.

Review and analysis of emerging statutory and case law in American juvenile justice.

CJ 413. The Legal Profession. 3 Hours.

Weekly seminars conducted by accomplished practitioners in civil litigation, criminal prosecution, criminal defense, labor and employment law, products liability, domestic relations, military justice, environmental, indigent legal aid, and alternative dispute resolution (ADR) techniques.

CJ 415. Investigating Online Crimes. 3 Hours.

Introduction to cyber investigative techniques involving focused analysis of email and websites; examination of legal process and preparing evidence in cyber crime cases; rules concerning introduction of digital evidence.

Prerequisites: JS 402 [Min Grade: C] or CJ 402 [Min Grade: C]

CJ 419. Investigating Online Crimes. 3 Hours.

Introduction to cyber investigative techniques involving focused analysis of email and websites; examination of legal process and preparing evidence in cyber crime cases; rules concerning introduction of digital evidence.

Prerequisites: CJ 402 [Min Grade: C] or JS 402 [Min Grade: C]

CJ 424. Serial Killers in Cross-National Settings. 3 Hours.

Examines serial homicide in cross-national settings including offender disorders; crime scene analysis; significance of victims; and offender classification process.

CJ 434. Mock Trial Competition. 3 Hours.

Represent UAB as member of Mock trial Team in invitational, regional, and national competition. May be repeated for maximum of 12 hours of which not more than 6 hours may be counted toward fulfilling major or minor requirements.

CJ 436. The Intelligence Community. 3 Hours.

Weekly seminars by intelligence community experts covering relevant topics including state fusion centers; proliferation of intelligence units within first responder agencies; growing role of the private sector; and local prosecution for intelligence agency abuse.

CJ 437. Digital Media Forensics. 3 Hours.

Digital media forensics addresses all stored digital evidence types faced by cyber security professionals and computer forensics examiners. Students will learn to analyze character encoding, file formats, and digital media, including hard drives, smartphones and other portable devices, and cloud-hosted evidence, as well as disk acquisition, duplication and evidence preservation techniques and how to apply these techniques in typical criminal investigation scenarios.

Prerequisites: JS 402 [Min Grade: C] or CJ 402 [Min Grade: C]

CJ 437L. Digital Media Forensics Lab. 0 Hours.

Laboratory to accompany CJ 437.

CJ 440. White Collar and Corporate Crime. 3 Hours.

Introduction to, and analysis of, illegal/deviant behavior occurring in complex organizational settings, including theoretical explanations; patterns and case studies; and control strategies.

CJ 441. Terrorism and Social Control. 3 Hours.

Exploration of causes and consequences of terrorism and how governments respond, including investigation, prosecution, and punishment of terrorists.

CJ 442. Race, Crime, Gender and Social Policy. 3 Hours.

Examination of how subordinate status of minority groups (African Americans, Hispanics, Native Americans and Women) affects interaction with the justice system as offenders, victims, and professionals.

CJ 443. Women and the Criminal Justice System. 3 Hours.

Examination of women's experiences as offenders, victims, and professionals in the criminal and civil justice systems.

CJ 444. Law and Society. 3 Hours.

Examination of relationship between law and society, including how law is used to facilitate or retard social change, social control, and social conflict.

CJ 445. Juvenile Corrections. 3 Hours.

Examination of historical and contemporary efforts to reduce juvenile delinquency through institutional and community-based programs; innovative programs; evaluation of program effectiveness.

CJ 450. Questioned Death Investigation. 3 Hours.

Introduction to and analysis of questioned deaths, including techniques used in case investigation; overview and history of coroners' offices structure and function in the U.S.

CJ 451. Research Methods in Forensic Science. 3 Hours.

Review of routinely used research methods to conduct forensic science scientific studies.

CJ 453. Investigation of Fires and Explosions. 3 Hours.

Introduction to arson investigation including overview of specific techniques used in case investigation; case preparation and presentation in court.

CJ 454. Financial Crimes and Investigations. 3 Hours.

Survey of the field of financial crime and its investigation, including review of various financial crimes (fraud, money laundering, cybercrime, etc.), investigative techniques, resources specific to the investigation of these crimes, and the role of financial institutions in combating these crimes.

CJ 456. Forensic Approaches to Osteology. 3 Hours.

Introduction study of structure and function of bones with particular emphasis on ability to identify age, sex, and population type of skeletal material.

CJ 460. Violence: An American Tradition. 3 Hours.

Examines violence as an American tradition, including historical acts of violence as catalysts for social change, destructive or negative violence, and policies and prevention strategies.

CJ 463. Urban Structures. 3 Hours.

One of the oldest explanations of criminal behavior is that crime is concentrated in particular areas of the city. This class examines the structure of cities, how they grow, and particularly how they decline. It addresses how this decline can produce high levels of crime. It also addresses how cities can be revitalized, and how the justice system can work to reduce crime in these areas.

CJ 464. Crime and Place. 3 Hours.

One of the oldest explanations of criminal behavior is that crime is concentrated in particular areas of the city. But why is that? Is it something about the people, the place, or both? This class will look at the structure of cities, how they grow, and particularly how they decline. We will talk about how this decline can produce high levels of crime. We will also talk about how cities can be revitalized, and how the justice system can work to reduce crime in these areas.

Prerequisites: CJ 463 [Min Grade: D]

CJ 465. Cold Case Analysis. 3 Hours.

Introduction to methods used in analyzing unsolved cases, including innovative technology, 3rd party investigators, and teams.

CJ 466. Spatial Analysis. 3 Hours.

This skills-based class will introduce students to the application of geographic information systems (GIS) to crime-related topics and issues.

CJ 481. Honors Research. 3 Hours.

Undergraduate research project developed and completed under direction of faculty mentor.

CJ 482. Honors Research and Colloquium. 3 Hours.

Completion of undergraduate Honors Project under the guidance of a faculty mentor with presentation of project at department colloquium.

CJ 483. Patterns in Crime. 3 Hours.

Examination of the major correlates of crime and criminality; critical examination of major sources of information from which data on crime correlates are gathered.

CJ 490. Independent Research in Criminal Justice. 1-3 Hour.

Independent readings, research or project approved and directed by a criminal justice faculty member who supervises proposed plan of study. Permission of Department Chair.

CJ 492. Study Abroad in Criminal Justice. 3 Hours.

This course affords students the opportunity engage in academic study outside of the U.S. to examine substantive topics in crime and justice. Students spend time (to be determined by the specific program) at a destination point, where they engage with students and faculty members in classroom and research settings at partner post-secondary institutions, experience immersion in foreign culture, and engage in comparative analysis of policies and programs relating to crime and justice.

CJ 493. Internship and Capstone for Digital Forensics Practitioners. 3 Hours.

Supervised capstone experience for students working full-time in a government agency or company in a position utilizing skills in digital forensics or cyber security. Course strongly emphasizes demonstration of student's ability to communicate in writing; understanding and practicing ethical decision making and civic responsibility; and quantitative analyses including construction and interpretation of tables and ability to adequately communicate quantitative information. Prerequisite: Permission of Internship Coordinator. No more than 3 hours of credit toward the degree may be earned.

CJ 495. Digital Forensics Internship and Capstone. 3 Hours.

Supervised capstone experience in government agency or private company utilizing skills learned in cyber security and forensic investigation. Course strongly emphasizes demonstration of ability to communicate in writing; understanding and practicing ethical decision making and civic responsibility; and quantitative analyses including construction and interpretation of tables and ability to adequately communicate quantitative information. Prerequisite: Permission of the Internship Coordinator. May be repeated for maximum of 12 hours of which not more than 6 hours may be counted toward fulfilling major or minor requirements.

CJ 497. Internship and Capstone in Criminal Justice for Practitioners. 3 Hours.

Supervised capstone experience for students already working in a local, state, or federal criminal justice or ancillary agency. Course strongly emphasizes demonstration of student's ability to communicate in written form to appropriate audiences, including competence in grammar and mechanics; understanding and practicing ethical decision making and civic responsibility; and quantitative analyses including construction and interpretation of tables and ability to adequately communicate quantitative information. Prerequisite: Permission of Internship Coordinator.

CJ 499. Internship and Capstone in Criminal Justice. 3-6 Hours.

Supervised capstone experience in local, state, or federal criminal justice or ancillary agency. Course strongly emphasizes demonstration of ability to communicate in written form to an appropriate audience, including competence in grammar and mechanics; understanding and practicing ethical decision making and civic responsibility; and quantitative analyses including construction and interpretation of tables and ability to adequately communicate quantitative information. Prerequisite: Permission of the Internship Coordinator. May be repeated for maximum of 12 hours of which not more than 6 hours may be counted toward fulfilling major or minor requirements. Ethics and Civil Responsibility and Writing are significant components of this course.

CJ 500. Drugs and Society. 3 Hours.

This course teaches students the pharmacological effects and different categories of drugs. Different theories of drug use are discussed as well as the historical development of drug laws including different methods of regulating drug use. Various harms associated with drug use are discussed as well as the consequences of drug prohibition.

CJ 502. Computer Forensics. 3 Hours.

Use of analytical and investigative techniques in criminal or civil litigation to identify, collect, examine and preserve evidence/information magnetically stored or encoded.

CJ 503. Restorative Justice. 3 Hours.

Introduction to, and analysis of, movement in criminal justice to institutionalize peaceful approaches to harm, problem-solving and violations of legal and human rights. Includes discussion of specific programs, critical evaluation of these programs, and analysis of future directions of the movement.

CJ 504. Serial Killers. 3 Hours.

Examination of the psychology and sociology of serial killers; case studies and agency responses to these offenders.

CJ 507. Special Topics in Criminal Justice. 3 Hours.

In-depth analysis of substantive topic in criminal justice or criminology including contemporary issues, ethics, historical review, or related topics. Varies by semester and by Instructor. May be repeated twice for credit.

CJ 508. Juvenile Delinquency. 3 Hours.

Introduction to the nature, scope, and causes of illegal behavior by juveniles, and societal responses to that behavior.

CJ 511. Juvenile Justice System. 3 Hours.

Introduction to the evolution and operation of specialized agencies and procedures to address juvenile law-breaking, including emerging problems and solutions.

CJ 512. Juvenile Law. 3 Hours.

Review and analysis of emerging statutory and case law in American juvenile justice.

CJ 519. Investigating Online Crimes. 3 Hours.

Study of cyber investigative techniques, involving focused analysis of email and websites; examination of legal process and preparing evidence in cyber crime cases.

CJ 524. Serial Killers in Cross-National Settings. 3 Hours.

Examines serial homicide in cross-national settings including offender disorders; crime scene analysis; significance of victims; and offender classification process.

CJ 530. Ethics and Computer Forensics. 3 Hours.

Overview of different systems of ethics; the role of ethics in computer forensics, cybercrime investigation, and information security; examination of ethical issues facing professionals involved in computer forensics, cybercrime investigation, and information security.

CJ 537. Digital Media Forensics. 3 Hours.

Digital media forensics addresses all stored digital evidence types faced by cyber security professionals and computer forensics examiners. Students will learn to analyze character encoding, file formats, and digital media, including hard drives, smartphones and other portable devices, and cloud-hosted evidence, as well as disk acquisition, duplication and evidence preservation techniques and how to apply these techniques in typical criminal investigation scenarios.

CJ 537L. Digital Media Forensics Lab. 0 Hours.

Laboratory to accompany CJ 537.

CJ 540. White Collar and Corporate Crime. 3 Hours.

Introduction to, and analysis of, illegal/deviant behavior occurring in organizational settings, including crimes committed by and against complex organizations.

CJ 542. Race, Crime, Gender and Social Policy. 3 Hours.

Examination of how the subordinate status of minority groups (African Americans, Hispanics, Native Americans, and Women) affects interaction with the justice system as offenders, victims, and professionals.

CJ 543. Women and the Criminal Justice System. 3 Hours.

Evaluation of the changing role of women in the justice system as victims, offenders and professionals.

CJ 544. Law and Society. 3 Hours.

Examination of how law is used to facilitate or regard social change, social control, and social conflict in society.

CJ 545. Juvenile Corrections. 3 Hours.

Examination of historical and contemporary efforts to reduce juvenile delinquency with particular attention to innovative programs and evaluation of their effectiveness.

CJ 550. Questioned Death Investigation. 3 Hours.

Examination of forensic pathology as used in local medical examiners' offices.

CJ 554. Financial Crimes and Investigations. 3 Hours.

Survey of the field of financial crime and its investigation, including review of various financial crimes (fraud, money laundering, cybercrime, etc.), investigative techniques, resources specific to the investigation of these crimes, and the role of financial institutions in combating these crimes.

CJ 560. Violence: An American Tradition. 3 Hours.

The course examines violence as an American tradition. Although the class examines historical acts of violence as catalysts for social change, the emphasis will be on destructive or negative violence, -- criminal violence. The class examines many different acts of violence in society as well as policies and prevention strategies.

CJ 563. Urban Structures. 3 Hours.

One of the oldest explanations of criminal behavior is that crime is concentrated in particular areas of the city. This class examines the structure of cities, how they grow, and particularly how they decline. It addresses how this decline can produce high levels of crime. It also addresses how cities can be revitalized, and how the justice system can work to reduce crime in these areas.

CJ 566. Spatial Analysis. 3 Hours.

This skills-based class will introduce students to the application of geographic information systems (GIS) to crime-related topics and issues.

CJ 583. Patterns in Crime. 3 Hours.

Examination of the major correlates of crime and criminality, including age, race, sex, and socio-economic status, examination of major sources of information from which data on crime correlates are gathered.

CJ 592. Study Away in Criminal Justice. 3 Hours.

Affords students the opportunity engage in academic study outside of the U.S. to examine substantive topics in crime and justice. Students spend time at a destination point, where they engage with students and faculty members in classroom and research settings at partner post-secondary institutions, experience immersion in foreign culture, and engage in comparative analysis of policies and programs relating to crime and justice.

CJ 600. Pro-Seminar in Criminal Justice. 3 Hours.

Critical analysis of formal and informal processing of offenders by criminal justice agencies, including police, courts, and corrections; effectiveness and future directions.

CJ 601. Seminar in Criminological Theory. 3 Hours.

Classic and contemporary theoretical explanations of crime and criminality.

CJ 603. Seminar in Criminal Justice Administration. 3 Hours.

Theories of organizational structure, motivation, and management applied to criminal justice agencies.

CJ 604. Seminar in Criminal Justice Policy. 3 Hours.

Origins, formulation, implementation, and evaluation of criminal justice policy; classic and contemporary examples of policy innovations.

CJ 605. Seminar in Research Design. 3 Hours.

Quantitative methods of empirical research emphasizing criminal justice/criminological applications; current research methodologies relating to analysis of issues involving crime and criminal justice.

CJ 606. Seminar in Data Analysis. 3 Hours.

Bivariate and multivariate analyses and interpretation of results from substantive research.

CJ 675. Law Evidence and Procedure. 3 Hours.

Overview and examination of the legal aspects of physical evidence, including rules of evidence, procedural rules, and the role of expert witnesses.

CJ 688. Special Topics in Criminal Justice. 3 Hours.

Special Topics in Criminal Justice.

CJ 693. Graduate Practitioner Internship in Criminal Justice. 3 Hours.

Internship specifically arranged for practitioners internship credit for the criminal justice major.

CJ 695. Graduate Independent Study (Non-Thesis). 3 Hours.

Independent study in a substantive area of interest under the direction of a faculty member.

CJ 696. Graduate Internship in Criminal Justice. 3 Hours.

Field experience in criminal justice agency setting. May be repeated for a maximum of 6 hours credit.

CJ 697. Graduate Plan II Research Project. 3 Hours.

Independent study in a student's substantive area of interest under the direction of a faculty member.

CJ 698. Directed Research (Non-Thesis). 3 Hours.

Independent study in a student's substantive area of interest under the direction of a faculty member.

CJ 699. Thesis Research. 3-6 Hours.

Admission to candidacy and successful defense of thesis proposal.

Prerequisites: GAC M

CLS-Clinical Laboratory Science

CLS 501. Introduction to the Clinical Laboratory. 3 Hours.

Overview of issues and skills surrounding working in the modern laboratory environment; introduction to roles and functions of a medical laboratory scientist; includes safety, equipment, mathematics, measurements, microscopy, dilutions, quality assurance, regulations of the laboratory, laboratory operations, and educational principles.

CLS 503. Body Fluids. 1 Hour.

Diagnosis and monitoring of renal and systemic disease through the physical, biochemical, and microscopic analysis of urine and feces. Diagnosis of central nervous system and systemic disease through cerebrospinal fluid analysis. Diagnosis of metabolic and infectious disease through analysis of peritoneal fluid, synovial fluid, transudates, and exudates. Fertility testing using semen analysis.

CLS 504. Lab Analysis of Body Fluids. 1 Hour.

Application of diagnosis and monitoring of renal and systemic disease through the physical, biochemical, and microscopic analysis of urine and feces. Diagnosis of central nervous system and systemic disease through cerebrospinal fluid analysis. Diagnosis of metabolic and infectious disease through analysis of peritoneal fluid, synovial fluid, transudates, and exudates. Fertility testing using semen analysis.

CLS 505. Laboratory Management. 3 Hours.

Roles and functions of clinical laboratories and practitioners; professionalism and ethics; educational methodology and training; professional and interpersonal communication; behavioral aspects of management; leadership styles and management theory; team-building; legal issues related to employment; recruitment, interview and selection of personnel; organizational culture and behavioral change; laboratory operations; safety, governmental regulations, standards and compliance; marketing, outreach, and business plan; budget, cost analysis, reimbursement; critical pathways, decision-making, test utilization; performance improvement, quality assessment; risk management, evidence-based laboratory medicine.

CLS 518. Immunology. 3 Hours.

Physiology of immune responses to infectious agents, tumors, transplant; abnormal responses: hypersensitivity, autoimmunity, immunoproliferative disorders, and immunodeficiencies; antigen-antibody reaction; complement; application of immunologic tests.

CLS 523. Clinical Microbiology. 3 Hours.

Reservoirs, modes of transmission, disease associations, and morphological and biochemical characteristics of microorganisms commonly isolated in the clinical laboratory; methods used to isolate and identify bacteria, parasites, and fungi.

CLS 524. Clinical Microbiology Laboratory. 1 Hour.

Performance of techniques and tests used in the isolation and identification of bacteria, fungi, and parasites commonly seen in a clinical microbiology laboratory.

CLS 526. Instrumentation & Automation. 2 Hours.

Study of the theory and principles of automation and instrumentation used in laboratories emphasis will be placed on quality control, quality assurance, instrumentation principles, basic statistics, and the regulatory, and economic issues encountered in laboratories including, clinical labs, health labs, government labs, private labs and other laboratories.

CLS 527. Instrumentation and Automation Laboratory. 1 Hour.

Practical application of automation and instrumentation used in laboratories. Emphasis will be placed on quality control, quality assurance, instrumentation principles, basic statistics, and the regulatory, and economic issues encountered in laboratories including, clinical labs, health labs, government labs, private labs and other laboratories.

CLS 528. Hematology I. 3 Hours.

Systematic examination of blood cells: normal function; recognizing their microscopic appearance; blood cell disorders; standard and special clinical hematology laboratory procedures; validation of laboratory data; interpretation of results, and quality assurance.

CLS 529. Hematology I Laboratory. 1 Hour.

Practical application of Hematology I as applicable to diagnostic assays in clinical laboratories. An emphasis will be placed on hematology lab principles; complete blood count analysis, manual hematology procedures, automated and manual differentials, cell identification, procedural determination of various clinical diseases and disorders (anemia, leukemia etc..) quality control and quality assurance procedures in the hematology lab.

CLS 530. Immuno-hematology. 4 Hours.

Immunogenetics, serological characteristics, and clinical significance of blood group systems; antibody identification; pretransfusion testing and problem-solving; donor blood collection; component preparation; transfusion and cellular therapy; investigation and treatment of immune hemolytic disorders.

CLS 531. Immuno-hematology Laboratory. 1 Hour.

Red cell phenotyping, antibody detection and identification, pretransfusion testing, and laboratory investigation to diagnosis and treat hemolytic anemias.

CLS 532. Hematology II. 3 Hours.

Structure and function of hematopoietic and lymphatic tissue. Stem cell differentiation, hematopoiesis, erythrocyte and leukocyte kinetics. Laboratory diagnosis and case management of anemia, lymphoma, myeloma, acute and chronic cell morphology, cell population scatter plots and histograms, cytochemistry, immunophenotyping, molecular methods, and cytogenetics. Hematology laboratory problem solving.

Prerequisites: CLS 528 [Min Grade: C]

CLS 533. Hematology II Laboratory. 1 Hour.

Practical application as applicable to diagnostic assays in clinical laboratories. An emphasis will be placed on hematology lab principles; complete blood count analysis, manual hematology procedures, normal and abnormal peripheral blood smear differentials, cell identification, procedural determination of various clinical diseases and disorders (anemia, leukemia etc.), bone marrow analysis, quality control and quality assurance procedures in the hematology lab.

CLS 538. Infectious Diseases. 3 Hours.

Pathogenic mechanisms of infectious diseases; normal flora and pathogens of various body sites; methods for collection, transport, and culturing different types of clinical specimens; interpretation of cultures.

Prerequisites: CLS 523 [Min Grade: C]

CLS 539. Infectious Diseases Laboratory. 1 Hour.

Performance and interpretation of direct Gram stains; culturing various types of clinical specimens for isolation of bacteria; performing and interpreting tests used in the identification of potential pathogens; reporting culture results; antimicrobial susceptibility and resistance testing.

Prerequisites: CLS 524 [Min Grade: C]

CLS 542. Molecular Diagnostics. 3 Hours.

Study of molecular biochemistry, medical genetics, molecular pathophysiology, and the theory of molecular tests.

CLS 543. Molecular Diagnostics Lab. 1 Hour.

Practical application of the isolation of nucleic acids, analysis of nucleic acids and protein, cytogenetics, and the interpretation of various molecular methods.

CLS 551. Clinical Chemistry. 4 Hours.

Theory of clinical laboratory techniques to identify and quantitate chemical analytes in body fluids and the correlation of these analytes to human disease.

CLS 552. Clinical Chemistry Laboratory. 1 Hour.

Performance of laboratory techniques used to identify and quantitate chemical analytes in body fluids and the correlation of these analytes to human disease.

CLS 560. Clinical Correlations. 3 Hours.

Correlate clinical, technical and analytical proficiencies that comprise clinical laboratory science practice. Analyze and interpret case studies through selection, application, and interpretation of clinical laboratory protocols.

Prerequisites: CLS 532 [Min Grade: C](Can be taken Concurrently) and CLS 538 [Min Grade: C](Can be taken Concurrently) and CLS 551 [Min Grade: C](Can be taken Concurrently)

CLS 570. Professional Development. 1 Hour.

Review of medical technology/ clinical laboratory science body of knowledge with required comprehensive trial certification final examination using self-directed online materials. Experience with the development of a personal certification maintenance plan to meet requirements defined by national certification agencies in Clinical Laboratory Sciences.

CLS 595. Clinical Practice. 1-12 Hour.

Directed clinical practice in immunohematology laboratory procedures and methods, problem-solving, quality assurance, preventive maintenance, and safety.

CLS 686. Special Topics in Clinical Laboratory Sciences. 1-4 Hour.

Selected advanced topics of current scientific, clinical, and professional importance; specific topics designed to meet student need and interest.

CLS 698. Master's Level Non-Thesis Research. 1-6 Hour.**CLS 699. Thesis Research. 1-6 Hour.**

Implementation of research. Must be admitted to master level candidacy. Must have approval IRB. Must have a 3 member committee approved by the graduate dean.

Prerequisites: GAC M

CM-Communication Management

CM 601. Foundations of Communication Management. 3 Hours.

Development of communication models, relationships between models and research, examination of functions of models and their impact on human communication in various media. 999999.

CM 602. Source Credibility. 3 Hours.

Theories of ethos, dynamics of credibility in public speaking, organizational, interpersonal, print and broadcasting contexts. Measures of credibility and methods for constructing credibility.

CM 603. Message Construction. 3 Hours.

Features of communication messages, including audience, situation, and culture and their impact on message construction. The principles underlying the creation of messages in various media.

CM 604. Analysis of Communication Audiences. 3 Hours.

Analysis of the audience and its place in the communication model. Includes needs and gratification from various media as well as how messages and feedback are interpreted.

CM 605. Communication Effects. 3 Hours.

Effects of Communication, especially through mass media, as a result of messages transmitted. Topics include violence, persuasion, and sexuality.

CM 607. Seminar in Applied Communication Research. 3 Hours.

Topics include interpersonal communication, small group communication, organizational communication, and political communication.

CM 609. Communibiology. 3 Hours.

Communication personality traits will be the primary focus of this course. This course is for graduate students only.

Prerequisites: CM 601 [Min Grade: B]

CM 611. Seminar in Org Communication. 3 Hours.**CM 612. Instructional Communication. 3 Hours.**

Communication problems in the classroom. Definition of sign and sign process. Signs in communicative action.

CM 613. Nonverbal Communication. 3 Hours.

Elements of nonverbal behavior (physical appearance, gestures, space, voice) which affect communication in person-to-person situations.

CM 614. Seminar: Political Communication. 3 Hours.

Seminar.

CM 615. Intercultural Communication. 3 Hours.

Intercultural Communication.

CM 616. Health and Med Communication. 3 Hours.**CM 617. Training and Development in Communication. 3 Hours.**

Training and Development in Communication focuses on contemporary communication knowledge and skills that every trainer should have. The class will include topics such as: Designing Curricula, Training Content, Methods, Plans, Sessions, Assessment, and Career Opportunities.

CM 618. Communications Independent Study. 1-6 Hour.

Independent Study. Topics of mutual interest to student and faculty member.

CM 619. Communication and the Law. 3 Hours.

Communication and the Law focuses on general effects communication has in the law environment. Conflict, leadership, and use of the law will be considered.

CM 620. Persuasion. 3 Hours.

Current theories and research in the area of attitude formation and change will be explored in this class.

CM 621. Seminar in Small Group Dynamics. 3 Hours.

Current theories and research in small group communication dynamics will be explored in this class. The class will include topics such as: Leadership, Decision-making, conflict and conformity.

CM 622. Interpersonal Communication and Relationships. 3 Hours.

This class introduces students to interpersonal communication concepts, theories, and research and their broad applications to personal and professional relationships. A variety of theories and research are reviewed and applied to relationships in health, organizational, educational, and romantic contexts.

CM 623. Deception. 3 Hours.

This course examines theory and research on the topic of human deception from the perspective of Truth Default Theory. Topics include verbal and nonverbal aspects of deception, prevalence of deception, deception motives, information manipulation, truth-bias, and improving accuracy.

CM 624. Special Topics in Communication Theory and Research. 3-6 Hours.

Various topics selected by faculty.

CM 630. Seminar in Research Classics. 3 Hours.

Students read and discuss seminal works in Communication and social science.

CM 675. Graduate Internship. 3 Hours.

Professional experience in communication management.

CM 690. Communication Theory. 3 Hours.

The class will introduce students to communication theory providing an introduction to theory construction as well as an overview of several prominent communication theories.

CM 691. Seminar in Communication Models. 3 Hours.

Synthesis of courses on the Shannon-Weaver model of communication, with contemporary adaptations. Students should learn to carefully critique reviews of literature, research questions and hypotheses posed by others.

CM 694. Quantitative Communication Research. 3 Hours.

The study of communication theory from a quantitative perspective. Data gathering, experimental and quasi-experimental design, field research and data analysis in applied contexts to be probed.

CM 695. Data Analysis for Quantitative Communication Research. 3 Hours.

This class introduces students to basic descriptive and inferential data analysis techniques in communication studies research.

CM 696. Qualitative Communication Research. 3 Hours.

Study of communication theory from a qualitative perspective. Historical/critical, participant-observation, and various data gathering methods and models explored from a theoretical and practical point of view.

CM 698. Master's Applied Project. 3-6 Hours.

Master's Applied Project.

CM 699. Thesis Research. 3-6 Hours.

Thesis Research.

Prerequisites: GAC M

CPA-Clinical Pathologist Assistant

CPA 605. Advanced Statistics and Data Analysis for Laboratory Medicine. 3 Hours.

Application of advanced statistical principles to laboratory data analysis; emphasis on statistical software selection to aid in data analysis; quality control processes for laboratory analyses, selection, and implementation; application to evidence based medicine practice.

CPA 606. Clinical Laboratory Management in the Health Care Setting. 3 Hours.

Applications of management principles, concepts and policies to the clinical laboratory setting; regulatory and compliance issues in clinical laboratory services, including CLIA 88, Medicare/Medicaid Reimbursement, coding, JCAHO, CAP, OSHA, and quality assurance.

CPA 607. Evidence Based Literature Analysis for Laboratory Professionals. 3 Hours.

Advanced analysis of research-oriented processes, with an emphasis on evidence-based review and synthesis of applicable literature. Principles of effective scientific communication are also addressed.

CPA 608. Laboratory Quality Diagnostic Algorithms. 3 Hours.

Economic, social, regulatory, and professional issues affecting the delivery of cost-effective, quality clinical laboratory services; use of laboratory services in clinical decision making; alternative laboratory service delivery models and mechanisms that promote cost efficiency, appropriate utilization, quality and patient access; use of practice guidelines, critical or clinical pathways, algorithms and reflex testing, direct access testing, evidenced-based practice, and outcomes measurements.

CPA 609. Patient Assessment, Consultation and Interprofessional Communication. 3 Hours.

Introduction to performing patient assessments based on medical history and physical examinations. Proper communication to include navigation of conflict resolutions with medical doctors, nurses, and advanced practice providers.

CPA 650. Advanced Hematology, Hemostasis, and Coagulation Therapy. 3 Hours.

Advanced topics in physiology, disease states, laboratory determinants for red blood cells, white blood cells, platelets, and coagulation; advanced topics in anticoagulation treatments and monitoring.

CPA 651. Advanced Transfusion Medicine and Transplantation. 3 Hours.

Advanced topics in blood products, blood group systems, immunology, physiology and pathophysiology, serologic and molecular testing, transfusion practice, and transplantation.

CPA 652. Advanced Clinical Chemistry. 3 Hours.

Advanced topics in carbohydrates, lipids, heme derivatives, enzymes, proteins, electrolytes, hormones, and vitamins.

CPA 653. Advanced Clinical Bacteriology, Parasitology, and Infectious Diseases. 3 Hours.

Advanced topics in specimen collection and processing, bacterial organisms, antibiotic testing and resistance patterns, fungi, parasites, mycobacteria, and technical methods.

CPA 654. Pharmacology and Toxicology for the Laboratory Professional. 3 Hours.

Clinical application of pharmacology in the management of patients, including frequently prescribed drugs; basic principles of pharmacodynamics, pharmacokinetics, and drug reactions; pertinent physiology and dosing schedules, therapeutic effects, and adverse reactions.

CPA 690. CPA Clinical Internship. 5 Hours.

Exposure to experiences outside the clinical laboratory and issues encountered when dealing with physicians, nurses, and other healthcare professionals. Ability to integrate classroom knowledge into the clinical pathology setting.

CPA 698. Clinical Pathologist Assistant/Non-thesis Project. 1-4 Hour.

Clinical pathology research project which is advisor-guided, student-directed, and designed to support and enhance the student's ability to apply their graduate experience and achieve tangible outcomes.

CRM-Nursing-Clinical Research Management

CRM 670. Clinical Research Ethics, Methods and Clinical Trials. 3 Hours.

This course provides clinical research personnel and advanced practice nurses with an introduction to historical, cultural, and ethical influences on clinical research, and introduces concepts related to good clinical practice guidelines. The course also addresses concepts of scientific integrity, scientific misconduct, the informed consent process, research methods and clinical trials.

CRM 671. Clinical Research Study Operations and Site Management. 3 Hours.

This course provides clinical research personnel and advanced practice nurses with an introduction to principles of study and site management for the development, implementation and evaluation of clinical research, and expands concepts related to good clinical practice guidelines.

CRM 672. An Overview of Teaching Principles for Clinical Research Coordinators and Healthcare Professionals. 3 Hours.

This course provides clinical research personnel and advanced practice nurses with an introduction and overview of teaching principles that are applicable to clinical and clinical research venues.

CRM 673. Current Issues in Clinical Research Management. 3 Hours.

This course provides students with an opportunity to expand critical learning and application of clinical research management topics through review of current literature and use of available resources.

Prerequisites: (CRM 670 [Min Grade: C] and CRM 671 [Min Grade: C] and CRM 672 [Min Grade: C]) or (CRM 670 [Min Grade: C] and CRM 671 [Min Grade: C] and CRM 672 [Min Grade: C])

CRM 674L. Practicum Experiences in Clinical Research Management. 3 Hours.

This course provides students with an opportunity to expand learning experiences that validate cognitive, affective and psychomotor skill sets of CRMs; and includes an opportunity to develop additional learning objectives and practicum experiences that will culminate in a project that fulfills learning goals.

Prerequisites: (CRM 670 [Min Grade: C] and CRM 671 [Min Grade: C] and CRM 672 [Min Grade: C] and CRM 673 [Min Grade: C])(Can be taken Concurrently) or (CRM 670 [Min Grade: C] and CRM 671 [Min Grade: C] and CRM 672 [Min Grade: C] and CRM 673 [Min Grade: C])(Can be taken Concurrently)

CS-Computer Science

CS 499L. Senior Capstone Laboratory. 0 Hours.

Laboratory to accompany CS 499.

CS 501. Programming Languages. 3 Hours.

CS501 is a programming language overview course. The course will discuss computability, lexing, parsing, type systems, and ways to formalize a language's semantics. The course will introduce students to major programming paradigms, such as functional programming and logic programming, and their realization in programming languages. Students will solve problems using different paradigms and study the impact on program design and implementation. The course enables students to assess strengths and weaknesses of different languages for problem solving.

CS 501L. Programming Languages Laboratory. 0 Hours.

Laboratory to accompany CS501.

CS 510. Database Application Development. 3 Hours.

Relational model of databases, structured query language, relational database design and application development, database normal forms, and security and integrity of databases.

CS 519. Investigating Online Crimes. 3 Hours.

Introduction to cyber-investigative techniques involving network forensics. Students will develop and learn to apply new programs and techniques to automatically evaluate digital evidence from network packet captures, emails, server logs, social media, darknets and online forums related to cyber crime cases from both a law enforcement and incident response perspective.

CS 520. Software Engineering. 3 Hours.

Design and implementation of large-scale software systems, software development life cycle, software requirements and specifications, software design and implementation, verification and validation, project management and team-oriented software development.

CS 520L. Software Engineering Laboratory. 0 Hours.

Laboratory to accompany CS520.

CS 522. Mobile Application Development. 3 Hours.

Fundamental concepts of mobile application development. Hybrid application development using web application technologies. Mobile form factor specific concerns. Client-server communication. Multi-screen design. Mobile application UX. Native development basics. This course has a laboratory component.

CS 522L. Mobile App Development Lab. 0 Hours.

Laboratory to accompany CS522.

CS 532. Systems Programming. 3 Hours.

Unix architecture and internals with an emphasis on Linux, shell scripting, distributions of Linux for various computing platforms including large and desktop computers, and embedded computing devices, introduction to the C programming language, systems programming in C covering signals and process control, networking, I/O, concurrency and synchronization, memory allocation, threads, debugging, library development and usage.

CS 532L. Systems Programming Lab. 0 Hours.

Laboratory to accompany CS532.

CS 533. Operating Systems. 3 Hours.

Internal design and operation of a modern operating system, including interrupt handling, process scheduling, memory management, virtual memory, demand paging, file space allocation, file and directory management, file/user security and file access methods. Computer Networks.

CS 533L. Operating Systems Laboratory. 0 Hours.

Laboratory to accompany CS 533.

CS 534. Networking. 3 Hours.

Underlying network technology, including IEEE 802.11. Interconnecting networks using bridges and routers. IP addresses and datagram formats. Static and dynamic routing algorithms. Control messages. Subnet and supernet extensions. UDP and TCP. File transfer protocols. E-mail and the World Wide Web. Network address translation and firewalls. Mandatory weekly Linux-based lab.

CS 534L. Networking Laboratory. 0 Hours.

Project oriented hands-on approach.

CS 537. Digital Media Forensics. 3 Hours.

Digital media forensics addresses all stored digital evidence types faced by cyber security professionals and computer forensics examiners. Students will learn to analyze character encoding, file formats, and digital media, including hard drives, smartphones and other portable devices, and cloud-hosted evidence, as well as disk acquisition, duplication and evidence preservation techniques and how to apply these techniques in typical criminal investigation scenarios.

CS 537L. Digital Media Forensics Lab. 0 Hours.

Laboratory to accompany CS 537.

CS 550. Automata and Formal Language Theory. 3 Hours.

Finite-state automata and regular expressions, context-free grammars and pushdown automata, turing machines, computability and decidability, and complexity classes.

CS 555. Probability & Statistics in Computer Science. 3 Hours.

Introduction to Probability and Statistics with applications in Computer Science. Counting, permutations and combinations. Probability, conditional probability, Bayes Theorem. Standard probability distributions. Measures of central tendency and dispersion. Central Limit Theorem. Regression and correlation. Hypothesis testing. Random number generation. Random algorithms. Estimating probabilities by simulation. Genetic algorithms.

CS 591. Special Topics. 1-3 Hour.

Selected Topics in Computer Science.

CS 592. Special Topics. 1-3 Hour.

Selected Topics in Computer Science.

CS 597. Competitive Programming Techniques. 1 Hour.

This course will help students become more competitive in a programming competition such as the ACM programming contest by exploring numerous problem solving techniques and algorithms not covered in the traditional curriculum.

CS 598. Practical Work Experience. 1-9 Hour.

Credit for working in the Computer Science field.

CS 600. Formal Semantics of Programming Languages. 3 Hours.

Context-sensitive and semantic aspects of programming languages, denotational semantics, mathematical foundations.

CS 601. Program Verification. 3 Hours.

Proving properties of programs, termination and correctness, computability and decidability, role of formal methods in software design.

CS 602. Compiler Design. 3 Hours.

Lexical and syntactical scan, semantics, code generation and optimization, dataflow analysis, parallelizing compilers, automatic compiler generation, and other advanced topics.

CS 610. Database Systems. 3 Hours.

This course offers an introduction to the advanced topics of database management systems. The following topics are addressed: System and file structure, efficient data manipulation using indexing and hashing, query processing, crash recovery, concurrency control, transaction processing, database security and integrity, distributed databases.

CS 613. Emerging Database Technologies. 3 Hours.

This course explores new technological and theoretical foundations for storing and organizing data for "Big Data" applications. Topics include emerging database technologies for high-velocity transaction processing, stream processing, real time analytics, and high-volume data processing. The discussions will focus on several real-world application domains, such as Internet advertising, health care, and social network analysis.

CS 614. Distributed Database Systems. 3 Hours.

Concepts of Distributed Database Systems and Architectures, Distributed Database Design, Distributed Query Processing and Optimization, Transaction Management and Concurrency Control, Heterogeneous and Multidatabase Systems.

CS 615. Multimedia Databases. 3 Hours.

This course introduces the principles of multimedia databases including multimedia information processing, modeling, and retrieval. The media to be considered include text, image, audio and video. At the conclusion of this course, the students should understand what multimedia data retrieval is, the principles, which allow the location of relevant information from amongst a large corpus of multimedia data, and the applications of multimedia information retrieval. The students should also have the expertise and competence to design and implement retrieval software for multimedia data.

CS 616. Big Data Programming. 3 Hours.

Introduction to Big Data, Properties of Big Data, platforms, programming models, applications, business analytics programming, big data processing with Python, R, and SAS, MapReduce programming with Hadoop.

CS 617. Database Security. 3 Hours.

Database fundamentals, introduction to database security, overview of security models, access control models, covert channels and inference channels, MySQL security, Oracle security, Oracle label security, developing a database security plan, SQL server security, security of statistical databases, security and privacy issues of data mining, database applications security, SQL injection, defensive programming, database intrusion prevention, audit, fault tolerance and recovery, Hippocratic databases, XML security, network security, biometrics, cloud database security, big database security.

CS 620. Software Design and Integration. 3 Hours.

This course provides hands-on experience in the design and integration of software systems. Component-based technology, model-driven technology, service-oriented technology, and cloud technology are all explored. Software design basics, including the decomposition of systems into recognizable patterns, the role of patterns in designing software and design refactoring, and attributes of good design. Agile culture, CASE tools, tools for continuous integration, build, testing, and version control.

CS 621. Advanced Web Application Development. 3 Hours.

Introduction to web application design and development. Includes traditional web applications utilizing server-side scripting as well as client/server platforms. Covers responsive design for both mobile and desktop users, as well as hands on server provisioning and configuration. Other topics include web security problems and practices, authentication, database access, application deployment and Web API design, such as REpresentational State Transfer (REST).

CS 621L. Advanced Web Application Development Laboratory. 0 Hours.

Laboratory to accompany CS621.

CS 622. Reflective and Adaptive Systems. 3 Hours.

This course examines the principles of compile-time and run-time adaptation in several contexts, including: reflection, metaprogramming, aspect-oriented software development, and metamodeling (applied to model-driven engineering).

CS 623. Network Security. 3 Hours.

Conventional network security (symmetric and public-key cryptography). Message encryption and authentication. Secure communication between computers in a hostile environment, including E-mail (PGP), virtual private networks (IPSec), remote access (SSH), and E-commerce (SSL), firewalls, intrusion detection and prevention, security of IEEE 802.11 wireless networks (WEP, WPA). Mandatory weekly Linux-based lab.

CS 623L. Network Security Laboratory. 0 Hours.

Laboratory to accompany CS 623.

CS 624. Formal Specification of Software Systems. 3 Hours.

Formal methods for software requirements specification, including VDM, Z, and object-oriented extensions; the relationship among formal requirements, design, and implementation.

CS 625. Metrics and Performance. 3 Hours.

Theory and practice of metrics for performance and scalability of software systems. The course will introduce students to the principles of queuing theory and statistical analysis relevant to analyzing the performance of software products. Students will use profiling frameworks to identify a range of performance problems in existing software. The course will enable students to improve the design of software and eliminate many common design oversights that hamper a system's performance and scalability.

CS 626. Secure Software Development. 3 Hours.

Why and how software fails, characteristics of secure and resilient software, life cycle of secure software development, metrics and models for secure software maturity, design methodology, best practices for secure programming, secure software for mobile computing, cloud computing and embedded systems, methodology for testing and validation.

CS 630. Computer Architecture. 3 Hours.

Introduction to computer architecture, including memory subsystems, direct-mapped and set-associative cache and multi-level cache subsystems, direct-access devices including RAID and SCSI disk drives, processor pipelining including super-scalar and vector machines, parallel architectures including SMP, NUMA and distributed memory systems, Interrupt mechanisms, and future microprocessor design issues.

CS 631. Distributed Systems. 3 Hours.

Object-oriented distributed systems design, distributed software architecture, data and resource access, communication, client-server computing, web technologies, enterprise technologies.

CS 632. Parallel Computing. 3 Hours.

Overview of parallel computing hardware, architectures, & programming paradigms; parallel programming using MPI, Pthreads, and OpenMP; design, development, and analysis of parallel algorithms for matrix computations, FFTs, and Sorting.

CS 633. Cloud Computing. 3 Hours.

Introduction to cloud computing architectures and programming paradigms. Theoretical and practical aspects of cloud programming and problem-solving involving compute, storage and network virtualization. Design, development, analysis, and evaluation of solutions in cloud computing space including machine and container virtualization technologies.

CS 633L. Cloud Computing Lab. 0 Hours.

Laboratory to accompany CS633.

CS 634. Virtualization. 3 Hours.

Theory and practice of virtualization. Origins, history, technical and economic motivations. Relationship to network operating systems and operating system architecture. Simulation, Emulation, Virtualization of CPUs, networks, storage, desktops, memory, devices, and combinations thereof. Different approaches to virtualization, including hardware assisted and software-only techniques. Techniques, approaches, and methodologies for scale-out and scale-up computing, including security, performance and economic concerns.

CS 635. Network Programming. 3 Hours.

Remote procedure call and client-server mechanisms. Protocol definition and compilation; client and server stubs and application code; transport independence; multiple client and server systems. Applications, e.g., remote database query and update and image filtering and archiving; systems programming and file systems contexts.

CS 636. Computer Security. 3 Hours.

Study of the breadth of major computer security topics including cyber threats, malware, information assurance, authorization, applied cryptography, web security, mobile and wireless security, network security, systems/software security, database and storage security, user-centered security, and best security practices and countermeasures.

CS 640. Foundations in Bioinformatics. 3 Hours.

Foundations in bioinformatics, emphasizing the application of computational tools and methodology in genomics, analysis of protein functions and structures, and DNA sequencing. Students learn how to use a high level programming language such as Python together with software tools such as BLAST and ArrayTrack to solve bioinformatics problems.

CS 641. Algorithms in Bioinformatics. 3 Hours.

This course covers the design and analysis of algorithmic techniques applied in bioinformatics. Topics include sequence comparison, alignment and matching, suffix tree, sequence database search, phylogenetic tree, genome rearrangement, motif finding, RNA prediction, and peptide sequencing.

Prerequisites: CS 640 [Min Grade: B]

CS 642. Mobile and Wireless Security. 3 Hours.

Mobile/wireless devices are ubiquitous, raising the potential for many cyber threats. This course examines security vulnerabilities inherent in many existing and emerging mobile and wireless systems, ranging from smartphones to wearables and RFID tags. In addition to exposing security vulnerabilities, defensive mechanisms to address these vulnerabilities drawn from existing deployments and research literature will be studied.

CS 643. Cloud Security. 3 Hours.

Definition of cloud computing, cloud computing models, privacy, authenticity and integrity of outsourced data, proof of data possession / retrievability, cloud forensics, malware analysis as a service, remote verification of capability and reliability, proof of availability, economic attacks on clouds and outsourced computing, virtual machine security, trusted computing technology and clouds, verifiable resource accounting, cloud-centric regulatory compliance issues and mechanisms, business and security risk models, secure MapReduce, applications of secure cloud computing, private information retrieval and cloud cartography.

CS 645. Modern Cryptography. 3 Hours.

Theory and practices of modern cryptographic techniques, algorithms and protocols, including formal analysis. Secret key encryption algorithms, public key encryption algorithms, stream ciphers, one-way hashing algorithms, authentication and identification, digital signatures, signcryption, key establishment and management, secret sharing and data recovery, zero-knowledge proofs, public key infrastructures, efficient implementation, cryptanalytic attacks and countermeasures, security models, assumptions and proofs.

CS 646. Blockchain and Cryptocurrency. 3 Hours.

Fundamental principles of blockchains and their applications in digital cash systems including Bitcoin, Ethereum and other notable cryptocurrencies. Topics to be covered include how a cryptocurrency works, blockchain and other decentralized consensus protocols, proof of work, proof of stake, smart contracts, security and privacy of cryptocurrencies, cryptographic techniques for digital currency, and applications of blockchain in peer-to-peer trust establishment, digital asset management, financial exchanges and distributed autonomous organization.

CS 647. Biomedical Modeling. 3 Hours.

Modeling from biomedical datasets. Acquisition, segmentation; registration and fusion; construction of shape models; measurement; illustration modeling techniques for surgical planning.

CS 650. Theory of Computation. 3 Hours.

Topics include Turing machines, computability, computational complexity, complexity classes, P vs. NP, circuit complexity, randomized computation, interactive proofs, quantum, decidability, primality testing, and other computational models.

CS 651. Formal Language Theory. 3 Hours.

Parsing and translation theory, formal syntax, proof properties and complexity measures.

CS 652. Advanced Algorithms and Applications. 3 Hours.

The design and analysis of fundamental algorithms that underpin many fields of importance ranging from data science, business intelligence, finance and cyber security to bioinformatics. Algorithms to be covered include dynamic programming, greedy technique, linear programming, network flow, sequence matching, search and alignment, randomized algorithms, page ranking, data compression, and quantum algorithms. Both time and space complexity of the algorithms are analyzed.

CS 653. Computational Geometry. 3 Hours.

Basic methods and data structures, geometric searching, convex hulls, proximity, intersections.

CS 654. Malware Analysis. 3 Hours.

Hands-on course teaching static, dynamic and contextual analysis of malware. Malware analysis and reverse-engineering techniques are taught through interaction with both "classroom" and "wild" malware samples. Defensive and counter-measure techniques for both corporate and law enforcement environments are explored.

CS 654L. Malware Analysis Lab. 0 Hours.

Laboratory to accompany CS 654.

CS 656. Web Security. 3 Hours.

The web uses advanced applications that run on a large variety of browsers that may be built using programming languages such as JavaScript, AJAX, Google Web Toolkit and Apache Struts, to name a few. This course studies how core web technologies work, the common security vulnerabilities associated with them, and how to build secure web applications that are free from these vulnerabilities.

CS 657. Penetration Testing and Vulnerability Assessment. 3 Hours.

This course focuses on penetration testing and vulnerability analysis. It introduces methodologies, techniques and tools to analyze and identify vulnerabilities in stand-alone and networked applications. It also covers methodologies for legal and standards compliance.

CS 659. Multiprocessor Programming. 3 Hours.

This course examines synchronization in concurrent systems, available atomic primitives, non-blocking programming techniques, lock-/wait-freedom, transactional memory, and memory models in hardware and software. The application of these techniques to the development of scalable data structures for multi-core architectures will be a central topic of this course.

CS 660. Artificial Intelligence. 3 Hours.

Programming methodologies, logic foundations, natural language applications, expert systems.

CS 662. Natural Language Processing. 3 Hours.

This course provides a broad introduction to Natural Language Processing (Computational Linguistics) and its applications. Topics covered include language modeling with neural networks, sequence labelling algorithms (segmentation, chunking, tokenization, part-of-speech tagging and others), syntactic and dependency parsing, vector-based representation models and using Deep Learning in NLP applications. Some application areas covered include information extraction and named entity recognition, semantic role labelling, word sense disambiguation, text generation, information retrieval, question answering, machine translation and other areas as time permits. There will be a focus on Deep Learning approaches using Tensorflow, PyTorch and keras for a major student project. Jupyter Notebooks will be used for assignments.

CS 663. Data Mining. 3 Hours.

Techniques used in data mining (such as frequent sets and association rules, decision trees, Bayesian networks, classification, clustering), algorithms underlying these techniques, and applications.

CS 665. Deep Learning. 3 Hours.

Deep Learning is a rapidly growing area of machine learning that has revolutionized speech recognition, image recognition and natural language processing. This course teaches you deep learning basics such as logistic regression, stochastic gradient descent, deep neural networks, convolutional neural networks and deep models for text and sequences. Students will also gain hands-on experience of using deep learning systems such as TensorFlow.

CS 667. Machine Learning. 3 Hours.

The course covers important issues in supervised learning, unsupervised learning and reinforcement learning. Topics include graphical models and Bayesian inference, hidden Markov model, mixture models and expectation maximization, density estimation, dimensionality reduction, logistic regression and neural network, support vector machines and kernel methods, and bagging and boosting.

CS 669. Introduction to the Internet of Things. 3 Hours.

Definition of the Internet of Things (IoT), history, IoT components, device specifications and examples, architectures, protocols, applications, security and privacy issues, programming and development environments for IoT, interoperability, interfacing IoT devices via web and mobile applications.

CS 670. Computer Graphics. 3 Hours.

Computer graphics is the study of the creation, manipulation, and rendering of shape models and images, for visualization, modeling, shape analysis, and animation. Topics include matrix transforms for motion and viewing, shading, viewing and camera modeling, shape modeling including meshes and smooth parametric curves and surfaces, visibility analysis, sampling, nonphotorealistic rendering, shape analysis, and texture mapping. Topics are explored through code, including OpenGL and GLSL.

CS 671. Shape Design. 3 Hours.

This course covers various aspects of the design of mathematical descriptions of shape. These geometric models are used in computer graphics, game design, automobile and aircraft design, robotics, anatomical modeling, and many other disciplines. Building geometry from images. Bezier and B-spline curves and surfaces.

CS 672. Geometric Modeling for Computer Graphics. 3 Hours.

The formal description of a motion is necessary in computer animation for graphics, game design, robotics, and many other disciplines. This course covers various aspects of the design of motions. Typical topics include position control along Bezier curves, orientation control with quaternion splines, motion planning, motion capture, camera control, collision detection, visibility analysis.

CS 673. Computer Vision and Convolutional Neural Networks. 3 Hours.

Computer vision, the study of the interpretation of images, is central to many areas of computer science, including data science and machine learning, driverless cars, biomedical computing, image computation for social media, and face detection in security. Recent algorithms for vision also leverage deep learning with convolutional neural networks for object recognition. Topics in this course include image smoothing and filtering, edge detection, segmentation, clustering, Hough transform, deformable contours, object recognition, and machine learning for object recognition using large image datasets.

CS 675. Data Visualization. 3 Hours.

The amount and complexity of data produced everyday is increasing at a staggering rate. Visualization presents an intuitive way to explore and interpret data. This course will be an introduction to the principles, and methods for effective visual analysis of data. Techniques to facilitate information visualization for non-spatial data (eg. graphs, text, high-dimensional data) and scientific visualization for spatial data (eg. gridded data from simulations and scanners and sensors) will be covered. Emphasis will be given to interactive approaches, especially while dealing with massive volumes of data. Topics in the domain of data analytics tightly coupled with visualization will also be covered. Students will learn fundamentals of perception, visualization techniques and methods for a broad range of data types, good practices for visualization, and will ultimately be able to develop their own visualization system.

CS 676. Structure from Motion. 3 Hours.

Structure from motion extracts geometric information from a series of images of an object, either still photographs or video streams. The position of the camera may also be computed, yielding camera paths. This topic has powerful applications in many areas, including computer graphics, computer vision, photography, visualization, and video augmentation. Projective geometry, multiple view geometry, feature extraction.

CS 680. Matrix Algorithms for Data Science. 3 Hours.

Computation with matrices and tensors is at the heart of many areas of computer science, including machine learning, computer vision, computer graphics, and self-driving cars. This course studies matrix computation (solution of linear systems, least squares, spectral analysis, and singular value decomposition) and its applications. These applications will be explored through code.

CS 681. Simulation Models. 3 Hours.

Model development using popular simulation languages, e.g., Excel or OpenOffice.org Calc Spreadsheet; interfacing to an animation system such as Proof Animation or Open_GL.

CS 683. Open Source Security Systems. 3 Hours.

An introduction to the design, implementation, evaluation and maintenance of secure software systems and applications using open source technologies, with an emphasis on hands-on experience. Topics include: open source ecosystems, open source security methodologies and models, notable open source software systems and projects, quality and security assurance through open source, open source supply chain security, major open source cryptographic packages; designing, implementing and maintaining security systems using open source technologies; assessment and regulatory compliance using open source tools, and open source hardware.

CS 684. Robot Motion. 3 Hours.

Path planning algorithms. Configuration space, potential functions, roadmaps, cell decomposition, probabilistic motion planning, compliant motion.

CS 685. Foundations of Data Science. 3 Hours.

Fundamental concepts and techniques in statistical inference and big data analytics. Topics include high-dimensional space, singular value decomposition, random graphs, random walks and Markov chains, data streaming and sketching, and basics of data mining and machine learning.

CS 686. Software-Defined Networking. 3 Hours.

Software defined networking (SDN) allows a logically centralized software component to manage and control the behavior of an entire network. Topics to be covered include abstractions and layered architecture of SDN, data, control and management planes, network virtualization, programming SDN, network functions (e.g. routing, load balancing and security), comparison of OpenFlow and proprietary SDN technologies, and network optimization with SDN.

CS 687. Complex Networks. 3 Hours.

Introduction to complex network theory and real-world applications in biology, physics, sociology, national security and cyber enabled technology systems such as social networks. Essential network models including small world networks, scale free networks, spatial and hierarchical networks together with methods to generate them with a computer will be discussed. In addition, various techniques for the analysis of networks including network modeling and evolution, community structure, dynamic network analysis, and network visualization will be explored.

CS 689. Cyber Risk Management. 3 Hours.

This course develops knowledge and skills in risk based information security management geared toward preventive management and assurance of security of information and information systems in technology-enabled environments. It focuses on risk assessments, risk mitigation strategies, risk profiling and sensitivity, quantitative and qualitative models of calculating risk exposures, security controls and services, threat and vulnerability management, financing the cost of security risks, and return on investment for information security initiatives. The course presents several risk assessment models with an ultimate goal of identifying and realizing the unique and acceptable level of information risk for an organization.

CS 690. Special Topics. 1-3 Hour.

Selected topics in Computer Science.

CS 691. Special Topics. 1-3 Hour.

Selected topics in Computer Science.

CS 692. Special Topics. 1-3 Hour.

Selected topics in Computer Science.

CS 697. Directed Readings. 1-6 Hour.

Selected readings, research and project development under direction of a faculty member. Must have permission of instructor and graduate program director.

CS 698. Master's Plan II. 1-9 Hour.

Masters student registration.

CS 699. Master's Thesis Research. 1-6 Hour.

Research for M.S. candidates writing a thesis.

Prerequisites: GAC M

CS 700. Formal Semantics of Programming Languages. 2,3 Hours.

Context-sensitive and semantic aspects of programming languages, denotational semantics, mathematical foundations.

CS 701. Program Verification. 3 Hours.

Proving properties of programs, termination and correctness, computability and decidability, role of formal methods in software design.

CS 702. Compiler Design. 3 Hours.

Lexical and syntactical scan, semantics, code generation and optimization, dataflow analysis, parallelizing compilers, automatic compiler generation, and other advanced topics.

CS 710. Database Systems. 3 Hours.

This course offers an introduction to the advanced topics of database management systems. The following topics are addressed: System and file structure, efficient data manipulation using indexing and hashing, query processing, crash recovery, concurrency control, transaction processing, database security and integrity, distributed databases.

CS 713. Emerging Database Technologies. 3 Hours.

This course explores new technological and theoretical foundations for storing and organizing data for "Big Data" applications. Topics include emerging database technologies for high-velocity transaction processing, stream processing, real time analytics, and high-volume data processing. The discussions will focus on several real-world application domains, such as Internet advertising, health care, and social network analysis.

CS 714. Distributed Database Systems. 3 Hours.

Concepts of Distributed Database Systems and Architectures, Distributed Database Design, Distributed Query Processing and Optimization, Transaction Management and Concurrency Control, Heterogeneous and Multidatabase Systems.

CS 715. Multimedia Databases. 3 Hours.

This course introduces the principles of multimedia databases including multimedia information processing, modeling, and retrieval. The media to be considered include text, image, audio and video. At the conclusion of this course, the students should understand what multimedia data retrieval is, the principles, which allow the location of relevant information from amongst a large corpus of multimedia data, and the applications of multimedia information retrieval. The students should also have the expertise and competence to design and implement retrieval software for multimedia data.

CS 716. Big Data Programming. 3 Hours.

Introduction to Big Data, Properties of Big Data, platforms, programming models, applications, business analytics programming, big data processing with Python, R, and SAS, MapReduce programming with Hadoop.

CS 717. Database Security. 3 Hours.

Database fundamentals, introduction to database security, overview of security models, access control models, covert channels and inference channels, MySQL security, Oracle security, Oracle label security, developing a database security plan, SQL server security, security of statistical databases, security and privacy issues of data mining, database applications security, SQL injection, defensive programming, database intrusion prevention, audit, fault tolerance and recovery, Hippocratic databases, XML security, network security, biometrics, cloud database security, big database security.

CS 720. Software Design and Integration. 3 Hours.

This course provides hands-on experience in the design and integration of software systems. Component-based technology, model-driven technology, service-oriented technology, and cloud technology are all explored. Software design basics, including the decomposition of systems into recognizable patterns, the role of patterns in designing software and design refactoring, and attributes of good design. Agile culture, CASE tools, tools for continuous integration, build, testing, and version control.

CS 722. Reflective and Adaptive Systems. 3 Hours.

This course examines the principles of compile-time and run-time adaptation in several contexts, including: reflection, metaprogramming, aspect-oriented software development, and metamodeling (applied to model-driven engineering).

CS 723. Network Security. 3 Hours.

Conventional network security (symmetric and public-key cryptography). Message encryption and authentication. Secure communication between computers in a hostile environment, including E-mail (PGP), virtual private networks (IPSec), remote access (SSH), and E-commerce (SSL), firewalls, intrusion detection and prevention, security of IEEE 802.11 wireless networks (WEP, WPA). Mandatory weekly Linux-based lab.

CS 723L. Network Security Laboratory. 0 Hours.

Laboratory to accompany CS 723.

CS 724. Formal Specification of Software Systems. 3 Hours.

Formal methods for software requirements specification, including VDM, Z, and object-oriented extensions; the relationship among formal requirements, design, and implementation.

CS 725. Metrics and Performance. 3 Hours.

Theory and practice of metrics for performance and scalability of software systems. The course will introduce students to the principles of queuing theory and statistical analysis relevant to analyzing the performance of software products. Students will use profiling frameworks to identify a range of performance problems in existing software. The course will enable students to improve the design of software and eliminate many common design oversights that hamper a system's performance and scalability.

CS 726. Secure Software Development. 3 Hours.

Why and how software fails, characteristics of secure and resilient software, life cycle of secure software development, metrics and models for secure software maturity, design methodology, best practices for secure programming, secure software for mobile computing, cloud computing and embedded systems, methodology for testing and validation.

CS 730. Computer Architecture. 3 Hours.

Introduction to computer architecture, including memory subsystems, direct-mapped and set-associative cache and multi-level cache subsystems, direct-access devices including RAID and SCSI disk drives, processor pipelining including super-scalar and vector machines, parallel architectures including SMP, NUMA and distributed memory systems, Interrupt mechanisms, and future microprocessor design issues.

CS 731. Distributed Systems. 3 Hours.

Object-oriented distributed systems design, distributed software architecture, data and resource access, communication, client-server computing, web technologies, enterprise technologies.

CS 732. Parallel Computing. 3 Hours.

Overview of parallel computing hardware, architectures, & programming paradigms; parallel programming using MPI, Pthreads, and OpenMP; design, development, and analysis of parallel algorithms for matrix computations, FFTs, and Sorting.

CS 733. Cloud Computing. 3 Hours.

Introduction to cloud computing architectures and programming paradigms. Theoretical and practical aspects of cloud programming and problem-solving involving compute, storage and network virtualization. Design, development, analysis, and evaluation of solutions in cloud computing space including machine and container virtualization technologies.

CS 733L. Cloud Computing Lab. 0 Hours.

Laboratory to accompany CS733.

CS 734. Virtualization. 3 Hours.

Theory and practice of virtualization. Origins, history, technical and economic motivations. Relationship to network operating systems and operating system architecture. Simulation, Emulation, Virtualization of CPUs, networks, storage, desktops, memory, devices, and combinations thereof. Different approaches to virtualization, including hardware assisted and software-only techniques. Techniques, approaches, and methodologies for scale-out and scale-up computing, including security, performance and economic concerns.

CS 735. Network Programming. 3 Hours.

Remote procedure call and client-server mechanisms. Protocol definition and compilation; client and server stubs and application code; transport independence; multiple client and server systems. Applications, e.g., remote database query and update and image filtering and archiving; systems programming and file systems contexts.

CS 736. Computer Security. 3 Hours.

Study of the breadth of major computer security topics including cyber threats, malware, information assurance, authorization, applied cryptography, web security, mobile and wireless security, network security, systems/software security, database and storage security, user-centered security, and best security practices and countermeasures.

CS 740. Foundations in Bioinformatics. 3 Hours.

Foundations in bioinformatics, emphasizing the application of computational tools and methodology in genomics, analysis of protein functions and structures, and DNA sequencing. Students learn how to use a high level programming language such as Python together with software tools such as BLAST and ArrayTrack to solve bioinformatics problems.

CS 741. Algorithms in Bioinformatics. 3 Hours.

This course covers the design and analysis of algorithmic techniques applied in bioinformatics. Topics include sequence comparison, alignment and matching, suffix tree, sequence database search, phylogenetic tree, genome rearrangement, motif finding, RNA prediction, and peptide sequencing.

CS 742. Mobile and Wireless Security. 3 Hours.

Mobile/wireless devices are ubiquitous, raising the potential for many cyber threats. This course examines security vulnerabilities inherent in many existing and emerging mobile and wireless systems, ranging from smartphones to wearables and RFID tags. In addition to exposing security vulnerabilities, defensive mechanisms to address these vulnerabilities drawn from existing deployments and research literature will be studied.

CS 743. Cloud Security. 3 Hours.

Definition of cloud computing, cloud computing models, privacy, authenticity and integrity of outsourced data, proof of data possession / retrievability, cloud forensics, malware analysis as a service, remote verification of capability and reliability, proof of availability, economic attacks on clouds and outsourced computing, virtual machine security, trusted computing technology and clouds, verifiable resource accounting, cloud-centric regulatory compliance issues and mechanisms, business and security risk models, secure MapReduce, applications of secure cloud computing, private information retrieval and cloud cartography.

CS 745. Modern Cryptography. 3 Hours.

Theory and practices of modern cryptographic techniques, algorithms and protocols, including formal analysis. Secret key encryption algorithms, public key encryption algorithms, stream ciphers, one-way hashing algorithms, authentication and identification, digital signatures, signcryption, key establishment and management, secret sharing and data recovery, zero-knowledge proofs, public key infrastructures, efficient implementation, cryptanalytic attacks and countermeasures, security models, assumptions and proofs.

CS 746. Blockchain and Cryptocurrency. 3 Hours.

Fundamental principles of digital cash systems including Bitcoin, Ripple and other notable cryptocurrencies. Topics to be covered include how a cryptocurrency works, blockchain and other decentralized consensus protocols, proof of work, proof of stake, security and privacy of cryptocurrencies, cryptographic techniques for digital currency, and applications of blockchain in peer-to-peer trust establishment, smart contracts, digital asset management, financial exchanges and distributed autonomous organization.

CS 747. Biomedical Modeling. 3 Hours.

Modeling from biomedical datasets. Acquisition, segmentation; registration and fusion; construction of shape models; measurement; illustration modeling techniques for surgical planning.

CS 750. Theory of Computation. 3 Hours.

Topics include Turing machines, computability, computational complexity, complexity classes, P vs. NP, circuit complexity, randomized computation, interactive proofs, quantum, decidability, primality testing, and other computational models.

CS 751. Formal Language Theory. 3 Hours.

Parsing and translation theory, formal syntax, proof properties and complexity measures.

CS 752. Advanced Algorithms and Applications. 3 Hours.

The design and analysis of fundamental algorithms that underpin all fields of importance ranging from data science, business intelligence, finance and cyber security to bioinformatics. Algorithms to be covered include dynamic programming, greedy technique, linear programming, network flow, sequence matching, search and alignment, randomized algorithms, page ranking, data compression, and quantum algorithms. Efficiency of algorithms is analyzed in both memory and time costs.

CS 753. Computational Geometry. 3 Hours.

Basic methods and data structures, geometric searching, convex hulls, proximity, intersections.

CS 756. Web Security. 3 Hours.

The web uses advanced applications that run on a large variety of browsers that may be built using programming languages such as JavaScript, AJAX, Google Web Toolkit and Apache Struts, to name a few. This course studies how core web technologies work, the common security vulnerabilities associated with them, and how to build secure web applications that are free from these vulnerabilities.

CS 757. Penetration Testing and Vulnerability Assessment. 3 Hours.

This course focuses on penetration testing and vulnerability analysis. It introduces methodologies, techniques and tools to analyze and identify vulnerabilities in stand-alone and networked applications. It also covers methodologies for legal and standards compliance.

CS 759. Multiprocessor Programming. 3 Hours.

This course examines synchronization in concurrent systems, available atomic primitives, non-blocking programming techniques, lock-/wait-freedom, transactional memory, and memory models in hardware and software. The application of these techniques to the development of scalable data structures for multi-core architectures will be a central topic of this course.

CS 760. Artificial Intelligence. 3 Hours.

Programming methodologies, logic foundations, natural language applications, expert systems.

CS 762. Natural Language Processing. 3 Hours.

This course provides a broad introduction to Natural Language Processing (Computational Linguistics) and its applications. Topics covered include language modeling with neural networks, sequence labelling algorithms (segmentation, chunking, tokenization, part-of-speech tagging and others), syntactic and dependency parsing, vector-based representation models and using Deep Learning in NLP applications. Some application areas covered include information extraction and named entity recognition, semantic role labelling, word sense disambiguation, text generation, information retrieval, question answering, machine translation and other areas as time permits. There will be a focus on Deep Learning approaches using Tensorflow, PyTorch and keras for a major student project. Jupyter Notebooks will be used for assignments.

CS 763. Data Mining. 3 Hours.

Techniques used in data mining (such as frequent sets and association rules, decision trees, Bayesian networks, classification, clustering), algorithms underlying these techniques, and applications.

CS 765. Deep Learning. 3 Hours.

Deep Learning is a rapidly growing area of machine learning that has revolutionized speech recognition, image recognition and natural language processing. This course teaches deep learning basics such as logistic regression, stochastic gradient descent, deep neural networks, convolutional neural networks and deep models for text and sequences. Students will also gain hands-on experience of using deep learning systems such as TensorFlow.

CS 767. Machine Learning. 3 Hours.

The course covers important issues in supervised learning, unsupervised learning and reinforcement learning. Topics include graphical models and Bayesian inference, hidden Markov model, mixture models and expectation maximization, density estimation, dimensionality reduction, logistic regression and neural network, support vector machines and kernel methods, and bagging and boosting.

CS 769. Introduction to the Internet of Things. 3 Hours.

Definition of the Internet of Things (IoT), history, IoT components, device specifications and examples, architectures, protocols, applications, security and privacy issues, programming and development environments for IoT, interoperability, interfacing IoT devices via web and mobile applications.

CS 770. Computer Graphics. 3 Hours.

Computer graphics is the study of the creation, manipulation, and rendering of shape models and images, for visualization, modeling, shape analysis, and animation. Topics include matrix transforms for motion and viewing, shading, viewing and camera modeling, shape modeling including meshes and smooth parametric curves and surfaces, visibility analysis, sampling, nonphotorealistic rendering, shape analysis, and texture mapping. Topics are explored through code, including OpenGL and GLSL.

CS 771. Shape Design. 3 Hours.

This course covers various aspects of the design of mathematical descriptions of shape. These geometric models are used in computer graphics, game design, automobile and aircraft design, robotics, anatomical modeling, and many other disciplines. Building geometry from images. Bezier and B-spline curves and surfaces.

CS 772. Geometric Modeling for Computer Graphics. 3 Hours.

The formal description of a motion is necessary in computer animation for graphics, game design, robotics, and many other disciplines. This course covers various aspects of the design of motions. Typical topics include position control along Bezier curves, orientation control with quaternion splines, motion planning, motion capture, camera control, collision detection, visibility analysis.

CS 773. Computer Vision and Convolutional Neural Networks. 3 Hours.

Computer vision, the study of the interpretation of images, is central to many areas of computer science, including data science and machine learning, driverless cars, biomedical computing, image computation for social media, and face detection in security. Recent algorithms for vision also leverage deep learning with convolutional neural networks for object recognition. Topics in this course include image smoothing and filtering, edge detection, segmentation, clustering, Hough transform, deformable contours, object recognition, and machine learning for object recognition using large image datasets.

CS 775. Data Visualization. 3 Hours.

The amount and complexity of data produced everyday is increasing at a staggering rate. Visualization presents an intuitive way to explore and interpret data. This course will be an introduction to the principles, and methods for effective visual analysis of data. Techniques to facilitate information visualization for non-spatial data (eg. graphs, text, high-dimensional data) and scientific visualization for spatial data (eg. gridded data from simulations and scanners and sensors) will be covered. Emphasis will be given to interactive approaches, especially while dealing with massive volumes of data. Topics in the domain of data analytics tightly coupled with visualization will also be covered. Students will learn fundamentals of perception, visualization techniques and methods for a broad range of data types, good practices for visualization, and will ultimately be able to develop their own visualization system.

CS 776. Structure from Motion. 3 Hours.

Structure from motion extracts geometric information from a series of images of an object, either still photographs or video streams. The position of the camera may also be computed, yielding camera paths. This topic has powerful applications in many areas, including computer graphics, computer vision, photography, visualization, and video augmentation. Projective geometry, multiple view geometry, feature extraction.

CS 780. Matrix Algorithms for Data Science. 3 Hours.

Computation with matrices and tensors is at the heart of many areas of computer science, including machine learning, computer vision, computer graphics, and self-driving cars. This course studies matrix computation (solution of linear systems, least squares, spectral analysis, and singular value decomposition) and its applications. These applications will be explored through code.

CS 781. Simulation Models and Animations. 3 Hours.

Model development using popular simulation languages, e.g., Excel or OpenOffice.org Calc Spreadsheet; interfacing to an animation system such as Proof Animation or Open_GL.

CS 783. Open Source Security Systems. 3 Hours.

An introduction to the design, implementation, evaluation and maintenance of secure software systems and applications using open source technologies, with an emphasis on hands-on experience. Topics include: open source ecosystems, open source security methodologies and models, notable open source software systems and projects, quality and security assurance through open source, open source supply chain security, major open source cryptographic packages; designing, implementing and maintaining security systems using open source technologies; assessment and regulatory compliance using open source tools, and open source hardware.

CS 784. Robot Motion. 3 Hours.

Path planning algorithms. Configuration space, potential functions, roadmaps, cell decomposition, probabilistic motion planning, compliant motion.

CS 785. Foundations of Data Science. 3 Hours.

Fundamental concepts and techniques in statistical inference and big data analytics. Topics include high-dimensional space, singular value decomposition, random graphs, random walks and Markov chains, data streaming and sketching, and basics of data mining and machine learning.

CS 786. Software-Defined Networking. 3 Hours.

Software defined networking (SDN) allows a logically centralized software component to manage and control the behavior of an entire network. Topics to be covered include abstractions and layered architecture of SDN, data, control and management planes, network virtualization, programming SDN, network functions (e.g. routing, load balancing and security), comparison of OpenFlow and proprietary SDN technologies, and network optimization with SDN.

CS 787. Complex Networks. 3 Hours.

Introduction to complex network theory and real-world applications in biology, physics, sociology, national security and cyber enabled technology systems such as social networks. Essential network models including small world networks, scale free networks, spatial and hierarchical networks together with methods to generate them with a computer will be discussed. In addition, various techniques for the analysis of networks including network modeling and evolution, community structure, dynamic network analysis, and network visualization will be explored.

CS 790. Special Topics. 3 Hours.

Selected Topics in Computer Science.

CS 791. Special Topics. 3 Hours.

Selected Topics in Computer Science.

CS 792. Special Topics. 3 Hours.

Selected Topics in Computer Science.

CS 796. Directed Readings and Research. 1-9 Hour.

Selected readings, research and project development under direction of a faculty member. Must have permission of instructor and graduate program director.

CS 799. Dissertation Research. 1-9 Hour.

Prerequisite: Admission to candidacy.

Prerequisites: GAC Z

Early Childhood Education

ECE 545. Curriculum for Young Children: Math Science and SS. 3-6 Hours.

Basic knowledge of curriculum and concepts of mathematics, science, and social studies for young children. Child growth and development as basis for planning and teaching mathematics, science, and social studies to young children. Teaching methods and use of instructional media. Practicum experience required.

ECE 546. Comm Arts/Reading Young Child. 3-6 Hours.

Nature of reading and language arts experiences for children grades Pre-K-3. Media, materials, experiences, programs, and strategies to facilitate development of communicative abilities with emphasis on preserving and maintaining creative expression. Integration of learning in areas of listening, speaking, reading, composition, literature, handwriting, spelling, and other communication arts. Laboratory experiences required.

ECE 548. Infant/Toddler Development. 3 Hours.

Study of human development within an ecological context from before birth to three years of age. Course covers social-emotional, physical, cognitive, language, and creative development of the infant and toddler in the home and also in programs for very young children.

ECE 549. Edu Environment: Inf/Todd/Par. 3-6 Hours.

Study of infant (or toddler) development as it relates to the organization of a parent/infant (or toddler) educational program. Information concerning program management, observation of parent/infant (or toddler) interaction, development and sequencing of activities, creation and evaluation of materials, and an examination of techniques and procedures for parent involvement and education. Actual experience in working with a parent/infant (or toddler) program will be an integral part of the course. Prerequisite: ECE 548 or equivalent.

Prerequisites: ECE 548 [Min Grade: C]

ECE 620. Introduction to Curriculum and Teaching in Cultural & Familial Contexts. 3 Hours.

Basic knowledge of early childhood curricula for young children and their families in a variety of cultural contexts. Relationship of child growth and development and family empowerment in planning and implementation of curriculum.

ECE 630. Cognitive Curriculum ECE. 3 Hours.

Mathematics and science for young children based on constructivism. Topics include children's thinking, particularly in physical-knowledge, group games, and situations in daily living. Field experiences required.

ECE 631. Programs for Young Children. 3 Hours.

Basic knowledge of organizing and administering early childhood programs, infancy through third grade, in a variety settings. Provides an overview of functions of program administration including pedagogy, accreditation, organizational development and systems, human resources, collaboration, and advocacy. Field experiences required.

ECE 632. Young Children and Their Literature. 3 Hours.

Literature for children infancy through third grade; selection, use, and integration of literature in total curriculum. Field experiences required.

ECE 633. Social and Emotional Development of the Young Child. 3 Hours.

Topics include the study of social and emotional development, the child's ability to react to and interact with the social environment, temperament, attachment, emotional regulation, and social competence. Field experiences required.

ECE 670. Studying the Young Child in School. 3 Hours.

This course provides an overview of key issues related to analysis of child study in school and the values and limitations of assessment. Candidates will engage in in-depth experiences in evaluating the growth and development of children.

ECE 690. Infant-Toddler Practicum. 3-6 Hours.

Early Childhood Practicum in birth to age three settings.

ECE 691. Practicum Supervision in ECE. 2-3 Hours.

Supervision of practicum students.

ECE 692. Practicum in Primary Education. 3-9 Hours.

Early Childhood Practicum in Kindergarten to third grade settings.

ECE 693. Internship in Early Childhood Education. 3-9 Hours.

Full-time internship for 10 weeks (300 clock hours).

ECE 694. Practicum in Play-based Education for the Young Child. 3 Hours.

Investigate the intrinsic nature of play in the lives of young children; engage in play observations, analyze contemporary theories of play & development, and plan and implement a play-based curriculum inclusive of creativity, curiosity, play, social negotiation, and problem-solving.

ECE 730. Doctoral Seminar I: Issues in Development Theory. 3 Hours.

Special Topics in Early Childhood and Development Studies. Specific topic announced in class schedule.

Prerequisites: GAC Z

ECE 731. Doctoral Seminar II: Children and Society. 3 Hours.

Special Topics in Early Childhood and Development Studies. Specific topic announced in class schedule.

Prerequisites: GAC Z

ECE 732. Doctoral Seminar III: History of Early Childhood Education. 1-3 Hour.

Survey of historical, philosophical, and sociocultural foundation of early childhood programs and policies.

Prerequisites: GAC Z

ECE 733. Doctoral Seminar IV: Advanced Research Design in ECE. 3 Hours.

Evaluation and planning of research in preparation for dissertation.

ECE 734. Logic and Scientific Inquiry. 3 Hours.

Scientific investigation as applied in education. Conceptual issues in research process. Methods of analysis and presentation.

ECE 735. Meaning and Development of Play. 3 Hours.

Nature of play, its importance and how it is nurtured.

ECE 736. Personality Development of the Young Child. 3 Hours.

Theoretical perspectives; review of research, including cross-cultural studies.

ECE 737. Parent Child and School Interface. 3 Hours.

Historical development of parent involvement. Theoretical bases of family-school interactions.

ECE 738. The Consultation Process and the Young Child. 3 Hours.

Skills for working with families, teachers, and professionals in community agencies that serve infants, toddlers, and young children.

ECE 739. Developing Interpersonal Competence for Leaders. 3 Hours.

Relationships with coworkers and subordinates. Various approaches to interpersonal relationships.

ECE 740. Research Apprenticeship. 3-6 Hours.

Planning, implementation, analysis, and presentation of research.

ECE 741. Research Study: Design and Implementation. 3 Hours.

Development of rationale, literature search, collection and analysis of data, and formal written report (according to APA guidelines). Must be completed before admission to candidacy.

Prerequisites: EPR 607 [Min Grade: C] and EPR 608 [Min Grade: C] and EPR 609 [Min Grade: C] and ECE 740 [Min Grade: C]

ECE 742. Piaget: Theory and Research I. 3 Hours.

Jean Piaget's theory, application to early childhood education; physical and social (conventional) knowledge. Representation and memory, logico-mathematical knowledge. Prerequisite: Master's degree and EEC 672.

Prerequisites: EEC 672 [Min Grade: C]

ECE 743. Piaget: Theory and Research II. 3 Hours.

Jean Piaget's theory, application to early childhood education; physical and social (conventional) knowledge. Representation and memory, logico-mathematical knowledge.

ECE 744. Piaget: Theory and Research III. 3 Hours.

Jean Piaget's theory, application to early childhood education; physical and social (conventional) knowledge. Representation and memory, logico-mathematical knowledge.

ECE 745. Piaget: Theory and Research IV. 3 Hours.

Jean Piaget's theory, application to early childhood education; physical and social (conventional) knowledge. Representation and memory, logico-mathematical knowledge.

ECE 746. Contemporary Issues in Science Education. 3 Hours.

Crisis atmosphere surrounding science education in American classroom.

ECE 747. Social Development of Young Children. 3 Hours.

Factors influencing socialization of young children.

ECE 748. Research in Infancy. 3 Hours.

Theoretical and empirical evidence relating to developmental domains for young children.

ECE 749. Advanced Early Childhood Curriculum. 3 Hours.

Historical, philosophical, psychological, and social thought influencing curriculum in early childhood education.

ECE 750. Literacy Before School. 3 Hours.

Written language development of preschool children.

ECE 751. School and Literacy Instruction. 3 Hours.

Primary-level literacy instruction and children's literacy development. Prerequisites: Admission to doctoral program in early childhood education and two courses in language development.

ECE 752. Theory Research Literacy Development Instruction. 3 Hours.

Philosophical and psychological beliefs regarding literacy development.

ECE 753. John Dewey and the Early Childhood Curriculum. 3 Hours.

Dewey's philosophy, epistemology; relationship to early childhood education and development.

ECE 760. Current Issues in Education. 2-3 Hours.

Current Issues in Early Childhood Education and Advocacy.

ECE 774. Advanced Seminar in Language Development. 3 Hours.

Relationship of thinking and knowing to language development; strategies for analysis; strengths and weaknesses of techniques of examining language development.

ECE 790. Internship in Early Childhood Education and Development. 3-9 Hours.

Internship.

ECE 791. Field Studies in Early Childhood Education. 1-6 Hour.

Individual Field Projects.

ECE 792. Directed Readings in Research. 3 Hours.

Review of research in early childhood education to gain understanding of conceptual and methodological basis.

ECE 793. Individual Research in Early Childhood Education. 3 Hours.

Recent research in early childhood education; systematic solutions to problems in education.

ECE 794. Current Research Topics in Early Childhood Education. 1-3 Hour.

Philosophical aspects of scientific methods in education; functions of paradigms, theories, and models in inquiry; theory development and validation; major types of experimental and nonexperimental inquiry appropriate to study of educational phenomena.

ECE 798. Non-Dissertation Research. 1-12 Hour.

The course provides for supervised research experience under the direction of a graduate faculty member within the School of Education. The topic for an ECE 798 course must relate to the discipline or specializations within early childhood education and child development.

ECE 799. Dissertation Research. 1-12 Hour.

Doctoral research.

Prerequisites: GAC Z

ECG-Counseling, Human Service

ECG 600. Intro to Integrated Care Counseling. 3 Hours.

Integrated care capitalizes on the combined expertise of mental health and primary care providers working together within a single treatment setting to more effectively address the physical health problems of individuals suffering from mental illness. Within these settings mental health counselors work collaboratively with health care professionals to design and implement comprehensive biopsychosocial treatment plans. This course addresses the specific needs of students preparing for contemporary counseling careers in both primary care and behavioral health settings, including the multi-faceted roles and functions of a professional counselor, the counseling needs of special community populations, and the professional/ethical issues unique to integrated care counseling.

ECG 612. Professional Orientation. 3 Hours.

This course emphasizes an understanding of professional roles and responsibilities; ethical and legal issues; historical perspectives; preparation standards; credentialing; trends and issues in the counseling profession. Central to this course will be an on-going self-evaluation of the student's attitudes, values, interpersonal skills, and motives for choosing counseling as a potential profession. Threaded throughout the course will be the concept of the counselor as a social change agent and advocate for clients, the community, and the counseling profession. This course is open to Non-Degree seeking students.

ECG 613. Foundations of Substance Abuse. 3 Hours.

The foundations of Substance Abuse course is an introductory overview of relevant theory, research, and practice associated with substance abuse and addictions counseling. The course will be presented as a blend of didactic and practical elements to increase student knowledge of fundamental concepts while providing opportunities to experiment with approaches to working with clients presenting with substance abuse and /or addictions concerns. To that end, the instructor will introduce topics that include pharmacological issues and terminology, models of addiction, theories on etiology, diagnosis and assessment, and evidence based treatment strategies. A practicum element that requires students to practice the introductory concepts of Motivational Interviewing will accompany lectures, group discussion, case studies, and demonstrations over the course of the semester. This course is open to Non-Degree seeking students.

ECG 616. Motivational Interviewing. 3 Hours.

Motivational Interviewing (MI) is an approach to behavior change designed to enhance intrinsic motivation by exploring and resolving ambivalence within the client. This course will introduce the underlying philosophy of MI, as well as the key MI principles, concepts, and “active ingredients” that make MI successful in a variety of settings with a variety of populations. Emphasis will be placed on instruction of the four fundamental processes of MI, engaging, focusing, evoking, and planning; MI interventions, treatment fidelity, short-term models, responding to discord between practitioner and client, and developing change plans. The instructor will provide supervision and feedback of MI practice for all enrolled students. Though the course will be fully taught online, the instructor will evaluate students based on their presentation of the skills of MI.

ECG 619. Special Issues for School Counselors. 3 Hours.

This course will expose the school counselor-in-training to a variety of critical incidents. These incidents (situations) will cover a variety of experiences which will be presented in a seminar environment and will require the student counselor's expertise and proper response. Authorities from the various school systems, law enforcement agencies, counseling/ mental health agencies, and child protective agencies will provide knowledge and insight from their perspectives.

ECG 620. Foundations of School Counseling. 3 Hours.

Social, psychological, economic, and philosophic trends leading to development of guidance programs in American schools. Organization and administration of guidance services. This course is open to Non-Degree seeking students.

ECG 621. Theories of Individual Counseling. 3 Hours.

Students will be provided an introduction to counseling theories. Students will explore beliefs about different approaches and methods of counseling including, educational, vocational, systemic, and personal counseling.

ECG 622. Group/Classroom Guidance in Schools. 3 Hours.

The process and practice of group and classroom guidance and counseling with children (K-12) will be explored.

ECG 623. Comprehensive Counseling and Guidance: M/H School. 3 Hours.

Principles and practices of comprehensive counseling and guidance in the middle/high school related to curriculum, guidance services, and the guidance program.

ECG 624. Assessment. 3 Hours.

The purpose of this course is to provide an introductory overview of assessment methods, instrumentation, and basic principles of measurement. Discussion topics will review techniques for assessing intellectual ability, aptitude/ achievement, psychopathology, emotion, and personality. Additional topics will include clinical assessment, communicating results, multicultural considerations, and ethical/ legal issues. This course will orient students to common instruments used in educational and clinical settings, common selection procedures, measurement methods, administration, scoring, and interpretation.

Prerequisites: EPR 590 [Min Grade: C]

ECG 626. Group Counseling: Process and Procedures. 3 Hours.

This course provides an introduction to many of the important challenges facing group leaders and group members in contemporary society. Ethical guidelines particular to group work will be discussed. Students will be exposed to how common counseling theories can be applied in group settings. Students will gain an understanding of group developmental stages and processes, and how these dynamics influence group growth and productivity. Leader skill development will be emphasized. Approximately 20 hours of class time is spent in a laboratory experience wherein each student is provided the opportunity to function in a group.

Prerequisites: ECG 621 [Min Grade: C](Can be taken Concurrently)

ECG 627. Comprehensive Counseling and Guidance: Elementary School. 3 Hours.

Principles and practices of comprehensive counseling and guidance in Elementary School related to curriculum, guidance services, and the guidance program.

ECG 628. Social and Cultural Diversity. 3 Hours.

This course is designed to expose students to various cultures, and the methods, values, and beliefs that organize family life and human development. Using the oppression model, students will examine how the intersections of race, class, culture, gender, ethnicity and sexuality shape and affect the lives of individuals and families and the therapeutic process itself. Intervention practices, social advocacy models, and resistance strategies will be reviewed.

ECG 629. Counseling Families in a Multicultural Society. 3 Hours.

The intent is to facilitate an understanding of family dynamics and cultural sensitivity. Counseling Families in a Multicultural Society provides opportunities for students to explore, understand, and appreciate families from culturally diverse backgrounds. Contents includes family and multicultural theories/concepts related to structure, dynamics, growth and development, assessment, possible counseling interventions, and research related to health promotion, maintenance, and restoration of diverse cultural groups.

ECG 630. Career Development: Vocational and Life Planning. 3 Hours.

This course will introduce students to the concepts of career development. The course will present the philosophical and historical foundations of career counseling. Students will learn how to apply career counseling theory to practice. Instruction will include career counseling technique, career assessment, career exploration, job market strategies, examination of workplace issues, and lifestyle and wellness concepts.

ECG 631. Suicide Prevention. 3 Hours.

The course will address the epidemiology of suicide, demographic and incidence information about at-risk groups, risk factors, protective factors, warning signs, assessment of emergency risk and chronic risk, intervention strategies, nomenclature, national strategy planning, prevention advocacy, and attention to the bereaved and complicated mourning and subsequent postvention. Students will be engaged in case studies and assessment exercises, research and review into the literature, hear from guest speakers including advocates and survivors, journal writing and reflection, exams, and presentations. This course is open to Non-Degree seeking students.

ECG 637. Adlerian Family Counseling. 3 Hours.**ECG 638. Practicum I: Clinical Skills and Techniques. 3 Hours.**

The Counseling Techniques course is a forum for the instructor to introduce candidates to the practical skills necessary for development as a counseling professional. Through classwork lecture, discussion and demonstration will be used in the instruction of course material, an emphasis on experiential education will be implemented to encourage growth in candidates' use of counseling skills. Opportunities to integrate counseling skills with counseling and multicultural theory will be afforded throughout the coursework.

Prerequisites: ECG 621 [Min Grade: C]

ECG 650. Diagnosis and Treatment of Psychological Disorders. 3 Hours.

This course will introduce students to the diagnosis, treatment, and conceptualization of mental disorders. First, students will learn about diagnostic classification, models for conceptualizing and treatment planning. Finally, students will receive a broad introduction into psychopharmacological interventions associated with the treatment of mental disorders.

ECG 652. Advanced Counseling Techniques. 3 Hours.

This course will involve the study of theoretical approaches to counseling which have been demonstrated to be culturally-relevant and conceptually inclusive of multiple theories and techniques: Advanced Cognitive Behavioral Therapy techniques will be emphasized (other techniques will also be explored). Selected readings, academic discussion and clinical application will be stressed. Critical thinking and active participation are essential. Students will focus on the application of theoretical information towards a goal of case conceptualizations as a precursor to effective treatment planning.

Prerequisites: ECG 621 [Min Grade: C] and ECG 638 [Min Grade: C]

ECG 653. Counseling Children and Adolescents. 3 Hours.

This course will review current evidenced based treatment interventions for children and families. Candidates will learn play therapy techniques, art therapy techniques, and behavioral interventions including how to create behavioral contracts, and methods for writing informative treatment plans. Candidates will also learn specific strategies for engaging parents and siblings in treatment, and will learn specific structural and narrative based theoretical approaches to family therapy.

ECG 660. Relationships and Human Sexuality. 3 Hours.

Introduction to the theory of human sexuality and considerations of couples therapy will be presented, followed by a discussion of systematic goal setting, treatment planning, and assessment, and an investigation of issues of dysfunctional sexual functioning, sexual disorders, and its effect on couple and family systems. Focus will be given to specific issues to take into account in the practice of systematic couples therapy, including cultural diversity, age, disability and illness, diverse sexual behavior, sexual trauma, and rape. Appropriate assessment and intervention methods, as well as techniques utilizing a contextual and systemic approach will be studied and practiced.

ECG 661. Play Therapy I. 3 Hours.

This course will introduce students to the philosophical underpinnings and theoretical approaches of play therapy with children. During this course, students will learn to appropriately conceptualize mental health in childhood, develop treatment plans, and apply play theory techniques for the treatment of children. Group counseling and incorporating families into play therapy will also be considered.

ECG 662. Play Therapy II. 3 Hours.

Counseling children. Advanced counseling theories and advanced techniques appropriate to working with children are explored. Play therapy is emphasized.

ECG 663. Adventure-Based Counseling. 3 Hours.

Improvement of self-concept and social life skills through physical, spiritual, emotional, and mental development in creative activity outdoors. Natural environment used as a learning laboratory for leadership, teamwork, problem solving, decision-making, conflict resolution, and physical fitness.

ECG 664. Challenge Course Fund II. 3 Hours.

This course introduces students to the background, philosophy, ethical issues, and risk management required to high ropes facilitation. Introduces students to a variety of high challenge course initiatives used for learning and problem solving, trust team building, and self-confidence and communication skills. How to present high challenge courses initiatives to diverse groups will be emphasized. Specific attention will be given to addressing learners of different ages and varying abilities. Additionally, an overview will be given of how counseling and ropes courses experiences can be integrated.

ECG 665. Adventure Processing and Facilitation. 3 Hours.

This course provides the skills necessary for facilitating a variety of client groups educational, recreational, corporate, and therapeutic indoor experience programs. The curriculum includes the Experiential Learning Cycle, stages of group development, leading group discussion, active listening, front loading, de-briefing, use of metaphors and transfer of learning. Activities are used to facilitate leadership, teamwork, problem solving, decision-making and conflict resolution. This knowledge will enhance students' ability to adapt their program to various groups. How to facilitate and lead group discussion with diverse groups will be emphasized.

ECG 666. Organization and Administration of Adventure Education. 3 Hours.

Students will synthesis their experience in adventure leadership, instruction and programming to explore the details of managing an adventure program. Topics include risk management for the administrator, operations and file management, legal issues, accreditation standards, staff recruitment, hiring and training, marketing and fiscal management. Special attention will be given to managing a universally designed challenge course.

ECG 680. The Intersections of Family and Community Systems. 3 Hours.

This course will examine the interactions and issues that arise between the family system and prominent community and social systems, with a focus on the education system and schools, the medical system and wellness, and mental health. Contemporary issues affecting families in the context of these systems will also be examined. These interactions and issues will be examined through a systemic lens with an emphasis on family strengths and resilience.

ECG 685. Marriage and Couples Counseling. 3 Hours.

This course is designed to introduce students to principles of effective couples therapy while preparing them to critically assess couple relationships. This course will be taught from a systems perspective and will include an overview of models and techniques drawn from evidence based research. This course is designed to blend theory and application. Students in this course will participate in didactic and experiential learning and will participate in simulations and case presentations to further understand clinical aspects of couples therapy.

Prerequisites: ECG 691 [Min Grade: C]

ECG 689. Advanced Family Counseling Techniques. 3 Hours.

This course will serve as an in-depth exploration of limited theories of family therapy, including Emotionally Focused Couples Therapy and Cognitive Behavioral Family Therapy, their more recent expressions within the professional literature, and how to consider them against the standards of evidenced based practice. Conceptual understanding and acquisition of specific treatment skills through direct clinical experiences and reflection/advisory teams will be emphasized. This course is designed to allow students to gain a greater understanding of how these key theoretical approaches and techniques, and advanced systemic concepts, can be applied in marriage and family therapy practice.

Prerequisites: ECG 685 [Min Grade: C] and ECG 691 [Min Grade: C]

ECG 691. Introduction to Couples and Family Counseling. 3 Hours.

The purpose of this course is to provide an introduction to family, systems, and relational therapies. An overview of theoretical concepts and intervention strategies associated with traditional and systemic theories of marriage and family therapy will be provided. This course also provides an examination of how family therapy has been shaped through cybernetics and systems theory.

ECG 692. Independent Readings in Counselor Education. 1-3 Hour.**ECG 695. Practicum II: Supervised Field Experience. 3 Hours.**

This clinical course is designed to give students the opportunity to demonstrate basic counseling skills with students/clients at a school or agency and to begin to move toward proficiency. Knowledge and skills developed in previous course work will be applied in the clinical setting. The counselor-in-training is involved in serious counseling interactions with clients. Student counselors receive feedback and supervision from on-site supervisors, group seminar supervisors, and UAB faculty members. Counselors in-training are assigned to a school, or agency setting for a minimum of 100 clock hours, 40 of the hours must be in direct service with clients. Prerequisites: Completion of Area I Courses, Completion of required personal counseling sessions, a grade of "Pass" on the comprehensive exam, and satisfactory dis-positional evaluations/successful resolution of a dis-positional letter.

ECG 696. Counseling Internship A. 3 Hours.

The internship provides an opportunity for the student to perform, under supervision, a variety of activities that a regularly employed counselor would be expected to perform in the clinical setting. A regularly employed staff member is defined as a person occupying the professional counseling and clinician's role to which the student is aspiring (school or clinical mental health). The intern is involved in counseling interactions with clients. Interns receive feedback and supervision from their on-site supervisor, group supervisors, and UAB faculty members. Interns are assigned to a school, agency, or rehabilitation setting for a total of 600 clock hours, 240 of the hours must be in direct service with clients. In this course, students will be challenged to become more self-aware of both their professional approach to counseling as well as how they personally influence the therapeutic space. This development will occur primarily via direct feedback from peers, facilitated by the group supervisor, as well as opportunities for personal reflection and individualized feedback from the supervisor. Interns are often unaware that counselor development hinges on one's willingness to explore themselves. The goal of this internship is to push the boundaries of this lack of awareness within a safe and supportive atmosphere and to challenge others to do the same for the benefit of providing our clients with a more authentic representation of ourselves as professional counselors. Interns are always given the opportunity to discuss this in the group setting or on an individual basis as desired.

Prerequisites: ECG 695 [Min Grade: P]

ECG 697. Counseling Internship B. 3 Hours.

The internship provides an opportunity for the student to perform, under supervision, a variety of activities that a regularly employed counselor would be expected to perform in the clinical setting. A regularly employed staff member is defined as a person occupying the professional counseling and clinician's role to which the student is aspiring (school or clinical mental health). The intern is involved in counseling interactions with clients. Interns receive feedback from their on-site supervisor, group supervisors, and UAB faculty members. Interns are assigned to a school, agency, or rehabilitation setting. Each semester of internship, students are required to have at least 300 total hours at their site, 120 of which must be in direct service with clients, for a total over two semesters of 600 clock hours, and 240 in direct service with clients.

Prerequisites: ECG 696 [Min Grade: P]

ECT-Collaborative Teacher Education

ECT 520. Formative and Summative Assessment. 3 Hours.

In-depth analysis of testing, assessment, and accountability applied to special education. Analysis of applied issues such as standards-based reform, annual yearly progress, response to intervention, and program effectiveness. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities. [Course is for students in the Alternative Masters Program (AMP) only].

Prerequisites: ECY 600 [Min Grade: C]

ECT 521. Program and Lesson Planning. 3 Hours.

This course focuses on the diagnosis and evaluation of students with disabilities using a variety of developmentally appropriate curriculum-based assessments, criterion referenced, and norm-referenced tests. Emphasis is on the interpretation of information from assessments into Individualized Education Program annual goals and objectives, transition planning, and Response to Intervention planning. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

Prerequisites: ECY 600 [Min Grade: C]

ECT 522. Language and Communication Facilitation. 3 Hours.

This course provides information on communication assessment and intervention procedures useful for teachers of students with disabilities. Includes an overview of normal and typical language development and research on effective naturalistic communication interventions. Candidates will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

Prerequisites: ECY 600 [Min Grade: C]

ECT 523. Instructional Methods. 3 Hours.

This course provides information on research-based instructional strategies for equipping students with disabilities with the skills and knowledge that will help them thrive in the classroom and beyond the school day. Particular emphasis will be placed on general instructional strategies for the acquisition and generalization of skills. In addition, strategies for implementing individualized and effective programming will be addressed. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

Prerequisites: ECY 600 [Min Grade: C]

ECT 524. Sensory, Health and Physical Methods. 3 Hours.

This course introduces research-based assessment and instructional strategies for equipping students with sensory, health, and physical disabilities with the skills and knowledge that will help them thrive in the classroom and beyond the school day. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

Prerequisites: ECY 600 [Min Grade: C]

ECT 525. Positive Behavioral Supports. 3 Hours.

This course presents definition and measurement of behavior, reinforcement strategies, systematic program development, basic formats for classroom instruction, and techniques for monitoring student progress. There is an emphasis on procedures for increasing academic and socially appropriate behavior through simulations and practice exercises. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

Prerequisites: ECY 600 [Min Grade: C]

ECT 526. Assistive and Instructional Technology. 3 Hours.

This course examines the use of computer-based instruction and management systems to facilitate classroom instruction. The course includes issues related to the integration of technology into instructional design, a review and analysis of educational software, an exploration of educational considerations of technology for individuals with disabilities, an evaluation of assistive technology options, and an overview of instructional and managerial computer applications. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

Prerequisites: ECY 600 [Min Grade: C]

ECT 527. Collaborative Processes. 3 Hours.

This course provides a variety of collaborative options for supporting students with disabilities. These include collaborating with families, agencies, paraprofessionals as well as other professionals.

Prerequisites: ECY 600 [Min Grade: C]

ECT 528. Legal Issues and Trends. 3 Hours.

This course explores current laws and trends relating to special education.

Prerequisites: ECY 600 [Min Grade: C]

ECT 529. Teaching Literacy and Reading in Inclusive Settings. 3 Hours.

The purpose of this course is to provide teacher candidates with an understanding of a balanced approach to literacy and research-based best practices for supporting literacy development among a diverse population of students. This knowledge affords teachers the ability to choose curricular goals, design instruction, promote student achievement, and assess and /or report student to a variety of stakeholders.

Prerequisites: EDU 500 [Min Grade: C] and ECY 600 [Min Grade: C]

ECT 530. Effective Teaching and Learning. 3 Hours.

This course focuses on the effective teaching and learning of students with disabilities. Course work will focus on planning appropriate lessons that support the student, ways to engage all learners and analyze teaching effectiveness. Candidates will also learn ways of using feedback to guide further learning and ways of using assessment to inform instruction.

Prerequisites: EDU 500 [Min Grade: C] and ECY 600 [Min Grade: C]

ECT 531. Internship in Collaborative Teaching K-12. 3-9 Hours.

These courses are required in UAB's Alternative Masters Program (AMP) for a Master of Arts in Education with Alternative Class A certification for teaching in the following areas: Collaborate Teacher K-12, Early Childhood Special Education, Visual Impairments P-12. The purpose of ECT 531 is to prepare teachers to use Best Practices for teaching within their content area. As stipulated by the ALSDE Administrative Code, determining readiness to serve as a certified teacher shall require competence to teach as demonstrated in an internship of 15 weeks of full-time student teaching. Collaborative Teacher K-12 and Visual Impairments P-12 interns will have two placements to satisfy their K-12 and P-12 certification requirements (i.e., 7.5 weeks in a K-5 placement and 7.5 weeks in a 6-12 placement).

ECT 532. Student Teaching Seminar. 1 Hour.

This course will accompany student teaching/internship to support and extend the efforts of student teaching. The course will focus on the successful completion of edTPA assignments and submission.

ECT 554. Communication & Technology Applications In Early Childhood Special Education. 3 Hours.

The purpose of this course is to provide information on communication facilitation and assistive and instructional technology applications for young children with delays or disabilities. The course examines (a) the use of various communication systems, (b) naturalistic communication strategies, (c) computer-based instruction and management systems to utilize assistive and instructional technology, (d) issues related to the integration of technology into instructional design, (e) a review and analysis of educational software, (f) an exploration of educational considerations of technology for young children with delays or disabilities, (g) an evaluation of assistive technology options, and (h) an overview of instructional and managerial computer applications. Candidates will incorporate evidence-based decision-making, IFSP and IEP development, and program planning to facilitate communication and provide instruction for young children with delays or disabilities and their families.

ECT 555. Early Primary Curriculum and Methods. 3 Hours.

Universal design, response to intervention, and co-teaching are central components of this course. This course provides information on providing evidence-based instructional strategies and support to young children (K-3) with delays or disabilities. The intent is to equip children (K-3) with the skills and knowledge that will help them thrive in the classroom, as well as other settings. Particular emphasis will be placed on applied teaching strategies for the acquisition and generalization of skills.

ECT 591. edTPA Seminar for Collaborative Teaching. 3 Hours.

This course will accompany student teaching/internship to support and extend the efforts of student teaching. The course will focus on the successful completion of edTPA assignments and submission.

ECT 601. Introduction to Technology in Special Education. 1 Hour.

Provides students with the knowledge and skills to begin the process of designing a standards-based electronic portfolio. Students will address the issues regarding the content and construction of electronic portfolios and the purpose of each stage of development. Issues related to formatting options will be demonstrated and critiqued. Students will be required to develop and demonstrate the requisite skills for creating and filing critical information in a digital format. Students will review numerous portfolios for discussion. The focus will be a standards based product which each student will begin during this course.

ECT 620. Formative and Summative Assessment. 3 Hours.

In-depth analysis of testing, assessment, and accountability applied to special education. Analysis of applied issues such as standards-based reform, annual yearly progress, response to intervention, and program effectiveness. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

ECT 621. Program and Lesson Planning. 3 Hours.

This course focuses on the diagnosis and evaluation of students with disabilities using a variety of developmentally appropriate curriculum-based assessments, criterion referenced, and norm-referenced tests. Emphasis is on the interpretation of information from assessments into Individualized Education Program annual goals and objectives, transition planning, and Response to Intervention planning. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

ECT 622. Language and Communication Facilitation. 3 Hours.

This course provides information on communication assessment and intervention procedures useful for teachers of students with disabilities. Includes an overview of normal and typical language development and research on effective naturalistic communication interventions. Candidates will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

ECT 623. Instructional Methods. 3 Hours.

This course provides information on research-based instructional strategies for equipping students with disabilities with the skills and knowledge that will help them thrive in the classroom and beyond the school day. Particular emphasis will be placed on general instructional strategies for the acquisition and generalization of skills. In addition, strategies for implementing individualized and effective programming will be addressed. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

Prerequisites: ECY 600 [Min Grade: C]

ECT 624. Sensory, Health and Physical Methods. 3 Hours.

This course introduces research-based assessment and instructional strategies for equipping students with sensory, health, and physical disabilities with the skills and knowledge that will help them thrive in the classroom and beyond the school day. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

Prerequisites: ECY 600 [Min Grade: C]

ECT 625. Positive Behavioral Supports. 3 Hours.

This course presents definition and measurement of behavior, reinforcement strategies, systematic program development, basic formats for classroom instruction, and techniques for monitoring student progress. There is an emphasis on procedures for increasing academic and socially appropriate behavior through simulations and practice exercises. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

ECT 626. Assistive and Instructional Technology. 3 Hours.

This course examines the use of computer-based instruction and management systems to facilitate classroom instruction. The course includes issues related to the integration of technology into instructional design, a review and analysis of educational software, an exploration of educational considerations of technology for individuals with disabilities, an evaluation of assistive technology options, and an overview of instructional and managerial computer applications. Students will incorporate data-based decision making, IEP development and lesson planning to teach students with disabilities.

Prerequisites: ECY 600 [Min Grade: C]

ECT 627. Collaborative Processes. 3 Hours.

This course provides a variety of collaborative options for supporting students with disabilities. These include collaborating with families, agencies, paraprofessionals as well as other professionals.

Prerequisites: ECY 600 [Min Grade: C]

ECT 628. Legal Issues and Trends. 3 Hours.

This course explores current laws and trends relating to special education.

Prerequisites: ECY 600 [Min Grade: C]

ECT 631. Practicum in Collaborative Teaching K-12. 3-9 Hours.

The purpose of ECT 631 is to prepare teachers to use Best Practices for teaching within their content area. As stipulated by the ALSDE Administrative Code, determining readiness to serve as a certified teacher shall require competence to teach as demonstrated in a focused practicum experience. Field experience is required.

ECT 650. Masters Seminar in Collaborative Teaching. 3 Hours.

A diagnostic and evaluation course designed to ensure that students have acquired basic competencies in historical, philosophical, legal, and assessment foundations in special education. Competencies addressed in this course also include research, writing, speaking, and computer literacy.

ECT 651. Assessment Foundations in Special Education. 3 Hours.

Designed to prepare special education teachers to assess children and youth in a manner that reflects federal and state mandates and regulations. Students are prepared to appropriately select, administer, and interpret assessment instruments designed to answer questions related to eligibility determination and, intervention programming.

Prerequisites: ECT 650 [Min Grade: C]

ECT 652. Char of Children/Yth w/Learning and Behv Disabilities. 3 Hours.

Details the characteristics, needs, and concerns related to children and youth with mild learning disabilities, mental retardation, and emotional-behavioral disorders. Additional issues addressed in the course are due process, inclusion, collaboration, and diversity as they pertain to these populations of students. Field experience required.

Prerequisites: ECT 650 [Min Grade: C]

ECT 653. Characteristics of Students with Low-Incidence Disabilities. 3 Hours.

Details the characteristics, needs, and concerns related to children and youth with physical, health, sensory, and communication disabilities. Additional topics covered include positioning and handling, assessment, development of health care plans, and transdisciplinary collaboration. Field experience required.

Prerequisites: ECT 650 [Min Grade: C]

ECT 654. Communication and Technology Applications In Early Childhood Special Education. 3 Hours.

The purpose of this course is to provide information on communication facilitation and assistive and instructional technology applications for young children with delays or disabilities. The course examines (a) the use of various communication systems, (b) naturalistic communication strategies, (c) computer-based instruction and management systems to utilize assistive and instructional technology, (d) issues related to the integration of technology into instructional design, (e) a review and analysis of educational software, (f) an exploration of educational considerations of technology for young children with delays or disabilities, (g) an evaluation of assistive technology options, and (h) an overview of instructional and managerial computer applications. Candidates will incorporate evidence-based decision-making, IFSP and IEP development, and program planning to facilitate communication and provide instruction for young children with delays or disabilities and their families.

ECT 655. Early Primary Curriculum and Methods. 3 Hours.

Universal design, response to intervention, and co-teaching are central components of this course. This course provides information on providing evidence-based instructional strategies and support to young children (K-3) with delays or disabilities. The intent is to equip children (K-3) with the skills and knowledge that will help them thrive in the classroom, as well as other settings. Particular emphasis will be placed on applied teaching strategies for the acquisition and generalization of skills. In addition, strategies for implementing individualized and effective programming in all curricular areas will be addressed. Candidates will incorporate evidence-based decision-making, design instructional programs, provide instruction, and monitor the progress of children K-3 with delays or disabilities. The course also focuses on co-teaching and working as a member of the team along with paraprofessionals, related service personnel, general educators, and families.

ECT 657. Teaching in Inclusive Classrooms. 3 Hours.

Provides students with the knowledge and skills to teach learners with low-incidence disabilities in K-12 settings. Course content addresses issues related to positioning and handling, Alabama Extended Standards, IEP development, writing health care plans, assessment, and strategies for teaching reading, math, and writing.

Prerequisites: ECT 653 [Min Grade: C]

ECT 658. Curriculum in General Education. 3 Hours.

Prepares students to utilize the general education curriculum as the foundation for educational programming for children and youth with special needs. IEP writing, using the general education curriculum, team planning, state- and district-wide assessments, and curriculum accommodations and modifications are topics addressed in this course.

Prerequisites: ECT 650 [Min Grade: P]

ECT 659. Plan and Manage the Teaching and Learning Environment. 3 Hours.

Prepares students to plan and manage the teaching and learning environment effectively. The major emphasis of the course is on the elements of classroom design and preparation. Primary and secondary academic and behavioral interventions are presented. Outcomes expected for students are related to the creation and maintenance of positive, caring classroom communities that facilitate the academic and social development of children and youth with disabilities. Field experience required.

Prerequisites: ECT 650 [Min Grade: P]

ECT 660. Providing Positive Behavior and Social Support. 3 Hours.

Prepares students to plan and manage the teaching and learning environment effectively. The major emphasis of the course is on the elements of classroom design and preparation. Primary and secondary academic and behavioral interventions are presented. Outcomes expected for students are related to the creation and maintenance of positive, caring classroom communities that facilitate the academic and social development of children and youth with disabilities. Field experience required.

Prerequisites: ECT 650 [Min Grade: P] or ECY 635 [Min Grade: C]

ECT 661. Communication and Collaborative Partnerships. 3 Hours.

Provides an opportunity for students to develop the knowledge, skills, and ability to work collaboratively with professionals responsible for services provided to students with disabilities, their families, and their communities. Emphasis will be placed on blending general education, special education, and related services. The course consists of a series of topics and activities that are designed to provide an overview of collaboration and consultation, present issues related to diversity and inclusion, and highlight implications for special educators, general educators, related service personnel, students, the community, and families. Field experience required.

Prerequisites: ECT 650 [Min Grade: C] or ECY 635 [Min Grade: C]

ECT 670. Practicum in Collaborative Teaching: Grades K-6. 3 Hours.

Students seeking Collaborative Teacher certification, Grades K-6, are required to complete a practicum experience in a collaborative setting that includes children who present a wide range of disabilities. This practicum experience is tailored to the unique needs and experiences of students seeking this certification.

ECT 671. Practicum in Collaborative Teaching: Grades 6-12. 3 Hours.

Students seeking Collaborative Teacher certification, Grades 6-12, are required to complete a practicum experience in a collaborative setting that includes children who present a wide range of disabilities. This practicum experience is tailored to the unique needs and experiences of students seeking this certification.

Prerequisites: ECT 650 [Min Grade: C]

ECT 672. Internship in Collaborative Teaching: Grades K-6. 3,9 Hours.

Students in the 5th-year, nontraditional program are required to complete a 12-week internship that is to be divided between lower and upper elementary settings. This internship is designed to assist the prospective graduate in virtually all teaching responsibilities in collaborative settings.

ECT 673. Internship in Collaborative Teaching: Grades 6-12. 3-9 Hours.

Students in the 5th-year, nontraditional program are required to complete a 12-week internship that is to be divided between lower and upper secondary settings. This internship is designed to assist the prospective graduate in virtually all teaching responsibilities in collaborative settings.

ECT 676. Survey of Pervasive Developmental Disorders. 3 Hours.

An in-depth examination of the characteristics, needs, and other concerns of children and youth with pervasive developmental disorders. Topics also include interventions, collaboration, and functional life-skill programming.

ECT 679. Advanced Legal Aspects of Special Education. 3 Hours.

Provides students with an in-depth examination of legal information pursuant to individuals with disabilities. The Individuals with Disabilities Education Act and its related amendments, the Americans with Disabilities Act, and Section 504 of the Improvement Rehabilitation Act are major federal laws reviewed in this course. Special education litigation is also addressed during the course.

Prerequisites: ECT 650 [Min Grade: C]

ECT 685. Comm and Lang for Indiv w/Low Incidence Disabilities. 3 Hours.

This course is designed as an elective to extend the experiences and knowledge base of students in the area of communication and language development for individuals with low incidence disabilities. The disability areas of focus will be visual impairments, hearing impairments, dual sensory impairments, autism, cerebral palsy, and moderate to severe mental retardation. Students will explore the linkages between speech, language and communication and relate them in application to alternative modes and/or indicators of inner, receptive and expressive language. There will be traditional academic tasks infused with technology and assistive technology applications, reinforced by hands-on learning experiences and field based learning.

ECT 700. ASD: An Introduction. 3 Hours.

The course provides candidates with an in-depth examination of the characteristics of individuals with autism spectrum disorders (ASD). Specific issues examined during the course include diagnostic and educational criteria as well as current research on etiology and medication. Additionally, the myriad challenges faced by individuals with ASD are examined. A broad overview of evidenced-based practices to support individuals with ASD is presented in the course. A developmental perspective of ASD across the life span is presented, and issues related to play and leisure, sexuality education, environmental supports, transition planning, and daily life skills are explored in the course. The nature and needs of individual with Asperger's Syndrome are also addressed in this course.

ECT 701. ASD: App of Assessment Inform. 3 Hours.

Candidates taking this course are required to critically review, administer, and interpret the results of common standardized assessments given to individuals with ASD. Additionally, candidates are required to develop informal assessments to monitor the academic and behavioral progress of individuals with ASD. The CAPS/Ziggarut model will be used by candidates to conduct a comprehensive, developmental assessment in order to develop and implement an educational program for a student with ASD.

ECT 702. ASD: Meth Mod to Sev Function. 3 Hours.

Methods course, with special emphasis on low-functioning learners an Individuals with autism spectrum disorders. Particular attention is given effective practices and strategies for teaching and promoting functional and adaptive behavior that will enhance the learner's social responsibility and independent performance of daily activities.

ECT 703. ASD: Meth High Funct Learn- Asp. 3 Hours.

Methods course, with special emphasis on learners with higher functioning autism spectrum disorders and Asperger Syndrome. Particular attention is given effective practices and strategies for teaching and promoting social skill development and proactive social interactions. Autism Spectrum Disorders: Methods for High Functioning Learners and Asperger's Syndrome. Field experience required.

ECT 704. ASD: Collaboration-Consultation. 3 Hours.

This is a collaboration/consultation course designed to increase the candidate's knowledge and skills in the areas of: (1) foundations of collaboration, consultation and teaming; (2) communication and problem-solving processes, (3) collaborative tools, technology and resources; (4) cultural and linguistic diversity issues related to collaboration; (5) collaboration in instructional and inclusive teams; (6) collaboration with families; and (7) consultation and collaboration with paraeducators, related service personnel, and other ancillary personnel. Leadership and advocacy as well as self-assessment/reflection of one's collaboration and consultation skills are addressed in the course.

ECT 705. ASD: Accommodating the Needs of Diverse Learners on the Spectrum. 3 Hours.

In this course, candidates will learn a variety of teaching strategies to support students with ASD from diverse backgrounds and those with diverse learning needs to access the general education curriculum. Response to Intervention and differentiated instruction are central components of the course. Candidates will learn a variety of strategies for providing accommodations for students with ASD who present with behavior, communication, attention, and cognitive challenges in general education classroom settings. Strategies for supporting students in general education classrooms in the areas of literacy and math are covered in the course. Candidates will also acquire strategies for facilitating second language acquisition for English Language Learners.

ECT 706. ASD: Advanced Social and Behavioral Methods. 3 Hours.

A major focus of this course is the utilization of applied analysis to support students with ASD who present behavioral challenges. Development of behavioral objectives, data collection procedures, single-subject design and functional behavior assessment are addressed in the course. Strategies for addressing antecedents to behavior and consequences of behavior are explored. Generalization and self-monitoring/self-regulatory strategies are addressed. Candidates will learn a variety of positive environmental supports and classroom management strategies. Strategies for facilitating the development of social skills, including the use of social stories and video modeling, are addressed in the course.

ECT 707. Autism Spectrum Disorders: Transition and Life Skills Programming. 3 Hours.

The transition needs of individuals with ASD from preschool, middle school, high school and post-secondary settings is examined in this course. Transition models, assessment and planning are core components of the course. Facilitating the development of self-advocacy and self-determination skills in individuals with ASD are addressed. Independent living skills and transition to community are included in the course. Transition education curricula and instructional strategies for facilitating successful employment and post-secondary education are addressed in the course. Interagency and interdisciplinary collaboration as well as job placement, training, and supervision, are components of this course.

ECT 708. Autism Spectrum Disorders: Legal, Ethical, and Professional Issues. 3 Hours.

This course has three major components. First, special education legislation and case law related to the IDEA, Section 504, the ADA, FERPA, and the Elementary and Secondary Act are explored. Second, this course requires candidates to examine ethical issues in special education and to develop a personal code of ethics in special education based upon the Alabama Code of Ethics for Educators and the Council for Exceptional Children Code of Ethics. Third, the professional leadership skills of candidates in this course are developed. Development of candidates' teacher leadership, mentorship, and advocacy skills is undertaken during in the course.

ECT 710. ASD: Practicum. 3 Hours.

To meet the requirements of this course, candidates will engage in a variety of integrated experiences in applied settings, including K-6, 6-12, and community settings. Please refer to the clinical and field experiences handbook for specifics regarding practicum requirements.

ECT 711. ASD: K-6 Internship. 3 Hours.

To meet the requirements of this course, candidates must complete an in-depth clinical experience in a K-6 setting that includes children and youth with ASD. Please refer to the clinical and field experiences handbook for specifics regarding internship requirements.

ECT 712. ASD: 6-12 Internship. 3 Hours.

To meet the requirements of this course, candidates must complete an in-depth clinical experience in a 6-12 setting that includes children and youth with ASD. Please refer to the clinical and field experiences handbook for specifics regarding internship requirements.

ECT 720. Universal Design for Lrn. 3 Hours.

This course covers the following areas: Accommodations/Modifications, Differentiated Instruction, Behavioral Strategies, Positive Learning Environments, Student Engagement, and Demonstration Teaching.

ECT 720L. Field Experience. 1 Hour.

This course covers the following areas: Accommodations/Modifications, Differentiated Instruction, Behavioral Strategies, Positive Learning Environments, Student Engagement, and Demonstration Teaching.

ECT 720R. Action Research. 1 Hour.

This course covers the following areas: Accommodations/Modifications, Differentiated Instruction, Behavioral Strategies, Positive Learning Environments, Student Engagement, and Demonstration Teaching.

ECY-Special Education

ECY 535. Foundations of Early Childhood Special Education. 3 Hours.

This is the introductory graduate course in the early childhood special education program, which is designed to provide an overview of the field of early intervention/early childhood special education (EI/ECSE) and address policy issues, the importance of collaboration, and future directions. Candidates must develop competencies in the areas of historical and philosophical foundations of EI/ECSE, federal, state, and local laws and legal requirements, characteristics of young children with known or suspected disabilities, family-professional partnerships, service delivery options, recommended practices, current policy issues and trends, and professionalism and ethics. Another important aspect of this course is professional development and life-long learning. Candidates must demonstrate a number of research and technology skills such as: accessing resources to support graduate studies; conducting reviews of the early childhood special education resources and literature; using American Psychological Association (APA) professional style writing; utilizing technology to support graduate studies; and identifying professional development resources for life-long learning. Course content and assignments are designed to promote critical thinking, problem solving skills, evidence-based practice application, and resource identification.

ECY 536. Early Intervention and Preschool Curriculum and Methods. 3 Hours.

The purpose of this course is to provide candidates with the knowledge, skills, methods, and attitudes necessary to deliver effective intervention/education to young children (birth through five) with known or suspected disabilities and their families from a variety of social, ethnic, and racial backgrounds. The course will include discussions and readings on topics central to an adequate understanding of the conceptual and theoretical foundations underlying current curriculum and methods for young children. Special emphasis will be placed on supporting families in all aspects of intervention. Attention will be given to developmentally and individually appropriate practices that facilitate inclusive environments. Candidates will be familiarized with instructional strategies and technologies. Course content and assignments will promote the use of critical thinking skills, problem solving, and technologies as they are applied to instructional programs for young children with known or suspected disabilities and their families. The course objectives will be assessed through completion of the course requirements and class participation. The content of this course is based on evidence-based practices, which integrate the best available research evidence with professional and family wisdom and values. Emphasized throughout this course are the following objectives: how to be a member of a transdisciplinary team in providing instruction, how to respond to cultural diversity, how to provide services in high-poverty communities and LEAs, and how to utilize evidence-based practices in all aspects of services. These priority areas will be addressed throughout the course.

Prerequisites: EDU 500 [Min Grade: C] and ECY 600 [Min Grade: C] and ECY 535 [Min Grade: C] and ECY 537 [Min Grade: C]

ECY 537. Assessment in Early Childhood Special Education. 3 Hours.

The purpose of this course is to prepare the candidate with knowledge and practical applications regarding the screening and assessment of young children with known or suspected disabilities (ages birth through eight). Both child-level and family-level assessment procedures will be emphasized. The candidate completing this course will be prepared to make professional decisions regarding the screening, assessment, program planning, and progress monitoring of young children with disabilities. Course content and assignments will promote critical thinking and problem solving skills. The content of this course is based on evidence-based practices, which integrate the best available research evidence with professional and family wisdom and values. Emphasized throughout this course are the following objectives: how to be a member of a transdisciplinary team in providing services in the natural environment, how respond to cultural diversity, how to provide services in high-poverty communities and LEAs, and how to utilize evidence-based practices in all aspects of assessment. These priority areas will be addressed throughout the course.

ECY 538. Physical and Health Care Support in Early Childhood Special Education. 3 Hours.

The purpose of this course is to provide candidates with the knowledge, skills, methods, and attitudes necessary to deliver effective intervention/education to young children with physical and health impairments. The course will include discussions and readings on topics central to an adequate understanding of the conceptual and theoretical foundations underlying typical and atypical motor development and neurodevelopment. Candidates will become proficient in motor skill facilitation, positioning, handling, feeding and health care support. The course objectives will be assessed through completion of the course requirements and class participation.

ECY 539. Transdisciplinary Collaboration and Consultation in Early Childhood. 3 Hours.

This course is designed for students to develop the knowledge, skills, and ability to work collaboratively with other professionals who provide inclusive services to infants and young children with delays or disabilities and their families. Emphasis will be placed on working as members of teams, which include families, early childhood special education, and the related services of physical and occupational therapy. Topics include teamwork, group decision-making, team process, leadership, and communication, the evidence that supports these practices, and how such issues influence services for young children and their families. A significant portion of content/discussion will focus on the roles and functions of various disciplines (including family members) as team members. Case studies will be used in simulations of transdisciplinary teamwork in action.

ECY 562. Methods and Materials for Teaching Visual Impairments. 3 Hours.

Principles and procedures for developing and implementing curricula for persons who are blind, visually impaired or deaf-blind. Field experience required.

Prerequisites: ECY 600 [Min Grade: D]

ECY 564. Braille, Orientation and Mobility. 3 Hours.

Principles of teaching reading, transcribing and writing Braille; tests, curricula and technology for Braille literacy. Fundamentals in teaching spatial orientation and mobility for persons who are blind, visually impaired or deaf-blind.

Prerequisites: ECY 600 [Min Grade: D]

ECY 565. Anatomy and Educational Implication of the Eye. 3 Hours.

Knowledge and evaluation of the visual system and use of low vision devices and other prescriptive devices for persons who are blind, visually impaired or deaf-blind.

Prerequisites: ECY 600 [Min Grade: C] and ECY 661 [Min Grade: C] and ECY 662 [Min Grade: C] and ECY 663 [Min Grade: C] and ECY 664 [Min Grade: C]

ECY 572. Early Childhood/Elementary School Student Teaching. 3-9 Hours.

Provides individualized field-based experiences that will meet the unique needs of ECSE candidates in the 5th year, non-traditional program. Students complete internships in settings that include children who present a wide range of disabilities within the (0-3), (3-5), and (5-8) year age ranges. This internship experience is tailored to the unique needs and experiences of each student.

Prerequisites: EDU 500 [Min Grade: C] and ECY 600 [Min Grade: C] and ECY 535 [Min Grade: C] and ECY 536 [Min Grade: C] and ECY 537 [Min Grade: C] and ECY 538 [Min Grade: C] and ECT 555 [Min Grade: C]

ECY 600. Introduction to Exceptional Learner. 3 Hours.

An overview of exceptionality as it pertains to children and adults. Both high and low incidence populations will be examined. Each area of exceptionality will be reviewed in terms of etiology, diagnosis, prevalence, remediation, and educational strategies.

ECY 607. Counseling Parents of Exceptional Children. 3 Hours.

Dynamics of family life and parental and sibling reactions to handicapped individuals are addressed in this course. Prerequisite: ECY 600.

ECY 635. Foundations of Early Childhood Special Education. 3 Hours.

This is the introductory graduate course in the early childhood special education program, which is designed to provide an overview of the field of early intervention/early childhood special education (EI/ECSE) and address policy issues, the importance of collaboration, and future directions. Candidates must develop competencies in the areas of historical and philosophical foundations of EI/ECSE, federal, state, and local laws and legal requirements, characteristics of young children with known or suspected disabilities, family-professional partnerships, service delivery options, recommended practices, current policy issues and trends, and professionalism and ethics. Another important aspect of this course is professional development and life-long learning. Candidates must demonstrate a number of research and technology skills such as: accessing resources to support graduate studies; conducting reviews of the early childhood special education resources and literature; using American Psychological Association (APA) professional style writing; utilizing technology to support graduate studies; and identifying professional development resources for life-long learning. Course content and assignments are designed to promote critical thinking, problem solving skills, evidence-based practice application, and resource identification.

ECY 636. Early Intervention and Preschool Curriculum and Methods. 3 Hours.

The purpose of this course is to provide candidates with the knowledge, skills, methods, and attitudes necessary to deliver effective intervention/education to young children (birth through five) with known or suspected disabilities and their families from a variety of social, ethnic, and racial backgrounds. The course will include discussions and readings on topics central to an adequate understanding of the conceptual and theoretical foundations underlying current curriculum and methods for young children. Special emphasis will be placed on supporting families in all aspects of intervention. Attention will be given to developmentally and individually appropriate practices that facilitate inclusive environments. Candidates will be familiarized with instructional strategies and technologies. Course content and assignments will promote the use of critical thinking skills, problem solving, and technologies as they are applied to instructional programs for young children with known or suspected disabilities and their families. The course objectives will be assessed through completion of the course requirements and class participation.

ECY 637. Assessment in Early Childhood Special Education. 3 Hours.

The purpose of this course is to prepare the candidate with knowledge and practical applications regarding the screening and assessment of young children with known or suspected disabilities (ages birth through eight). Both child-level and family-level assessment procedures will be emphasized. The candidate completing this course will be prepared to make professional decisions regarding the screening, assessment, program planning, and progress monitoring of young children with disabilities. Course content and assignments will promote critical thinking and problem solving skills. The content of this course is based on evidence-based practices, which integrate the best available research evidence with professional and family wisdom and values. Emphasized throughout this course are the following objectives: how to be a member of a transdisciplinary team in providing services in the natural environment, how respond to cultural diversity, how to provide services in high-poverty communities and LEAs, and how to utilize evidence-based practices in all aspects of assessment. These priority areas will be addressed throughout the course.

ECY 638. Physical and Health Care Support in Early Childhood Special Education. 3 Hours.

The purpose of this course is to provide candidates with the knowledge, skills, methods, and attitudes necessary to deliver effective intervention/education to young children with physical and health impairments. The course will include discussions and readings on topics central to an adequate understanding of the conceptual and theoretical foundations underlying typical and atypical motor development and neurodevelopment. Candidates will become proficient in motor skill facilitation, positioning, handling, feeding and health care support. The course objectives will be assessed through completion of the course requirements and class participation.

ECY 639. Transdisciplinary Collaboration and Consultation in Early Childhood. 3 Hours.

This course is designed for students to develop the knowledge, skills, and ability to work collaboratively with other professionals who provide inclusive services to infants and young children with delays or disabilities and their families. Emphasis will be placed on working as members of teams, which include families, early childhood special education, and the related services of physical and occupational therapy. Topics include teamwork, group decision-making, team process, leadership, and communication, the evidence that supports these practices, and how such issues influence services for young children and their families. A significant portion of content/discussion will focus on the roles and functions of various disciplines (including family members) as team members. Case studies will be used in simulations of transdisciplinary teamwork in action.

ECY 662. Meth and Material for Teaching the Visually Impaired. 3 Hours.

Principles and procedures for developing and implementing curricula for persons who are blind, visually impaired or deaf-blind. Field experience required.

Prerequisites: ECY 600 [Min Grade: C]

ECY 664. Braille, Orientation and Mobility. 3 Hours.

Principles of teaching reading, transcribing and writing Braille; tests, curricula and technology for Braille literacy. Fundamentals in teaching spatial orientation and mobility for persons who are blind, visually impaired or deaf-blind.

Prerequisites: ECY 600 [Min Grade: C]

ECY 665. Anatomy and Educational Implication of the Eye. 3 Hours.

Knowledge and evaluation of the visual system and use of low vision devices and other prescriptive devices for persons who are blind, visually impaired or deaf-blind.

Prerequisites: ECY 600 [Min Grade: C] and ECY 664 [Min Grade: C]

ECY 670. Practicum in Early Childhood Special Education. 3-6 Hours.

Provides individualized field-based experiences to meet the unique needs of graduate candidates in ECSE. Students complete practicum experiences in settings that include children who present a wide range of disabilities within the 0-3, 3-5, 5-8 year age ranges. This practicum experience is tailored to the unique needs and experiences of each student.

ECY 672. Internship in Early Childhood Special Edu. 3-6 Hours.

Provides individualized field-based experiences that will meet the unique needs of ECSE candidates in the 5th year, nontraditional program. Students complete an internship in settings that include children who present a wide range of disabilities within the 0-3, 3-5, 5-8 year age ranges. This internship experience is tailored to the unique needs and experiences of each student.

ECY 686. Practicum In Special Education: Visually Impaired. 3-6 Hours.

Clinical experiences with persons who are blind, visually impaired or deaf-blind in various educational settings; demonstration of curriculum development, assessment, and teaching in structured situations.

Prerequisites: ECY 600 [Min Grade: C] and ECY 662 [Min Grade: C] and ECY 664 [Min Grade: C] and ECY 665 [Min Grade: C]

ECY 689. Advanced Topics in Special Education. 1-6 Hour.

A group seminar focused on transdisciplinary teaming in early intervention and early childhood special education. The course is designed for students representing the discipline of early childhood special education, general early childhood education, speech-language pathology, physical therapy, and occupational therapy.

EDA-Art Education

EDA 534. Methods I: Visual Arts. 3 Hours.

Introduction to teaching visual arts in school settings. Developing basic skills in planning, instruction, and assessment. Admission to Alternative Master's Program required.

EDA 564. Methods II: Visual Arts. 3 Hours.

Preparation to plan, teach and assess the visual arts in school settings: making informed decisions about context, learners, learner differences, teaching strategies, methodologies, curricula, and assessment.

EDA 583. Methods of Teaching Art. 3 Hours.

Preparation to teach art in schools. Learning experiences necessary for development of essential teaching competencies. Materials and methods in art studio media, technology skills for art classroom, art history and criticism, and current issues in art education. Admission to Alternative Master's Program required.

EDA 584. Methods of Teaching Art Lab. 1 Hour.

Methods of Teaching Art Lab required.

EDA 591. Art Education Final Exhibition. 3 Hours.

M.A. students plan and mount exhibition of work during final year. Graphicdesign students may prepare public portfolio presentation instead of exhibition. Art History students prepare a thesis research paper. Course is an independent study course taken with the student s thesis advisor.

EDA 651. Innovative Practices in Teaching Art in School. 3 Hours.

Innovative practices in planning, instructing, and evaluating in art education. Specialized study of contemporary needs in art and art education.

EDA 680. Advanced Methods: Visual Arts. 3 Hours.

Advanced methods for teaching the visual arts in grades 6-14. Includes curriculum development, classroom interaction, pedagogical activities, technology applications, source materials, current research, society issues, and cognitive development of students. Current classroom teaching required.

Prerequisites: GAC M

EDA 690. Internship in Art Education N-12. 3-9 Hours.

For Alternative Master's Program students. Observation and student teaching in elementary and secondary schools (15 full weeks in school setting). Approval of internship application required.

EDC-Curriculum Education

EDC 651. Innovative Practices in Curriculum. 3 Hours.

Current issues and special topics in curriculum; topics vary. May be repeated with different subject areas.

EDC 655. Curriculum Principles and Practices. 3 Hours.

Current curriculum practices; concepts and principles underlying their development.

EDC 656. Developmental Prob and Issues in Curriculum Construc. 3 Hours.

Developmental Prob and Issues in Curriculum Construction includes field study of curriculum in teachers' own schools.

EDC 694. Curriculum Seminar. 1-3 Hour.

Prerequisite: EDC 655 or permission of instructor.

Prerequisites: EDC 655 [Min Grade: C]

EDC 695. Coaching for Effective Instruction. 3 Hours.

This course provides research based and standards based practices to effect instructional change in schools, working collaboratively with children, teachers, and administration.

EDC 706. The Dynamics of Educational Change. 3 Hours.

Defining roles as change agents; understanding school as unit undergoing change; guiding perspectives in making changes.

Prerequisite: Admission to graduate school.

EDC 707. Introduction to Teacher Leadership. 3 Hours.

This course is intended to be the first course in the Ed.S. program where students will begin their teacher leadership project.

EDC 711. Analysis and Evaluation of Teaching. 3 Hours.

Strategies and models for analysis of teaching. Use of data in evaluating teacher effectiveness. Prerequisite: Master's degree.

EDC 712. Seminar in Curriculum and Instruction. 3 Hours.

Critical issues and research. Development and discussion of individual research. Prerequisite: Master's degree.

EDC 713. Educational Issues and Human Diversity. 3 Hours.

Social, economic, and cultural forces contributing to deprivation; implications for teachers, administrators, and educational staff.

Prerequisite: Master's degree.

EDC 720. Problems and Issues in Education. 3 Hours.

An ecological systems approach is used to assist students in focusing on the microsystem, mesosystem, exosystem, and macrosystem as each relates to current problems and issues in education related meeting the needs of diverse populations. Further emphases are placed on transformational teaching and learning, service learning, social justice, and citizenship.

EDC 725. Advanced Study in Social Studies Curriculum. 3 Hours.

Major problems and issues associated with social studies curriculum and instructional practices. Prerequisites: Completion of graduate course in teaching social studies and experience in teaching social studies.

EDC 728. EDS Research Project I. 3 Hours.

Development of research proposal. Proposal must be accepted and approved by appointed faculty committee.

Prerequisites: EPR 596 [Min Grade: C]

EDC 729. EDS Research Project II. 3 Hours.

Development and implementation of research proposal. Proposal must be accepted and approved by appointed faculty committee.

Prerequisites: EDC 728 [Min Grade: C] and EPR 594 [Min Grade: C]

EDC 731. Curricular Design & Implementation. 3 Hours.

Recognizing, assessing, and supporting quality instructional practices; program evaluation. School-based problem research project and field experience.

EDC 731L. Field Experience. 1 Hour.

This course covers the following areas: Standards-Based Content Knowledge, Instructional Strategies, Scope and Sequence of Curriculum, and Horizontal and Vertical Curriculum Design.

EDC 731R. School-Based Problem Research: Curriculum Design Implementation. 1 Hour.

This course covers the following areas: Standards-Based Content Knowledge, Instructional Strategies, Scope and Sequence of Curriculum, and Horizontal and Vertical Curriculum Design.

EDC 732. Culturally and Linguistically Responsive Instruction. 3 Hours.

Culturally responsive instruction, effective instruction of culturally and linguistically diverse (CLD) students, strategies to support academic and linguistic growth of English Learners, outreach to CLD parents and families, and professional learning communities.

EDC 732L. Field Experience for Culturally and Linguistically Responsive Instruction. 1-2 Hour.

Field-based experience to accompany EDC 732.

EDC 732R. School-Based Problem Research for CLD Responsive Instruction. 1 Hour.

Action-research project to accompany Culturally and Linguistically Responsive Instruction.

EDC 740. Teaching All Learners. 3 Hours.

This course explores Universal Design for Learning to meet the educational needs of diverse populations.

EDC 750. Critical Pedagogy for Diverse Populations. 3 Hours.

Critical analysis and social justice perspectives of historical and current social constructions of ethnicity, race, gender, religion, special needs, SES, and sexual orientation in educational settings will be explored.

EDC 760. Engaging Glocal Communities. 3 Hours.

Engagement of local and global, (glocal)communities through the identification, development, and implementation of grant projects, especially for promoting a targeted area of specialization.

EDC 770. Professional Preparation of College Educators. 3 Hours.

The professional preparation of college educators for area of specialization in teaching K-12. Registration for this course requires admission to Pedagogical Studies Concentration or instructor permission.

EDC 780. Expanding Literature on Responsive Methodologies. 3 Hours.

The expansion of literature on responsive methodologies in a targeted area of specialization.

EDC 791. Field Studies. 1-3 Hour.

Participation in field studies related to a targeted area of specialization.

EDC 793. Directed Reading. 1-3 Hour.

Review of literature to expand understanding of conceptual and methodological basis in a targeted area of specialization.

EDC 795. Selected Topics. 1-3 Hour.

Recent studies in the education of diverse populations; systematic solutions to problems in a targeted area of specialization.

EDC 797. Dissertation Seminar. 3-6 Hours.

Doctoral Seminar.

EDC 799. Dissertation Research. 1-12 Hour.

Doctoral dissertation.

Prerequisites: GAC Z

EDF-Foundations of Education

EDF 600. Urban Education. 3 Hours.

An examination of the historical, social, political, and economic factors that shape urban education, as well as its similarities and differences to suburban and rural education, in the United States.

EDF 601. The History of American Curricular Thought. 3 Hours.

An examination of American educational history using primary source documents to provide insight into the evolution of curriculum, policy, and educational practice.

EDF 602. Critical Social Issues in American Education. 3 Hours.

An examination of contemporary social issues facing schools in the United States, from politics and policy, school structure, and curriculum to pedagogical practice. The relationship of the school to society is also addressed.

EDF 603. Philosophy and Education. 3 Hours.

An examination of various philosophical schools of thought, their application to the field of education, and their relevance to teaching, learning, and life.

EDF 604. Social Philosophies and Education. 3 Hours.

An examination of various schools of social and political philosophy and theories pursuant to contemporary educational problems. Topics may include class structure, the cultural context of schooling, identity politics, ecological issues, physical and mental health issues, and the history of social theory related to educational policy and practice.

EDF 606. Social Movements in Education. 3 Hours.

An examination of how the Progressive Education Movement, the Women's Movement, along with other major social movements in recent history have shaped American education. The history of the Civil Rights Movement in Birmingham and its impact on schools, communities, and the lives of educators and students are of special interest.

EDF 608. Theories of Knowledge. 3 Hours.

An examination of the various philosophical and cultural conceptions of knowledge, and how these inform and impact research, educational practice, and lived experience.

EDF 616. Comparative Education. 3 Hours.

An examination of the historical, social, economic, political, and cultural forces influencing the structure and function of education in other countries in comparison to education in the United States. Course may be taught as part of a study abroad program.

EDF 620. Culture and American Education: Race Class and Gender. 3 Hours.

An examination of the interlocking influences and socially constructed meanings and understandings of culture, race, ethnicity, social class, and gender in American education.

EDF 624. Ethics and Education. 3 Hours.

The focus of this course is twofold: first, it covers some of the foundational materials in the philosophy of ethics and their application to the field of education; second, it examines the present moral context of schools and the problems and potentials of morally-directed education.

EDF 691. Special Problems in The Foundations of Education. 3 Hours.

This course covers variable topics addressing critical issues and problems in the educational foundations field. The course may be taught for in-service educator credit in conjunction with special P-12 school/ university collaborative initiatives.

EDF 697. Individual Readings in Foundations of Education. 1-3 Hour.

This course emphasizes individually-guided and research-focused readings in the field of educational foundations.

EDF 698. Individual Research in Foundations of Education. 1-3 Hour.

This course is generally taught in independent study or small seminar formats to guide graduate research in the field of educational foundations.

EDF 700. Urban Education. 3 Hours.

An examination of the historical, social, political, and economic factors that shape urban education, as well as its similarities and differences to suburban and rural education, in the United States.

EDF 701. The History of American Curricular Thought. 3 Hours.

An examination of American educational history using primary source documents to provide insight into the evolution of curriculum, policy, and educational practice.

EDF 702. Critical Social Issues in American Education. 3 Hours.

An examination of contemporary social issues facing American schools, from politics and policy, school structure, and curriculum to pedagogical practice. The relationship of the school to society is also addressed.

EDF 703. Selected Topics In Educational Philosophy. 3 Hours.

An examination of various philosophical schools of thought, their application to the field of education, and their relevance to teaching, learning, and life.

EDF 706. Social Movements in Education. 3 Hours.

An examination of how the Progressive Education Movement, the Women's Movement, along with other major social movements in recent history have shaped American education. The history of the Civil Rights Movement in Birmingham and its impact on schools, communities, and the lives of educators and students are of special interest.

EDF 708. Ethical Dilemmas in Educational Administration. 3 Hours.

This course addresses ethical dilemmas in educational administration and leadership. May be taught by both Educational Foundations and Educational Leadership faculty.

EDF 711. Theories of Knowledge. 3 Hours.

An examination of the various philosophical and cultural conceptions of knowledge, and how these inform and impact research, educational practice, and lived experience.

EDF 713. History of Educational Philosophy. 3 Hours.

A historically sequenced survey of educational philosophy from the ancient Greeks, 18th century enlightenment thought, American pragmatism, and existentialism to postmodernism.

EDF 716. Comparative Education. 3 Hours.

An examination of the historical, social, economic, political, and cultural forces influencing the structure and function of education in other countries in comparison to education in the United States. Course may be taught as part of a study abroad program.

EDF 720. Cult and Amer Educ: Race Class and Gender. 3 Hours.

An examination of the interlocking influences and socially constructed meanings and understandings of culture, race, ethnicity, social class, and gender in American education.

EDF 724. Ethics and Education. 3 Hours.

The focus of this course is twofold: first, it covers some of the foundational materials in the philosophy of ethics and their application to the field of education; second, it examines the present moral context of schools and the problems and potentials of morally-directed education.

EDF 750. Special Problems in the Foundations of Education. 3-9 Hours.

A doctoral seminar on various special problems and issues in educational foundations. May be taken for 3, 6, or 9 credit hours.

EDF 755. Educational Studies in Diverse Populations: Theory of Inquiry. 3 Hours.

This doctoral seminar examines contemporary issues concerning diversity and institutions of education and the various epistemological lenses and theoretical perspectives that can be used to conduct research about culture and human differences as related to educational policy and practice.

EDF 765. Metropolitan Education Studies Proseminar. 3 Hours.

This doctoral seminar introduces students in the Educational Studies in Diverse Populations program to the multidimensional, interdependent, dynamic, and very often, contentious relationships among urban school districts, the central cities in which they are nested, and their surrounding suburban and exurban school districts and municipalities. The seminar emphasizes the historical, political, social, and cultural contexts of urban and metropolitan education.

EDF 796. Dissertation Seminar. 3 Hours.

This course provides for supervised research experience under the direction of a graduate faculty member within the School of Education. The topic for an EDF 796 course must relate to the concentration area of Metropolitan Education Studies within the Educational Studies in Diverse Populations (ESDP) doctoral program. This course is only available to students who have been admitted to the ESDP doctoral program. Prerequisite/co-requisite completion of research sequence and prerequisite courses.

Prerequisites: EPR 609 [Min Grade: C](Can be taken Concurrently) and EPR 710 [Min Grade: C](Can be taken Concurrently) and EPR 792 [Min Grade: C](Can be taken Concurrently) and EPR 696 [Min Grade: C](Can be taken Concurrently)

EDF 797. Independent Studies. 3 Hours.

Independent readings under the direction and supervision of EDF faculty. Doctoral status and the permission of the instructor are required.

EDF 798. Individual Research in the Foundations. 3 Hours.

This course is designed for doctoral students to deepen their understanding of selected research topics.

EDF 799. Dissertation Research. 1-12 Hour.

Doctoral research in the Metropolitan Education Studies concentration of the Educational Studies in Diverse Populations doctoral program.

Prerequisites: GAC Z

EDL-Educational Leadership

EDL 601. Foundations of Instr. Ldrshp. 3 Hours.

The purpose of the course is to provide a strong foundation in strengthening knowledge and skills in instructional leadership. The student will be prepared to become an instructional leader who engages the school community in developing a shared mission, vision; will explore various leadership theories and application; and will review the purpose and process of leadership for continuous school improvement. Requires admission to either EDL Master's or Post-Master's Certification program.

EDL 602. Fld Exp: Found of Inst Ldrshp. 1 Hour.

Through observing, participating, and leading field-based experiences, Foundations of Instructional Leadership students will gain practical knowledge and skills needed to be effective school leaders. This course is for master's students in educational leadership and is taken in connection with EDL 601.

EDL 603. Data Driven Decision Making. 3 Hours.

This course prepares the future school leader to effectively use and interpret data in all forms to lead and monitor continuous school improvement. Students will become conversant with strategies and techniques that enhance classroom instruction. The students will lead in a school improvement project, identifying and addressing student achievement gaps. This course is required for all students earning a Master of Arts in Educational Leadership. Other students interested in studying data-based decision making to improve student learning are welcome to enroll.

EDL 604. Fld. Exp. in Data Driven Dec.. 1 Hour.

Through observing, participating, and leading field based experiences, Data Driven Decision Making for School Improvement students will gain practical knowledge and skills in using data and techniques to enhance leadership for learning in a school. This course is required for students earning their Master of Arts in Educational Leadership, but other students interested in studying data-based decision making for a school setting are welcome to enroll.

EDL 605. Residency in Inst. Leadership. 6 Hours.

The purpose of the Residency in Instructional Leadership is to give future instructional leaders authentic experiences in a continuum of observing, participating, and leading in K-12 schools without the distraction of teaching responsibilities or other coursework requirements. Students are required to complete their residency, in a school with children present, over 10 days. Students are required to attend two Residency Seminars during the term. Residency is a requirement for eligibility for Alabama Class A certification in Instructional Leadership.

EDL 606. Supervision/ Ment. Inst. Staff. 3 Hours.

The purpose of this course is to prepare the future school leader to utilize knowledge of human resources to accomplish school and system goals. This involves developing the ability to design and implement effective professional development and facilitate teaching that will impact student achievement. Emphasis is placed on the observation of classroom teachers and developing systematic feedback processes in order to facilitate improvement in classroom instruction. A final unit will assist the future leader in seeking mentoring opportunities.

EDL 607. Fld Exp. in Super / Mentoring. 1 Hour.

Through observing, participating and leading field based experiences, students will gain practical knowledge and skills in implementing staff development, supervision of instructional staff, and creating mentoring opportunities for new teachers and oneself. This class is for students earning their Master of Arts in Educational Leadership.

EDL 608. Org. & Financial Mgt. 3 Hours.

This course is designed to prepare instructional leaders to develop the knowledge and skills to apply financial procedures for public schools in Alabama. An emphasis on strategies to utilize student data as the impetus for allocating financial resources will be part of the curriculum. In addition, students will conduct a technology audit and explore guidelines for creating safe school facilities.

EDL 609. Fld. Exp. in Org & Finc Mgmt. 1 Hour.

Through observing, participating, and leading field-based experiences, students will gain practical knowledge and skills in applying financial procedures, allocating resources and creating safe K-12 schools.

EDL 610. Legal & Ethical Foundations. 3 Hours.

The purpose of this course is twofold: (1) Candidates will give a fundamental knowledge of ethical principles based on the Alabama Educator Code of Ethics and guidelines of the State Ethics Commission and (2) Candidates will gain a working knowledge of legal principles established by local, state, and federal legislatures and judicial requirements.

EDL 611. Fld. Exp. in Legal/Eth Found. 1 Hour.

Through observing, participating and leading field based experiences assigned in EDL 610 Legal and Ethical Foundations of School Leadership, students will gain a working knowledge of legal and ethical principles necessary to employ in K12 school leadership.

EDL 612. Best Prac. Inst. Ldrship. 3 Hours.

The purpose of this course is to prepare instructional leaders who can create positive learning environments for all students. Special emphasis will be placed on using data to assess and improve student achievement. Students will explore the needs of diverse and underrepresented populations, including racial/ethnic minorities, students with special needs, LGBTQ students, and others. Students will also examine legal mandates for providing services to diverse student populations.

EDL 613. Fld Exp in Best Practices for Inst Ldrshp for Diverse Populations. 1 Hour.

Through observing, participating leading field based experiences, students will gain practical experience needed to meet the instructional needs of diverse populations, including racial/ethnic minorities, students with special needs, LGBTQ students, and others. This course is required for all students earning a Master of Arts in Educational Leadership.

EDL 614. Planning for Change. 3 Hours.

This course explores the process and school leader's role in effecting organizational change. Course readings and discussions will help to develop student knowledge and skill bases in effecting change at the individual, organization, and systems levels and will examine key issues in planning for and effecting change among stakeholders groups throughout the school community.

EDL 615. Non-Thesis in Educational Leadership. 3 Hours.

This course will prepare students for the degree of Master of Education in the preparation of a master's level thesis. The process of reviewing relevant literature and designing a research study will be examined. The course will culminate in the students' development of a proposal.

EDL 617. Politics of Education. 3 Hours.

Politics of Education. Education leaders learning to take action within the complex maze of political relations within schools, between schools and their communities, and within levels of government. Prerequisite: Admission to Master's level program in EDL or approval by instructor. 3 hours.

EDL 618. Ethics and Leadership. 3 Hours.

Ethics and Leadership. An examination of ethical issues and dimensions of ethical decision making. Prerequisite: Admission to Master's level program in EDL or approval by instructor. 3 hours.

EDL 619. School-Based Problem Solving. 3 Hours.

School-Based Problem Solving. An analysis and application of techniques for school-based problem solving.

EDL 620. Public School Organization and Administration. 3 Hours.**EDL 621. The School Principalship. 3 Hours.****EDL 622. Clinical Supervision:Administrators and Supervisors. 3 Hours.**

Clinical Supervision:Administrators and Supervisors.

EDL 623. School Finance. 3 Hours.

In this course students will learn about the process of developing and monitoring a school budget. Various approaches to budget development will be examined, including line-item, zero-based, and program-based budgeting. The course will also explore multiple sources of revenue for schools, and the processes and guidelines for budget allocation, procurement, and expenditure.

EDL 625. Education Management. 3 Hours.

Education Management. An overview of education management techniques for the improvement of the education enterprise and student learning. Prerequisite: Admission to Master's level program in EDL or approval by instructor. 3 hours.

EDL 626. Advanced Clinical Supervision: Admin and Supervisors. 3 Hours.

This course will explore the role of school principals, assistant principals, and other instructional supervisory personnel in working with instructional staff to improve instruction to affect increased levels of learning for all students.

EDL 630. School and Community. 3 Hours.**EDL 631. Education and the Political Environment. 3 Hours.****EDL 635. Survey of School Law. 3 Hours.****EDL 637. Legal Liability and the Educator. 3 Hours.****EDL 640. Introduction to Community Education. 3 Hours.****EDL 641. Community Education for School Administrators. 3 Hours.****EDL 642. Operation and Admin: Community Education Program. 3 Hours.****EDL 643. Community Resources Workshop. 3 Hours.****EDL 644. Instructional Supervision. 3 Hours.**

This course will explore the role of the school principal and other key school leaders in the process of guiding instructional staff toward improvement and excellence in instruction. Key instructional processes will be examined, including planning, pre-observation conferencing, observation of instruction, observational strategies and techniques, post-observation conferencing, and planning for professional improvement.

EDL 660. Administrative Leadership I. 3 Hours.**EDL 661. Simulation in Educational Leadership. 3 Hours.**

This is a course designed to provide practice for prospective school administrators in observing teachers in the classroom. Emphasis is placed on developing the skill base of school leaders in observing, note-taking, and providing meaningful feedback to classroom teachers regarding the delivery of instruction and student response. Skills are also developed in assisting teachers in writing their own professional development plans based upon classroom observation.

EDL 665. Supervision of Instruction in Elementary Schools. 3 Hours.

This course focuses on the process of classroom observation and feedback for prospective school administrators planning for a career in elementary school leadership. Emphasis is placed on the development and use of observational strategies and techniques across content areas and on the development of instructional skills for teachers.

EDL 666. Supervision of Secondary Instruction. 3 Hours.

This course focuses on the process of classroom observation and feedback for prospective school administrators planning for a career in secondary school leadership. Emphasis is placed on the development and use of observational strategies and techniques across content areas and on the development of instructional skills for teachers.

EDL 670. Theories in Educational Leadership. 3 Hours.

In this course leading theories pertaining to the process of learning, instruction, and leadership will be explored. The course involves readings of several key theorists in leadership, discussion of those theories, and emphasizes the practical application of those theories to the everyday professional work of school administrators.

EDL 671. Practicum in Elementary Instructional Supervision. 3 Hours.

In this course, pre-service elementary school administrators will be required to observe classroom teachers in the act of delivering instruction. Emphasis is placed on developing specific observational skills and techniques in observing classroom instruction, note-taking, and the provision of timely and meaningful feedback for elementary classroom teachers in order to improve their instructional skills and to affect increased levels of learning for all students.

EDL 672. Practicum in Secondary Instructional Supervision. 3 Hours.

In this course, pre-service secondary school administrators will be required to observe classroom teachers in the act of delivering instruction. Emphasis is placed on developing specific observational skills and techniques in observing classroom instruction, note-taking, and the provision of timely and meaningful feedback for secondary classroom teachers in order to improve their instructional skills and to affect increased levels of learning for all students.

EDL 675. Administration and Supervision of Student Teaching. 3 Hours.

In this course, pre-service school administrators will explore best practices in coaching and mentoring student teachers. Key issues of concern to the effective development of pre-service teachers will be addressed, including processes of planning for instruction, classroom management, conferencing with parents, building a familiarity with curriculum and instructional delivery, and planning for a professional interview.

EDL 685. Workshop in Administration and/or Supervision. 1-3 Hour.**EDL 690. Internship in Educational Leadership. 1-6 Hour.**

This course provides practical, hands-on experience for pre-service school administrators wherein they shadow practicing school administrators to observe the many demands and functions of the role. Students work directly in a school setting with a selected school administrator, and assume leadership in several leadership projects as collaboratively identified by the school administrator and student.

EDL 691. Practicum in Educational Leadership. 3 Hours.

Practicum in Educational Leadership.

EDL 692. Individual Readings in Educational Leadership. 3 Hours.**EDL 694. Seminar in Educational Leadership. 1-3 Hour.****EDL 695. Community Education Seminar. 1-3 Hour.****EDL 696. Practicum in Community Education. 3-6 Hours.****EDL 698. MR Lev Non-Thesis Res. 3 Hours.****EDL 699. Thesis Research. 1-6 Hour.**

Advanced Research in Educational Leadership.

Prerequisites: GAC M

EDL 701. Organizational Leadership and Decision Making I. 3 Hours.

This course provides an introduction for school leaders in the process of facilitating shared decision-making. Basic concepts of organizational theory are explored with an examination of how these theories might be applied to practice in order to build school leaders' effectiveness in involving all stakeholder groups in making important school-based decisions.

EDL 702. Organizational Leadership and Decision Making II. 3 Hours.

This course provides an in-depth examination for school leaders in the process of facilitating shared decision-making. Selected organizational theories are explored more deeply with an examination of how these theories might be applied to practice to build school leaders' effectiveness in involving all stakeholder groups in making important school-based decisions. School leaders will develop expertise in the knowledge and application of a selected organizational theory as applied to decision-making.

EDL 703. Theory and Practices of Supervision Leadership. 3 Hours.

Specific leadership and supervisory or management theories will be explored with an emphasis on how these theories can help to guide and enhance school leaders' practice. An array of theories will be introduced, and students will select one or two theories to study more deeply. Students will be required to examine their own professional practice in terms of the selected theories and explore how the theoretical framework helped them understand their practice more deeply.

EDL 704. Educational Law and Policy Development. 3 Hours.

In this course, students will take an in-depth look at influential court decisions and legislation that affects the operation of schools and school districts in modern society. Furthermore, the processes, responsibilities and multiple roles in the development of school and school district policy will also be explored.

EDL 705. The Management of Educational Programs and Services. 3 Hours.

In this course, the process and responsibilities of operational leadership and management will be explored. Oversight resource allocation, facilities functions, transportation, food service, school-wide discipline and school safety are among several key topics to be examined.

EDL 706. Current Issues in Community Education. 3 Hours.**EDL 707. International Aspects of Community Education. 3 Hours.****EDL 708. Administration Leadership II. 3 Hours.****EDL 709. Theories of Educational Leadership. 3 Hours.****EDL 710. Mentoring for Educational Leadership. 3 Hours.**

In this course, students will develop their knowledge base and skill sets in mentoring instructional staff in the development of their own practice as classroom instructors. Concepts of mentoring as a key process in professional development of teachers will be examined. Specific mentoring skills and strategies will be emphasized. Students will be required to examine current mentoring program goals and processes as well as practice their own skills in mentoring.

EDL 711. Collaborative Problem Solving. 3 Hours.

This course is designed to introduce candidates to the analysis and application of strategies for school-based problem solving. Course content will include: an introduction to the basic tenets of change in schools, learning to use quality tools (TQM), shared decision-making/ group processes/ effective teaming/mentoring & cognitive coaching in professional development, using data to make decisions, and practical applications of problem-solving in schools.

EDL 711L. Collab Probl Solv: Fld Exper. 1 Hour.

The field experience consists of investigating the processes of collaboration and change that are currently implemented in the candidate's own school district.

EDL 711R. School-Based Problem Research. 1 Hour.

The action research consists of identification of a project, usually within the candidate's own school district, that will require collaboration with a selected problem-solving team at one's school site.

EDL 712. School System Administration. 3 Hours.**EDL 713. Leadership of Special Education Programs. 3 Hours.****EDL 714. Advanced School Business Management. 3 Hours.****EDL 715. Non-Thesis Research in Education Leadership. 3 Hours.****EDL 716. Workshop in Administration and/or Supervision. 1-6 Hour.****EDL 717. Leading Change Through Action Research. 3 Hours.**

The purpose of this course is to strengthen knowledge and skills in the areas of effective leadership and systemic organizational change. This course will teach participants the skills and strategies to prepare for and introduce change in their schools through an identified school-based problem solving project. Candidates will be required to lead a collaborative effort of analyzing and applying strategies and quality tools in addressing a school-based problem, preferably one that is impacting student achievement. Course content will include: an introduction to quality tools (TQM), shared decision-making, group processes, effective teaming, and using data to make decisions.

EDL 717L. Field Experience for Leading Change Through Action Research. 1 Hour.

The course is designed to give Ed.S. candidates authentic, practical experience in leading in a school. A minimum of 20 hours of field experience, spent in leadership activities correlating to the core course, at the school site, will be required as the field experience for EDL 717-L. The Field Experience Course is taken concurrently with the core course.

EDL 718. Essential Skills for Organizational Leadership. 3 Hours.

This course is designed to strengthen knowledge and skills essential to effective leadership in the school setting. Candidates will increase their understanding of and skills in utilizing participatory /shared decision making; using data focused on student learning to drive the decision making process; communicating high expectations for student learning; and enhancing human resource development. Candidates will demonstrate the ability to analyze various situations involving community and stakeholder relationships through the structural, human resource, political, and symbolic frames and devise appropriate courses of action based on this analysis of school programs.

EDL 718L. Field Experience for Essential Skills for Organizational Leadership. 1 Hour.

The course is designed to give Ed.S. candidates authentic, practical experience in leading in a school. A minimum of 20 hours of field experience, spent in leadership activities correlating to the core course, at the school site, will be required as the field experience for EDL 718-L. The Field Experience Course is taken concurrently with the core course.

EDL 719. Mentoring & Coaching Skills for School Leaders. 3 Hours.

In an era of ensuring highly qualified teachers through embedded, research-based staff development, the role of supervision and mentoring has taken on an unprecedented role in successful schooling. Supervision and mentoring are at the heart of schooling. In addition, future school leaders need to understand their own mentoring needs, and be comfortable with seeking a mentor for themselves. In this course, candidates will conduct a comprehensive critical examination of mentoring concepts, both for personal development and for instructional supervision of classroom teachers. The skills of supervision through cognitive coaching will be learned and practiced. Implications for individual and group development and the improvement of instruction are emphasized. The field experience, EDL 719L will involve candidates seeking a mentor for themselves, as well as engaging in mentoring a new teacher.

EDL 719L. Field Experience for Mentoring & Coaching Skills for School Leaders. 1 Hour.

The course is designed to give Ed.S. candidates authentic, practical experience in leading in a school. A minimum of 20 hours of field experience, spent in leadership activities correlating to the core course, at the school site, will be required as the field experience for EDL 719-L. The Field Experience Course is taken concurrently with the core course.

EDL 720. Field Project in Educational Leadership. 3 Hours.

In this course, students enrolled in the Doctorate of Education program work closely with their course instructor to develop their proposal for dissertation research. The content and structure of the proposal and dissertation are examined, including conducting a comprehensive review of the relevant literature and the techniques and strategies of data collection, analysis, and development of conclusions and implications related to research findings. The anticipated culminating field project is the development and defense of the proposal for doctoral dissertation research.

EDL 721. Administration of Staff Personnel. 3 Hours.**EDL 722. Current Issues in Educational Leadership. 3 Hours.****EDL 723. Administration of Educational Programs and Services. 3 Hours.**

Administration of Educational Programs and Services.

EDL 724. Educational Leadership Seminar II. 1-3 Hour.**EDL 725. Current Issues and Problems in School Administration. 3 Hours.**

This is a seminar type course that explores current issues affecting the profession of school leadership. Various topics of concern will be presented and discussed. Multiple guest speakers with expert knowledge of selected issues may be invited to present in this class. Students will be required to reflect carefully about their own positions relative to select issues and problems.

EDL 726. Advanced Clinical Supervision Administrator/Supvis. 3 Hours.**EDL 727. Leading the Adult Learning Community. 3 Hours.**

This course is divided into the following conceptual units: a. Teachers as Adult Learners b. Understanding Adult Learning Theories c. Applying Adult learning Theories to Professional Learning Communities d. Creating Collaborative Teams to support learners e. Shared Leadership to improve academic achievement of diverse learners f. Developing and Utilizing Shared Leadership Strategies The purpose of this course is to prepare candidates with the ability to and the knowledge of skills and strategies required to Lead the Adult Learning community in schools. An in-depth analysis of adult learning theories and strategies to develop shared leadership capacity in school communities will provide the impetus of this course. Candidates will learn about characteristics of adult learners and various theories of how adults learn, develop, and interact in professional learning communities. The second focus of this course is how to develop and implement shared leadership in schools.

EDL 727L. Field Experience for Leading the Adult Learning Community. 1 Hour.

The course is designed to give Ed.S. candidates authentic, practical experience in leading in a school. A minimum of 20 hours of field experience, spent in leadership activities correlating to the core course, at the school site, will be required as the field experience for EDL 727-L. The Field Experience Course is taken concurrently with the core course.

EDL 728. Management of the Learning Organization. 3 Hours.

The purpose of this course is to strengthen knowledge of and skills in essential management functions within the school or district setting, as noted in specified ISLLC and Alabama Administrative Code Standards. The course will focus on practices and procedures that are vital to the efficient and effective operation of a school or a school district.

EDL 728L. Field Experience for Management of the Learning Organization. 1 Hour.

The course is designed to give Ed.S. candidates authentic, practical experience in leading in a school. A minimum of 20 hours of field experience, spent in leadership activities correlating to the core course, at the school site, will be required as the field experience for EDL 728-L. The Field Experience Course is taken concurrently with the core course.

EDL 729. Advanced Research in Educational Leadership. 1-6 Hour.**EDL 730. Advanced Focus on the Principalsip. 3 Hours.****EDL 731. Law, Ethics, and Policy for Educational Leaders. 3 Hours.**

The purpose of this course is twofold: 1) Candidates will gain a fundamental knowledge of ethical principles based on the Alabama Educator Code of Ethics and the guidelines of the State Ethics Commission. 2) Candidates will gain a working knowledge of legal principles established by local, state, and federal legislative and judicial requirements. Candidates will be able to demonstrate an understanding of legal and ethical principles related to underrepresented populations within the school setting. Candidates will be able to demonstrate a knowledge and application of the ethical principles stipulated in the Alabama Educator Code of Ethics and accompanying legal precepts. Candidates' ability to make sound legal and ethical decisions will be enhanced through a better understanding of board policies and politics as well as through reflection on and clarification of personal values and beliefs.

EDL 731L. Field Experience for Law, Ethics, and Policy for Educational Leaders. 1 Hour.

The course is designed to give Ed.S. candidates authentic, practical experience in leading in a school in the area of law, ethics, and policy. A minimum of 20 hours of field experience, spent in leadership activities correlating to the core course, at the school site, will be required as the field experience for EDL 731-L. The Field Experience Course is taken concurrently with the core course.

EDL 732. Leadership of Special Programs. 3 Hours.

Leadership of Special Programs coalesces the knowledge of and ability to lead special programs within a school site. Candidates will apply leadership skills in developing a comprehensive home school collaborative project and a comprehensive technology integration project. In addition, candidates will develop curriculum which will align state standards unique to career and technical education. Emphasis will be placed on models of communication, problem solving, conflict resolution and team building principles and skills. Focus will also be placed on best practices in the development of community information, networking, public relations, and media. The technology portion of this class will focus on the total integration of technology into a school community.

EDL 732L. Field Experience for Leadership of Special Programs. 1 Hour.

The course is designed to give Ed.S. candidates authentic, practical experience in leading in a school. A minimum of 20 hours of field experience, spent in leadership activities correlating to the core course, at the school site, will be required as the field experience for EDL 732-L. The Field Experience Course is taken concurrently with the core course.

EDL 735. Professional Leadership. 3 Hours.

Provides an overview of key issues related to professional leadership from the perspective of the teacher leader. Special emphasis will be give to the following course themes: Alabama Educator Code of Ethics, ethical and professional conduct, school law and policy, and adult learning.

EDL 735L. Field Experience/Professional Leadership. 1 Hour.

Field-based experience to accompany EDL 735.

EDL 735R. School Based Problem Research Project/Professional Leadership. 1 Hour.

Action-research project to accompany EDL 735.

EDL 746. Practicum in Instructional Leadership. 1 Hour.

Course required in the Ed.S. program for candidates who completed the Class A Administrative Certification before 2009, before program redesign. The practicum in Institutional Leadership allows for authentic leadership experiences in K-12 schools. The Practicum consists of developing projects and documents /artifacts, throughout the four-semester Educational Specialist Program, that outline leadership experiences in all areas of the Alabama Standard for Instructional Leaders.

EDL 748. Current Issues and Problems in School Administration. 3 Hours.

Current Issues and Problems in School Administration.

EDL 750. Issues and Problems in School Finance. 3 Hours.

This is a seminar type course that explores current issues affecting the financing and funding of schools both locally and across the nation. Issues such as equity and adequacy in school funding will be examined. Key legislation issues will also be explored. Multiple guest speakers with expert knowledge of selected school finance issues may be invited to present in this class. Students will be required to reflect carefully about their own positions relative to select issues and problems in school finance.

EDL 752. Advanced Educational Planning. 3 Hours.**EDL 755. Advanced School System Administration. 3 Hours.**

An advanced course for practicing school leaders examining the various aspects of leadership of a school district from the level of the principalship and beyond. This course explores systems theory and systems thinking relative to the various systems enacted in the leadership of a school district.

EDL 756. Current Legal Problems in Alabama Education. 3 Hours.

An advanced course for practicing school leaders examining the various aspects and implications of educational state and national level case law and policy governing and related to leadership of a school district from the level of the principalship and beyond.

EDL 758. Problems in Supervision. 3 Hours.

This is a seminar type course that explores current issues regarding the effective supervision of schools in the context of recent legislation and challenges. Issues such as developing school culture and strategic planning, supervision of instruction, and addressing the demands of an increasingly diverse clientele will be examined. Professional standards and expectations for school leaders as supervisors will also be explored. Multiple guest speakers with expert knowledge of selected school supervision issues may be invited to present in this class. Students will be required to reflect carefully about their own positions relative to select issues and problems in the supervision of schools.

EDL 760. Advanced Administrative Leadership. 3 Hours.

This is a seminar type course that explores current issues regarding the effective administration and leadership in schools and school districts. Issues such as standard-based leadership; developing school and district mission, vision, values, and goals; clinical supervision and professional development of instructional and supervisory staff to address student achievement; and addressing the demands of an increasingly diverse clientele will be examined. Multiple guest speakers with expert knowledge in school leadership roles may be invited to present in this class. Students will be required to reflect carefully about their own positions relative to leadership in schools and school districts.

EDL 762. Futurism in Community Education. 3 Hours.**EDL 766. Advanced Clinical Supervision for Admin/Supervisor. 3 Hours.**

This course is designed to provide building principals and district-level administrators a chance to examine, in depth, best practices in clinical supervision of classroom teachers and school administrators. Emphasis is placed on how to help teachers and school-level leaders improve their practice in leading for high levels of student achievement. Although it is not a pre-requisite, this course is designed to build topics covered in EDL 626.

EDL 770. Advanced Administrative Leadership. 3 Hours.**EDL 772. Advanced Technology of Educational Planning. 3 Hours.****EDL 792. Directed Study in Educational Leadership. 3 Hours.****EDL 796. Individual Readings in School Law. 3-6 Hours.****EDL 797. Doctoral Internship in Educational Leadership. 1-12 Hour.****EDL 798. Non-Dissertation Research. 1-12 Hour.**

This course is for doctoral students in educational leadership who have completed their preliminary course work but who have not yet attained candidacy (i.e., developed or defended their proposal for doctoral/dissertation research).

EDL 799. Dissertation Research. 1-12 Hour.

This course is for doctoral students in educational leadership who have completed their preliminary course work, passed their comprehensive written exam, and have successfully defended their proposal for doctoral/dissertation research and who, upon the recommendation of their dissertation committee, are entered into doctoral candidacy through the Graduate School. A minimum of 12 hours of EDL 799 is required for the EdD program.

Prerequisites: GAC Z

EDR-Reading Education

EDR 521. Reading in Content Areas. 1 Hour.

Application of principles of reading process to content-area materials and instruction. Designed for pre-service teachers. Field experience required concurrently with the field experience in a teaching methods course. Supervision fee \$100.

EDR 540. Developmental Reading I. 1-4 Hour.

Materials and methods. Emphasis on planning balanced program and understanding reading process. Includes field experiences. Prerequisite: Admission to 5th-Year Program.

Prerequisites: EEC 650 [Min Grade: C]

EDR 541. Literature for Adolescents. 3 Hours.

Literary works written for or about adolescents.

EDR 543. Developmental Reading II. 1-4 Hour.

Reading process as it relates to content area materials. Includes field experience. Prerequisite: Admission to 5th-Year Program.

Prerequisites: EEC 612 [Min Grade: C]

EDR 551. Reading in Content Areas. 3 Hours.

Reading process; evaluation of content area materials; analysis of different content area textbooks; meeting individual differences. Supervision fee \$100.

EDR 640. Reading Improvement Workshop. 3-6 Hours.

For inservice teachers of reading. Specific content varies according to needs of teachers.

EDR 645. Foundations of Reading. 3 Hours.

Early literacy experiences; beginning reading instruction; approaches to reading instruction; use of semantic, syntactic, and graphophonic clues; reading comprehension; and organization of reading program. Prerequisite: Admission to Fifth-Year Program. (If EDR 440, Developmental Reading I, has been taken, no credit will be given for EDR 645.).

EDR 650. Teaching Reading P-12. 3 Hours.

Understanding of reading process. Nature of reading programs; readiness motivation, methods, skills, assessment, evaluation, materials, and resources.

EDR 652. Pre and Early Reading Instruction. 3 Hours.

Theoretical bases, procedures, techniques, and materials for prereading and reading instruction. Prerequisite: Developmental reading course.

EDR 653. Literature for Grades P-12. 3 Hours.

Emphasis on needs of children, selection of books, societal issues in children's literature.

EDR 654. Dyslexia Research, Education & Advocacy. 3 Hours.

The purpose of this course is to provide candidates with an understanding of a balanced approach to literacy and research-based best practices for supporting literacy development among a diverse population of students. Additionally, this course provides knowledge of the approaches available to specialize curriculum for meeting the exceptional needs of students.

EDR 655. Reading Assessment and Evaluation. 3 Hours.

Examines evaluation techniques such as observation, standardized oral and silent reading tests and informal reading inventories such as miscue analysis.

EDR 656. Reading Strategies for Students with Reading Diff. 3 Hours.

Development and application strategies for remediating reading difficulties based on assessment and evaluation data. Prerequisite: Diagnostic reading course.

EDR 657. Supervision of Reading. 3 Hours.

Supervisor's role in improving reading instruction; methods of supervision and evaluation. Prerequisite: Permission of instructor.

EDR 659. Research and Problems in Reading. 3 Hours.

For teachers in elementary and early childhood education.

EDR 690. Internship in Reading. 1-3 Hour.

Supervised experience with children with reading difficulties. Prerequisites: Admission to reading certification program, permission of instructor and department.

EDR 691. Practicum in Reading. 3 Hours.

Practicum Prerequisite: Permission of instructor.

EDR 692. Internship in Supervision of Reading. 3-6 Hours.

Internship Prerequisites: Admission to Reading Supervisor Program and permission of instructor.

Prerequisites: EDR 655 [Min Grade: C]

EDR 698. Independent Non-Thesis Research in Reading. 3 Hours.

Research Prerequisite: Permission of instructor.

EDR 701. Advanced Diagnosis and Remediation of Reading. 3 Hours.

Examination of serious reading disabilities; diagnosis, possible remediation strategies, and development; diagnosis, possible remediation strategies, and development of remediation plan in lab setting. Prerequisites: Master's degree and M.A.-level diagnostic reading course or permission of instructor.

EDR 702. Reading: Theoretical Foundations. 3 Hours.

Relates concepts of learning, development, and linguistics to reading-learning process; emphasis on current theory; implications for program planning and classroom practice. Prerequisites: EDR 650 or permission of instructor, and master's degree.

Prerequisites: EDR 650 [Min Grade: C]

EDR 703. Advanced Research in Reading. 3 Hours.

Research Prerequisites: EDR 650 and master's degree.

Prerequisites: EDR 650 [Min Grade: C]

EDR 704. Field Experience in Reading. 3-6 Hours.

Supervised field experiences under direction of qualified reading consultant or supervisor in school setting. Prerequisites: Admission to Sixth-Year Program for Reading Teacher and permission of instructor.

EDR 705. Reading Instruction Seminar. 3 Hours.

Examination of trends and issues in field of reading. topics determined by each class. Prerequisites: Master's degree and 9 graduate hours in reading or permission of instructor.

EDR 706. Research. 1-3 Hour.

Research Prerequisites: Master's degree and permission of instructor.

EE-Electrical & Computer Engineering

EE 511. Facilities Engineering. 3 Hours.

General engineering project planning, applying codes and standards, preliminary design, economic forecasting, environmental planning/reports, site selection, population displacement, cash flow, specifications and plans.

EE 512. Practical Computer Vision. 3 Hours.

Fundamentals and applications of computer vision: image preprocessing, detection, segmentation, registration, classification and recognition, texture and color, visual tracking.

EE 518. Wireless Communications. 3 Hours.

Wireless communication system topics such as propagation, modulation techniques, multiple access techniques, channel coding, speech and video, coding, and wireless computer networks. EE 318 (Methods of System Analysis) is a prerequisite for this course.

EE 523. Digital Signal Processing. 3 Hours.

Digital filter analysis and design. FET algorithms. Applications of DSPs in engineering problems such as data acquisition, control, and I/O. Lecture and computer laboratory. EE 318 (Methods of System Analysis) is a prerequisite for this course.

EE 526. Control Systems. 3 Hours.

Theory of linear, continuous-feedback control systems using complex frequency techniques. Block diagram manipulation, performance measures, stability, root locus, construction and locating roots (positive and negative feedback), gain adjustment, and altering dynamic properties. Discrete transforms using z-transform and z-plane root locus.

EE 527. Controls and Automation. 3 Hours.

Power control devices and applications. Relay logic and translation to other forms. Analog and digital computers. Proportional-integral-derivative (PID) control techniques. Modern laboratory instrumentation and man-machine interface software. Lecture and laboratory. EE 233 Engineering Programming Method), EE 318 (Methods of System Analysis), and EE 351 (Electronics) are prerequisites for this course.

EE 531. Analog Integrated Electronics. 4 Hours.

Advanced analysis and design using op-amps, with emphasis on error analysis and compensation. Applications include signal conditioning for instrumentation, instrumentation amplifiers, nonlinear and computational circuits, Butterworth and Chebyshev filter design, power amplifier design, voltage regulator design, and oscillators. A-to-D and D-to-A conversion methods. Laboratory exercises emphasizing design techniques. EE 351 (Electronics) is a prerequisite for this course. EE 318 (Methods of System Analysis) is a prerequisite or may be taken concurrently with the course.

EE 532. Introduction to Computer Networking. 3 Hours.

Introduction to computer networking and engineering standards related networking. Network hardware, Ethernet, token ring, ISDN, ATM, networking protocols including TCP/IP protocol suite, Internetworking, LANS, and typical applications.

Prerequisites: EE 134 [Min Grade: C] and EE 210 [Min Grade: C]

EE 533. Engineering Software Solutions. 3 Hours.

Project planning, specification, design, implementation and testing of software solutions for engineers. Waterfall model of development and agile development methods will be covered. Lecture and computer laboratory. Four projects. EE 333 (Engineering Programming using Objects) is a prerequisite for this course.

EE 534. Power and Radio-Frequency Semiconductor Electronics. 3 Hours.

Fundamentals of integrated circuit design for radio-frequency and power converter circuits. Course contents will include basics of RF circuit theory, matching networks, high frequency MOS model, low-noise-amplifier, voltage controlled oscillator, fundamentals of power electronics, power semiconductor switches, steady-state equivalent circuit modeling, DC transformer model, basic AC equivalent circuit modeling, linearization and perturbation, etc. Will require accomplishing a computer aided design, simulation and chip layout of an integrated circuit design project.

EE 537. Introduction to Embedded Systems. 3 Hours.

Applications of microprocessors in engineering problems such as data acquisitions control, and real-time input/output.

EE 538. Computer Architecture. 3 Hours.

Advanced microprocessor topics including cache design, pipelining, superscalar architecture, design of control units, microcoding, and parallel processors. Comparison of advanced, contemporary microprocessors from Intel and IBM. EE 337 (Introduction to Microprocessors) is a recommended prerequisite for this course.

EE 543. Medical Imaging Processing. 3 Hours.

A lab-based introduction to processing analysis and display techniques for medical imaging.

EE 544. Real-Time Process & Protocols. 3 Hours.

Hands-on laboratory course covering topics in real-time computer systems such as algorithms, state-machine implementations, communication protocols, instrumentation, and hardware interfaces.

EE 547. Internet/Intranet Application Development. 3 Hours.

Focus on the development of applications and models using Internet/Intranet Technologies such as JavaScript, Conferencing systems, Dynamic HTML, server side scripting, multi-tier models and XML. Lecture and computer laboratory.

Prerequisites: EE 233 [Min Grade: C]

EE 548. Software Engineering Projects. 3 Hours.

Builds on the Object-Oriented concepts covered in EE 333. Coverage for Unified Modeling Language is expanded and design patterns are incorporated. Provides a project environment for implementation of systems using Object Oriented techniques.

Prerequisites: EE 333 [Min Grade: C]

EE 552. Digital Systems Design. 3 Hours.

Computer Design Automation using VHDL. Architectural, behavioral and logical descriptions of digital systems. Logic verification and simulation. Projects involve designing complex integrated circuits using modern DA tools. Lecture and laboratory.

Prerequisites: EE 337 [Min Grade: C]

EE 558. Medical Instrumentation. 3 Hours.

Fundamental operating principles, applications and design of electronic instrumentation used in measurement of physiological parameters. Class design project.

Prerequisites: EE 351 [Min Grade: C]

EE 561. Machinery II. 3 Hours.

Physical principles of DC machines. Mathematical analysis of generator designs using equivalent circuits and magnetization curves. Calculation of motor speed, torque, power, efficiency, and starting requirements. Solid-state speed control systems. EE 361 (Machinery I) is a prerequisite for this course.

EE 571. Power Systems I. 3 Hours.

Components of power systems. Performance of modern interconnected power system under normal and abnormal conditions. Calculation of inductive and capacitive reactances of three-phase transmission lines in steady state. EE 351 (Electronics) is a prerequisite for this course.

EE 572. Power Systems II. 3 Hours.

Modeling of generators, transformers, and transmission lines for system studies. Introduction to symmetrical components. Calculation of short-circuit currents due to balanced and unbalanced faults. Determination of interrupting ratings of circuit breakers. Transient stability of power systems. Derivation of swing equation and solution by numerical method. Equal area criterion. Power system design project required.

EE 573. Protective Relaying of Power Systems. 3 Hours.

Operating principles of protective relays. Protection of transmission lines, generators, motors, transformers, and buses.

EE 574. Industrial Power Systems. 3 Hours.

One-line diagrams/load analysis. Medium and low voltage feeder design, voltage regulation, and short-circuit analysis. Selection of protective devices. Grounding and lightning protection. Term project.

EE 585. Engineering Operations. 3 Hours.

Economic, procedural, planning, and control aspects of engineering projects.

EE 590. Special Topics in (Area). 1-6 Hour.**EE 591. Individual Study in (Area). 1-6 Hour.**

Topic assigned with course.

EE 601. Electrical and Computer Engineering Seminar. 1-3 Hour.

Consists of research presentations and colloquia delivered by faculty, research assistants, and invited guests in various state-of-the-art and popular topics related to Electrical and Computer Engineering. Required of all full-time Electrical and Computer Engineering graduate students.

EE 605. Embedded Systems for Industrial Scholars. 3 Hours.

Embedded systems are commonplace in the integration age. From consumer applications to medical applications, embedded systems are within practically every system. Engineers developing all kinds of systems should be at least familiar with the possibilities available with embedded systems. This introductory course will cover basics of developing systems with embedded computing components. Various popular systems and languages will be exposed. Topics covered will include: Significance of embedded systems, embedded systems design, rapid system prototyping of embedded systems, use of FPGAs and other modern design strategies.

EE 610. Technical Communication for Engineers. 3 Hours.

A workshop-oriented course providing students with the opportunity to produce technical memoranda, a proposal, and a conference and/or refereed- journal paper and to make oral presentations related to these work products utilizing appropriate software presentation aids. Successful performance on a written pre-test required.

EE 616. Design of CMOS Analog Integrated Circuits. 3 Hours.

This course will cover basic building blocks of CMOS analog VLSI design, MOSFET theory, short channel device and nonlinear effects, current mirrors, current-reference generator, operational trans conductance amplifier, switched capacitor architecture, analog-to-digital converter and digital-to-analog converter. Students will be required to develop a computer aided design, simulation and chip layout of an analog integrated circuit design project.

Prerequisites: EE 605 [Min Grade: C] and EE 606 [Min Grade: C] and EE 607 [Min Grade: C] and EE 608 [Min Grade: C] and EE 609 [Min Grade: C] and EE 611 [Min Grade: C] and EE 612 [Min Grade: C] and EE 613 [Min Grade: C]

EE 621. Random Variables and Processes. 3 Hours.

Theory underlying analysis and design of communication, stochastic control, data gathering, and data analysis systems.

Prerequisites: EE 421 [Min Grade: C]

EE 622. Advanced Communication Theory. 3 Hours.

Analysis of performance of analog modulation techniques in presence of noise.

Prerequisites: EE 421 [Min Grade: C]

EE 623. Computer Vision. 3 Hours.

Advanced topics in computer vision: image segmentation, registration, and visual tracking. (EE 412:512 - Practical Computer Vision or EE 300 - Engineering Problem Solving + EGR 265 - Mathematical Tools for Engineering Problem Solving or other equivalent courses).

EE 624. Digital Communications. 3 Hours.

Design of digital communications systems.

EE 625. Information Theory and Coding. 3 Hours.

Channel models and block codes, block code ensemble performance analysis, convolutional codes and ensemble performance, sequential decoding of convolutional codes.

EE 626. Digital Image Processing. 3 Hours.

Digital image processing fundamentals, image transformations, image enhancement, image restoration, image compression, image segmentation, and image presentation.

Prerequisites: EE 318 [Min Grade: C]

EE 627. Wireless Communications. 3 Hours.

Wireless communication system topics such as propagation, modulation techniques, multiple access techniques, channel coding, speech and video coding, and wireless computer networks.

EE 628. Telecommunications I. 3 Hours.

Advanced topics.

EE 629. Telecommunications II. 3 Hours.

Advanced Topics.

EE 632. Introduction to Computer Networking. 3 Hours.

Computer networking fundamentals. Layered network model and correspondence to real systems. Discussion of Ethernet, Token Ring, TCP/IP, LAN, and other protocols. Exploration of the Internet and similar systems. Network application models. Simulation of networks.

Prerequisites: EE 333 [Min Grade: C] and EE 210 [Min Grade: C]

EE 633. Experiments in Computer Networking. 3 Hours.

Detailed exploration of particular issues in network protocols and network application models. Development of series of programs to explore the details of network protocols and network application models.

EE 634. Introduction to Neural Networks. 3 Hours.

Neural network topologies and learning algorithms with an emphasis on back propagation. Applications and limitations of networks. Designing networks for specific uses. Individual software project. A grade of C or better in EE 210 (Digital Logic) is required for this course.

EE 635. Telecommunication Systems. 3 Hours.

System organization and structure; data transmission.

EE 636. Advanced Digital Design. 3 Hours.

Large-scale class project. Sample topics include math coprocessors, text coprocessors, CRT controllers, and data encryption devices.

EE 637. Design of Modern Computer with Digital Integrated Circuits. 3 Hours.

This course will cover the basic design flow of digital computing chips. Students will be exposed to all levels of the chip design flow. The course will involve design projects that utilize the industry-grade software suite from Cadence. The course will use Silicon based Metal Oxide Semiconductor Field Effect Transistor (MOSFET) technology, which is current, for computer chip design. It will also briefly introduce two of the popular emerging technologies, Carbon based transistors and interconnects and 3-Dimensional ICs. Requires a basic understanding of transistors and digital logic.

EE 639. Embedded Systems. 3 Hours.

Topics covering both hardware and software issues. Individual or group term project. Course is for MSEE and PhD in Computer Engineering.

EE 640. Object-Oriented Design. 3 Hours.

Study and practice of the object-oriented methodology for developing software designs. Implementation consequences. Application of object-oriented methodologies to specific problems using an object-oriented language. A grade of C or better in EE 333 (Engineering Programming using Objects) or other software design experience using C is required for this course.

EE 641. Modern Control Theory. 3 Hours.

State variable models for discrete-time systems. Sampled-data systems. State feedback and pole placement. State estimation. Control Systems (EE 426) is a suggested prerequisite for this course.

EE 642. Intelligent Systems. 3 Hours.

Organization and characteristics of intelligent systems. Optimization. Evolutionary algorithms. Neural network and fuzzy logic algorithms. Intelligent control.

EE 650. Software Engineering. 3 Hours.

Introduces classical software lifecycles and software development paradigms. Provides state-of-the-art practical experience in proposal development and software design. Develops integrated skills drawing experience from computer engineering, computer science, communication, systems engineering, and problem solving.

EE 651. Software Engineering Large Systems - I. 3 Hours.

Introduces advanced integrated software systems development paradigms. Notions of process and integrated system views are extensively covered. Modeling-in-the-large and modeling-in-the-small are discussed and related to levels in Object Oriented Design and Programming.

EE 652. Software Engineering Large Systems - II. 3 Hours.

Builds on the advanced integrated software systems development paradigms covered in EE 651/751. Components are introduced as elements of large system implementations. In the context of a design taxonomy, advanced Object Oriented design and development techniques are reviewed.

EE 653. Electronic Power Switching Circuits. 3 Hours.

Power semiconductor devices. Switching circuit analysis, AC voltage controllers, controlled rectifiers, DC-to-DC converters, inverters, and cyclo-converters.

Prerequisites: EE 351 [Min Grade: C]

EE 654. Mobile Computing. 3 Hours.

Fundamental and advanced concepts in mobile computing. Develop user interface, application logic, and backend services, using advanced integrated development environments. Individual and team projects. Programming required.

EE 655. Cloud Computing. 3 Hours.

This course covers fundamental and advanced concepts in cloud computing, including evaluation of current market offerings. Students will also design and implement systems integrating multiple cloud computing services.

EE 656. Introduction to Big Data Analytics. 3 Hours.

Introduction to the field of big data analytics, including technologies, and challenges, architecture and hypothesis testing.

EE 658. Machine Learning in Engineering. 3 Hours.

Machine learning includes the science, engineering, and techniques for developing solutions to complex problems without having to explicitly program the computers. Beginning with classification and linear regression, the course covers topics that include supervised and unsupervised learning, boosting, support vector machines, Neural Networks, Convolution Neural Networks, and Recurrent Neural Networks. The course provides students with the theoretical underpinnings of machine learning as well as the practical knowledge to design and implement solutions to problems in different domains. Students will be asked to work on biweekly assignments and to develop a course project demonstrating their understanding of the major concepts presented in this course.

EE 661. Advanced Synchronous Machines. 3 Hours.

Effects of synchronous machine design on generated voltage and harmonics. Time domain modeling and simulation of machine dynamics for transient stability analysis.

EE 662. Advanced Induction Machines. 3 Hours.

Time domain modeling of induction machines. Simulation of induction machine dynamics including motor starting transients.

EE 663. Control of Synchronous Machines. 3 Hours.

EE 671. Computer Applications in Power Systems. 3 Hours.
Analysis of power systems operation.

EE 672. Power System Overvoltages. 3 Hours.

Events causing overvoltages, and protection of system.

EE 673. Reliability of Power Systems. 3 Hours.

Component reliability using standard industrial techniques.

EE 674. Economic Operation and Control of Power Systems. 3 Hours.

Economic control of thermal generating stations and hydrothermal stations. Computer control of power systems.

EE 682. Electromagnetic Field Theory I. 3 Hours.

Application of Maxwell's equations to problems of electrical engineering; boundary-value problems, wave propagation, waveguides, radiation, and scattering; and surface waves.

EE 683. Complex Frequency Techniques in Process Control. 3 Hours.

S-plane techniques; characterization of processes; design of controllers.

EE 688. Enterprise Perspectives in Information Engineering. 3 Hours.

Technology entrepreneurship, business processes, measurement of information systems effectiveness and productivity, building a responsive information infrastructure. Business system analysis, design, and process redesign. Reengineering and information systems evolution. Electronic commerce technical design. Legal considerations and governmental regulations and requirements. Ethics. Information system engineering.

EE 690. Special Topics in (Area). 1-6 Hour.

Special Topics in (Area).

EE 691. Individual Study in (Area). 1-6 Hour.

Topic assigned with course.

EE 697. Graduate Project. 3 Hours.

Graduate project for Plan II Masters students.

EE 698. Non-Thesis Research. 1-12 Hour.

Non-Thesis Research.

EE 699. Thesis Research. 1-12 Hour.

Master's Degree Thesis.

Prerequisites: GAC M

EE 701. Electr & Compnr EGR Sem. 1-3 Hour.

Consists of research presentations and colloquia delivered by faculty, research assistants, and invited guests in various state-of-the-art and popular topics related to Electrical and Computer Engineering. Maximum of 3.0 credit hours applicable toward M.S.E.E. degree.

EE 716. Design of CMOS Analog Integrated Circuits. 3 Hours.

This course will cover basic building blocks of CMOS analog VLSI design, MOSFET theory, short channel device and nonlinear effects, current mirrors, current-reference generator, operational trans conductance amplifier, switched capacitor architecture, analog-to-digital converter and digital-to-analog converter. Students will be required to develop a computer aided design, simulation and chip layout of an analog integrated circuit design project.

EE 723. Computer Vision. 3 Hours.

Advanced topics in computer vision: Image segmentation, registration, and visual tracking. Linear algebra, PDE or basic computer vision (EE 412:512 - Practical Computer Vision or EE 300 - Engineering Problem Solving + EGR 265 - Mathematical Tools for Engineering Problem Solving or other equivalent courses).

EE 724. Digital Communications. 3 Hours.

Design of digital communications systems.

EE 725. Information Theory and Coding. 3 Hours.

Channel models and block codes; block code ensemble performance analysis; convolutional codes and ensemble performance; sequential decoding of convolutional codes.

EE 726. Digital Image Processing. 3 Hours.

Digital image processing fundamentals, image transformations, image enhancement, image restoration, image compression, image segmentation, and image presentation.

Prerequisites: EE 318 [Min Grade: C]

EE 727. Wireless Communications. 3 Hours.

Wireless communication system topics such as propagation, modulation techniques, multiple access techniques, channel coding, speech and video coding, and wireless computer networks.

EE 728. Telecommunications I. 3 Hours.

Advanced topics.

EE 729. Telecommunications II. 3 Hours.

Advanced Topics.

EE 732. Introduction to Computer Networking. 3 Hours.

Computer network fundamentals. Layered network OSI model and correspondence to real systems. Discussion of Ethernet, Token Ring, TCP/IP, LAN, and other protocols. Exploration of the Internet and similar systems. Network application models. Simulation of networks. Digital Logic(EE 210) and Introduction to Microprocessors (EE 337) are recommended prerequisites for this course.

EE 733. Experiments in Computer Networking. 3 Hours.

Detailed exploration of particular issues in network protocols and network application models. Development of series of programs to explore the details of network protocols and network application models.

EE 734. Introduction to Neural Networks. 3 Hours.

Neural network topologies and learning algorithms with an emphasis on back propagation. Applications and limitations of networks. Designing networks for specific uses. Individual software project. EE 426 (Control Systems) and a grade of C or better in EE 210 (Digital Logic) are prerequisites for this course.

EE 737. Design of Modern Computers with Digital Integrated Circuits. 3 Hours.

This course will be focused on teaching the basic design flow of digital computing chips. The students will be exposed to all levels of the chip design flow. The course will involve design projects that utilize an industry-grade software suite from Cadence. The course will use Silicon based Metal Oxide Semiconductor Field Effect Transistor (MOSFET) technology, which is current, for computer chip design. It will also briefly introduce two of the popular emerging technologies, Carbon based transistors and interconnects (3-DimensionallCs). Requires basic understanding of transistors and digital logic.

EE 740. Object-Oriented Design. 3 Hours.

Study and practice of the object-oriented methodology for developing software designs. Implementation consequences. Application of object-oriented methodologies to specific problems using an object-oriented language. Requires a knowledge of software design experience using C.

EE 742. Intelligent Systems. 3 Hours.

Organization and characteristics of intelligent systems. Optimization. Evolutionary algorithms. Neural network and fuzzy logic algorithms. Intelligent control.

EE 746. Batch Control. 3 Hours.

Theory, analysis, and synthesis of batch processing control systems.

EE 747. Distributed Control Systems. 3 Hours.

Application of distributed control to process, integration, and operator interfaces.

EE 748. Process Analyzers. 3 Hours.

Automated analytical techniques for identifying chemical process streams.

EE 750. Software Engineering. 3 Hours.

Introduces classical software lifecycles and software development paradigm. Provides state-of-the-art practical experience in proposal development and software systems design. Develops integrated skills drawing experience from computer engineering, computer science, communication, system engineering, and problem solving.

EE 751. Software Engineering Large Systems - I. 3 Hours.

Introduces advanced integrated software systems development paradigms. Notions of process and integrated system views are extensively covered. Modeling-in-the-large and modeling-in-the-small are discussed and related to levels in Object Oriented Design and Programming.

EE 752. Software Engineering Large Systems - II. 3 Hours.

Builds on the advanced integrated software systems development paradigms covered in EE 651/751. Components are introduced as elements of large system implementations. In the context of a design taxonomy, advanced Object Oriented design and development techniques are reviewed.

EE 754. Mobile Computing. 3 Hours.

Fundamental and advanced concepts in mobile computing. Develop user interface, application logic, and backend services, using advanced integrated development environments. Individual and team projects. Programming required.

EE 755. Cloud Computing. 3 Hours.

This course covers fundamental and advanced concepts in cloud computing, including evaluation of current market offerings. Students will also design and implement systems integrating multiple cloud computing services.

EE 756. Introduction to Big Data Analytics. 3 Hours.

Introduction to the field of big data analytics, including technologies, and challenges, architecture and hypothesis testing.

EE 758. Machine Learning in Engineering. 3 Hours.

Machine learning includes the science, engineering, and techniques for developing solutions to complex problems without having to explicitly program the computers. Beginning with classification and linear regression, the course covers topics that include supervised and unsupervised learning, boosting, support vector machines, Neural Networks, Convolution Neural Networks, and Recurrent Neural Networks. The course provides students with the theoretical underpinnings of machine learning as well as the practical knowledge to design and implement solutions to problems in different domains. Students will be asked to work on biweekly assignments and to develop a course project demonstrating their understanding of the major concepts presented in this course.

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EE 762. Advanced Induction Machines. 3 Hours.

Time domain modeling of induction machines. Simulation of induction machine dynamics including motor starting transients.

EE 763. Control of Synchronous Machines. 3 Hours.

Component reliability using standard industrial techniques.

EE 771. Computer Applications in Power Systems. 3 Hours.

Analysis of power systems operation.

EE 772. Power System Overvoltages. 3 Hours.

Events causing overvoltages, and protection of system.

EE 773. Reliability of Power Systems. 3 Hours.

Component reliability using standard industrial techniques.

EE 774. Economic Operation and Control of Power Systems. 3 Hours.

Economic control and operation of thermal generating stations and hydrothermal stations. Computer control of power systems.

EE 782. Multivariable Systems. 3 Hours.

Analysis and design of multiple-output, multiple-input control systems.

EE 788. Enterprise Perspectives in Information Engineering. 3 Hours.

Technology entrepreneurship, business processes, measurement of information systems effectiveness and productivity, building a responsive information infrastructure. Business system analysis, design, and process redesign. Reengineering and information systems evolution. Electronic commerce technical design. Legal considerations and governmental regulations and requirements. Ethics. Information system engineering.

EE 790. Special Topics in (Area). 1-6 Hour.

Special Topics In (Area).

EE 791. Individual Study in (Area). 1-6 Hour.

Individual Study In (Area).

EE 798. Non-Dissertation Research. 1-12 Hour.

Non-Dissertation Research.

EE 799. Dissertation Research. 1-12 Hour.

Doctoral Dissertation Research.

Prerequisites: GAC Z

EEC-Elementary and Early Childhood Education

EEC 500. Pedagogy One. 9 Hours.

Develops candidate's knowledge, skills/performance, and dispositions in the teaching of reading and language arts in the early childhood and elementary classroom. Refines abilities in instructional planning, instructional delivery, classroom management, and assessment of learners in order to address the literacy needs of diverse learners.

EEC 501. Pedagogy Two. 9 Hours.

Curriculum and field experience of P-6 curriculum in the areas of math, science, literacy, and social studies. Emphasis is placed on the scope, sequence, and content of each content area. Extensive field experience required.

EEC 502. Primary Math Methods. 1-4 Hour.

Materials and methods on emergent numeracy. Field experience required.

EEC 505. Children's Literature in Elem. and Early Childhood. 3 Hours.

Materials and methods. Needs of children, selection of books, societal issues in children's literature, and role of media in children's literature. Field experiences required.

Prerequisites: EDU 500 [Min Grade: C] and EEC 650 [Min Grade: C]

EEC 506. Language Arts in Elementary and Early Childhood Ed.. 1-4 Hour.

Materials and methods. Communication-based approach in developing effective language arts program. All aspects of language arts program addressed. Field experiences required.

Prerequisites: EEC 600 [Min Grade: C] and EEC 612 [Min Grade: C] and EEC 650 [Min Grade: C]

EEC 512. Math in EC and Elementary Educ. 3 Hours.

Material and methods of teaching mathematics. Emphasizes scope, sequence, and content of the mathematics program. Computation skills and problem solving are stressed. Includes field experiences.

Prerequisites: EEC 612 [Min Grade: C]

EEC 513. Science in EC and Elem Edu. 3 Hours.

Scope, sequence, materials, and methods. Emphasis on teaching and the development of content and process skills. Field experiences completed in conjunction with practicum.

Prerequisites: EEC 612 [Min Grade: C]

EEC 514. Soc Studies in EC and Elem Edu. 3 Hours.

Scope, sequence, and content of elementary school social studies curriculum. Teaching strategies, program articulation, and instructional planning. Field experiences completed in conjunction with practicum.

Prerequisites: EEC 612 [Min Grade: C]

EEC 515. Learning Environments through Positive Behavior Support. 1-3 Hour.

Theoretical approaches that focus on child centered curriculum, classroom management, discipline strategies and cultural, linguistic, and developmentally appropriate instruction. Field experience required.

EEC 540. Workshop in Education: Strategies for English Learners. 1-3 Hour.

Strengthen proficiency in teaching English Learners in the mainstream classroom. Develop understanding of second language acquisition, culturally responsive teaching, accommodations for varying language levels, and appropriate assessments for English Learners. Practice planning, implementing, and managing sheltered instruction.

EEC 560. Current Issues in Education. 3 Hours.

Topics announced in class schedule. May be repeated for maximum of 6 hours with different topics.

EEC 565. Teaching Globe and Map Skills. 3 Hours.

Concepts and skills related to understanding functional use of globes and maps. Teaching strategies and methodologies for teaching concepts and skills. Curriculum scope, sequence, continuity, and application within social studies program.

EEC 592. Individual Curriculum Projects:(Area Specified). 3-6 Hours.

Field projects in curriculum modification and improvement of classroom practice.

EEC 593. Individual Readings. 1-3 Hour.

Individualized readings on special topics.

EEC 594. Field Work in Elementary and Early Childhood Education. 1-6 Hour.

Observation and participation experiences with children.

EEC 600. Transition into P-6 Teaching. 3 Hours.

Introduction to the teaching profession (Alternative Master's Program, Elementary/Early Childhood Education).

EEC 610. Curriculum Development in ELEM and ECE. 3 Hours.

Curriculum decisions, planning and implementation.

Prerequisites: EEC 660 [Min Grade: C]

EEC 611. Teacher Roles in Elementary and Early Childhood Ed.. 3 Hours.

Models of instructional roles such as facilitator, program planner, curriculum designer; models of social roles. Includes practicum experiences.

EEC 612. Models of Teaching. 3 Hours.

Selecting and applying specific teaching strategies. Includes practicum experiences.

EEC 620. Teaching Mathematics N-6. 3 Hours.

Issues and approaches in early childhood and elementary mathematics; research and implementation for instruction.

Prerequisites: EEC 660 [Min Grade: C]

EEC 621. Teaching Language Arts P-12. 3 Hours.

Issues and approaches in teaching early childhood and elementary school language arts. Implications of research for instruction.

Prerequisites: EEC 660 [Min Grade: C]

EEC 622. Teaching Social Studies N-6. 3 Hours.

Function and organization of social studies programs in early childhood and elementary schools. Selection and adaptation of content, resources, teaching materials, and teaching strategies/methods with emphasis on current trends.

Prerequisites: EEC 660 [Min Grade: C]

EEC 623. Teaching Science N-6. 3 Hours.

Issues and approaches in early childhood and elementary science, technology, engineering, & math. Implications of research for instruction.

Prerequisites: EEC 660 [Min Grade: C]

EEC 625. Critical Pedagogy Advocacy Collaboration. 3 Hours.

Encompasses current issues in education from critical, postmodern, and feminist perspectives. Issues of advocacy, collaboration, equity, social justice, racism, sexism, and the marginalization of minorities in education will be explored.

Prerequisites: EEC 660 [Min Grade: C]

EEC 628. Masters Project. 1 Hour.

Designed for the nontraditional 5th-year student in early childhood and elementary education. This one-hour seminar must be taken concurrently with the student's internship experience.

EEC 633. Classroom Applications of Constructivist Theory. 3 Hours.

This course provides practical classroom applications of constructivist principles in teaching and learning.

EEC 650. Systematic Reflections About Teaching. 3 Hours.

Theory and practice of reflective inquiry in the elementary classroom which includes observations, data collection, analysis, and narrative reporting. Prerequisite: Admission into Graduate School.

EEC 660. Reading in Teaching and Learning. 3 Hours.

Introductory course is designed to assist the student in locating, analyzing, and synthesizing current research in early childhood and elementary education.

EEC 670. Studying the Child in School. 3 Hours.

Analysis of child study in school; values and limitations of assessment.

EEC 671. Creative and Affective Experiences. 3 Hours.

Nature and nurture of creativity through creative learning experiences. Maintaining and preserving creative expression throughout curriculum.

EEC 672. Piaget and Perspectives in Learning. 3 Hours.

Piaget's theory of intellectual or cognitive development; applications to elementary and early childhood education. Prerequisite: Course in human growth and development.

EEC 673. Teaching in Diverse Society. 3 Hours.

Examination of effective strategies for working with diverse populations.

EEC 674. Language Development. 3 Hours.

Developmental processes involved in language, relationship to education programs.

EEC 675. Teaching in the Urban School. 3 Hours.

Methods and materials; evaluation of school and school-related programs for equalizing educational opportunity.

EEC 676. Discipline and Social Education. 3 Hours.

Classroom management focused on responsible thinking, cooperation, mutual respect, shared decision-making, and other social skills.

EEC 677. Readiness for Learning. 3 Hours.

Preschool and primary level language development and literacy development; assessment techniques.

EEC 678. Primary Mathematics: A Constructive Approach. 3 Hours.

New ways of teaching primary math based on Piaget's theory about how children acquire logico-mathematical knowledge.

EEC 680. National Board Portfolio. 3-6 Hours.

Prepares teachers for National Board Candidacy and to support candidates as they go through the certification process. Students enrolled in this course may be either precandidates or candidates for National Board Certification.

EEC 690. Internship in P-3/3-6. 3-9 Hours.

Supervised teaching in an early childhood (P-3) and/or an elementary (3-6) program. The student gradually assumes responsibility for planning and teaching for the entire class (minimum of 15 weeks). The internship experience includes supervision in working with professional resource professionals and parents. Approval of application for Internship in P-3/3-6 required.

Prerequisites: EDR 540 [Min Grade: C] and EEC 502 [Min Grade: C] and EEC 540 [Min Grade: C] and EEC 506 [Min Grade: C] and EEC 512 [Min Grade: C] and EEC 513 [Min Grade: C] and EDR 543 [Min Grade: C] and EEC 514 [Min Grade: C]

EEC 691. Practicum in ECE/ELEM. 3 Hours.

Practicum in Early Childhood Education and Elementary Education.

EEC 692. Curriculum Projects. 3-6 Hours.

Field projects in curriculum modifications and improvement of classroom practice.

EEC 693. Independent Studies. 1-3 Hour.

Independent Study in Elementary and Early Childhood Education.

EEC 694. Field Study. 1-6 Hour.

Field study.

EEC 695. Practicum Supervision in ECE/ELE. 2-6 Hours.

Supervision of practicum students.

EEC 696. Internship Seminar. 1-3 Hour.

Course will accompany the 9 semester hour internship (EEC 690) to support and extend the efforts of student teaching. The course will focus on problem-solving related to classroom situations such as classroom management, grading, professionalism and ethics, legal issues, teacher rights, and others that occur during the internship.

EEC 698. Independent Non-Thesis Research. 3-6 Hours.

Non Thesis research.

EEC 699. Thesis Research. 6-9 Hours.

Thesis research.

Prerequisites: GAC M

EEC 701. Advanced Seminar in Language Development. 3 Hours.

Relationship of thinking and knowing to language development; strategies for analysis.

Prerequisites: EEC 674 [Min Grade: C]

EEC 702. Administration and Supervision Prog Young Children. 3 Hours.

Evaluation, decision making, supportive services, staff development, community interaction strategies.

EEC 710. Research. 1-6 Hour.

Research.

EESL-English as a Second Language

EESL 510. Second Language Acquisition. 3 Hours.

An in-depth look at major theories of second language acquisition. Exploration of learning environments, programs, home language, culture, and other factors that influence second language acquisition. This course entails 30 hours of field experiences. Required for the Alternative Master's.

EESL 512. Curriculum, Program, Policies. 3 Hours.

Introduction to the curriculum, programs, policies, and laws that support new language learners with respect to legal issues, instructional strategies, accommodations, assessments, and support networks and that are grounded in second language acquisition theory. This course entails 5 days of field experiences in an English learner summer program. Required for the Alternative Master's in ESL.

EESL 513. Teaching ESL in a Multicultural Society. 3 Hours.

Designed to introduce students to the goals, principles, and practices of multicultural education and to sensitize students to cultural pluralism in the United States. Required for the Alternative Master's.

EESL 515. Grammar and Linguistics for ESL Teachers. 3 Hours.

A critical study of aspects of Modern English grammar and linguistics that are important for the teaching of English as a Second or Foreign Language. Students will gain an understanding of the major syntactic and semantic phenomena important for teaching ESL/EFL, become familiar with the practical and theoretical literature on teaching English grammar, participate in practical exercises of grammar correction in writing with actual ESL students, and develop and compile classroom activities for teaching points of grammar. Required for the Alternative Master's.

EESL 525. Phonology for Second Language Teachers. 3 Hours.

An introduction to phonology and its application to the teaching of a second or foreign language. Students learn the phonological structure of the English language, analyze examples from language learner data, diagnose pronunciation difficulties experienced by language learners from different first languages, and identify instructional strategies for assisting language learners to perceive and produce challenging sounds. Required for the Alternative Master's.

EESL 530. Methods and Materials of Teaching ESL. 3 Hours.

Examines traditional and current approaches for teaching English to speakers of other languages and curriculum materials, texts, and other resources. This course entails 30 hours of field experiences. Required for the Alternative Master's.

EESL 540. Teaching New Languages Through Reading and Writing. 3 Hours.

Theory, research and practice in reading and writing for second language learners. Implications for teaching reading and writing skills that allow second language learners to participate in the full range of academic situations. This course entails 30 hours of field experiences. Required for the Alternative Master's.

EESL 560. Effective Teaching and Learning. 3 Hours.

This course prepares candidates to plan, teach, and assess second and foreign languages in school settings: making informed decisions about context, learners, learner differences, teaching strategies, methodologies, curricula, and assessment. This course entails 30 hours of field experience. Required for the Alternative Master's in ESL, French, and Spanish.

EESL 570. Engaging Families and Communities. 3 Hours.

This course prepares professional educators to engage families and communities with the overarching idea of shared responsibility for the English learner's academic success. In this course, UAB candidates will determine what family engagement could look like over time and through multiple levels, starting with individual engagement, the engagement of a school, and of a school system.

EESL 589. Internship Seminar in ESL. 1 Hour.

Provides an opportunity to explore in-depth effective ways to deliver instruction during the internship experience.

EESL 590. Internship in Second and Foreign Languages, N-12. 6 Hours.

Meets the internship requirements of the state code. Interns are engaged in the full scope of teaching activities including planning and delivering lessons, evaluating students, and conducting managerial tasks and other appropriate duties.

EESL 600. TESOL Residency. 0 Hours.

Students in the EdS program's non-certification track must enroll in EESL 008 during the summer term. During their two-week residency at UAB, they will participate in a TESOL institute on campus and also visit TESOL sites off-campus.

EESL 601L. Community English Teaching. 1 Hour.

Students co-teach weekly Community English Classes.

EESL 610. Second Language Acquisition. 3 Hours.

An in-depth look at major theories of second language acquisition. Exploration of learning environments, programs, home language, culture, and other factors that influence second language acquisition. This course entails 8 hours of field experiences at other schools plus 22 hours of working with English learners at one's own school.

EESL 612. Curriculum, Programs and Policies. 3 Hours.

Introduction to the curriculum, programs, policies, and laws that support new language learners with respect to legal issues, support networks, instructional strategies, assessments, and accommodations and that are grounded in second language acquisition theory. This course entails 3 days of field experiences in an English learner summer program.

EESL 613. Teaching ESL in a Multicultural Society. 3 Hours.

Designed to introduce students to the goals, principles, and practices of multicultural education and to sensitize students to cultural pluralism in the United States.

EESL 615. Grammar and Linguistics for ESL Teachers. 3 Hours.

A critical study of aspects of Modern English grammar and linguistics that are important for the teaching of English as a Second or Foreign Language. Students will gain an understanding of the major syntactic and semantic phenomena important for teaching ESL/EFL, become familiar with the practical and theoretical literature on teaching English grammar, participate in practical exercises of grammar correction in writing with actual ESL students, and develop and compile classroom activities for teaching points of grammar.

EESL 617. Teaching English in a Global Context. 3 Hours.

Provides a sociolinguistic perspective on the globalization of English and on the emergence and teaching of English as an International Language. Students explore dialectology, language change, language diversity, language ideology and power, national language policies, World Englishes, the growing number of non-native English speakers, and attitudes of native and non-native English speakers toward the domination of English.

EESL 620. Special Topics in ESL. 3 Hours.

Topics will vary from year to year.

EESL 625. Phonology for Second Language Teachers. 3 Hours.

An introduction to phonology and its application to the teaching of a second or foreign language. Students learn the phonological structure of the English language, analyze examples from language learner data, diagnose pronunciation difficulties experienced by language learners from different first languages, and identify instructional strategies for assisting language learners to perceive and produce challenging sounds.

EESL 627. Teaching Adult Language Learners. 3 Hours.

Introduces goals, principles, and practices for teaching English to adult learners, addresses the influence of varying backgrounds on adult language learning, and examines ways to evaluate adults' second language development. After learning to recognize quality components in distinct program models, as outlined by TESOL Standards for Adult Education ESL Programs, students do a critical study of community-based programs and English for Specific Purposes.

EESL 630. Methods and Materials of Teaching ESL. 3 Hours.

Examines traditional and current approaches to teaching English to speakers of other languages and curriculum materials, texts, and other resources. This course entails 40 hours of field experience working with English learners in one's own school.

EESL 637. Methods Teaching English as an International Language. 3 Hours.

Prepares students to teach English as an International Language by using methods, strategies, and techniques appropriate for adults in ESL contexts and for all learners in EFL contexts. Engaged with approaches aligned with TESOL Standards for ESL/EFL Teachers of Adults, students plan state-of-the-art curriculum, instruction and assessment for 5 program settings: adult/community, workplace, college/university, intensive English, and English as a Foreign Language.

EESL 640. Teaching New Languages Through Reading and Writing. 3 Hours.

Theory, research and practice in reading and writing for second language learners. Implications for teaching reading and writing skills that allow second language learners to participate in the full range of academic situations. This course entails 8 hours of field experiences at another school and 32 hours working with English learners in one's own school.

EESL 641. Teaching Emergent Bilingual Learners in the Early Childhood Setting. 3 Hours.

This course prepares candidates to work effectively with emergent bilingual learners in the early childhood setting. Candidates will gain context knowledge needed to design curriculum, including literacy, appropriate for emergent bilingual learners and will learn how culture and home language impacts learning additional languages.

EESL 643. Promoting Global Peace through TESOL. 3 Hours.

This course guides graduate students in understanding and facilitating the promotion of global peace within and out of the TESOL classroom through listening, speaking, reading and writing. The goal of this course is for educators to learn to use the tools of negotiation, arbitration, and mediation with an overarching focus on peacekeeping, peacemaking, and peacebuilding.

EESL 647. Instruction and Assessment: Reading and Writing. 3 Hours.

Addresses linguistic, sociocultural, psychological, and educational factors that affect literacy development of English as an additional language. Grounded in theoretical and practical aspects of teaching second language (L2) reading and writing to adolescents and adults in diverse communities, students learn to implement effective instructional strategies for promoting literacy in English as an additional language. To measure attainment of L2 reading and writing skills, students learn to design and conduct authentic assessments and to administer standardized assessments.

EESL 650. Strategies for Teaching Math and Science to ELLs. 3 Hours.

Provides knowledge and strategies for making math and science accessible to ELLs at all grade levels, K-12. Classroom teachers will learn to make accommodations for teaching ELLs within a sheltered instruction framework.

EESL 657. Instruction and Assessment: Listening and Speaking. 3 Hours.

Examines how spoken communication is structured so that it is socially appropriate and linguistically accurate. Students learn principles and best practices for the contextualized teaching of second language (L2) listening and speaking skills to adolescent and adult learners. After exploring the purposes, types, and availability of formal testing tools to assess the attainment of these skills in English as an additional language, students also learn to generate and conduct their own tests for assessing L2 listening and speaking.

EESL 660. Effective Teaching and Learning. 3 Hours.

This course prepares candidates to plan teach and assess second and foreign languages in school settings: making informed decisions about context, learners, learner differences, teaching strategies, methodologies, curricula, and assessment. This course entails 30 hours of field experience. Required for the traditional Master's in ESL.

EESL 670. Engaging Families and Communities. 3 Hours.

This course prepares professional educators to engage families and communities with the overarching idea of shared responsibility for the English learner's academic success. In this course, UAB candidates will determine what family engagement could look like over time (in school years) and through multiple levels, starting with individual engagement, the engagement of a school, and of a school system.

EESL 677. Field Studies. 1-3 Hour.

Students participate in field studies related to the teaching of English as a second or foreign language.

EESL 680. Research in ESL. 3 Hours.

Primary types of research conducted in second language teaching and learning and how these methods can be used to inform teaching. Introduction to classroom-based second language research approaches.

EESL 681. National Boards in English as a New Language. 3 Hours.

This course prepares experienced teachers for National Board Candidacy in English as a New Language (ENL). Students enrolled in this course may be either pre-candidates or candidates for National Board Certification.

EESL 687. English for Specific Purposes. 3 Hours.

This inquiry-focused course guides emerging teachers in experiencing the differentiated facets of working in adult ESL and EFL environments. Students explore English for Specific Purposes and related issues in Intensive English Programs, English for Occupational Purposes, Program Administration, and English as an International Language. Students observe classes in regional IEPs, develop an EOP program, receive hands-on experience in administration, apply research to various adult EIL teaching situations, and do an in-depth study of an EFL context.

EESL 689. Internship Seminar in ESL. 1 Hour.

Provides an opportunity to explore in-depth effective ways to deliver instruction during the internship experience. Must be taken concurrently with EESL 690.

Prerequisites: EESL 610 [Min Grade: C]

EESL 690. Internship in Second and Foreign Languages, P-12. 3 Hours.

Meets the internship requirements of the state code. Interns are engaged in the full scope of teaching activities including planning and delivering lessons, evaluating students, and conducting managerial tasks and other appropriate duties. This course entails 2 weeks of internship in an English learner summer program. Approval of internship application for the traditional master's.

EESL 691. Internship in Second and Foreign Languages. 3-9 Hours.

Meets the internship requirements of the State Code. Interns are required to engage in the full scope of teaching activities and planning and delivering lessons, evaluating students, and conducting managerial tasks and other appropriate duties. Approval of internship applications required.

EESL 697. ESL Practicum. 3 Hours.

In this practicum course, prospective ESL/EFL teachers shadow a professional ESL teacher when teaching an Academic English class. As needed, they also provide specialized support for the ESL students in that class. To enhance their professional growth, these prospective teachers share their reflections and newly-acquired competencies with the EESL 697 course instructor.

EESL 698. Teaching Apprenticeship. 3 Hours.

This required teaching apprenticeship is housed in a standards-based course that offers practical application of the knowledge and skills learned in other courses for teaching ESL. After having completed one semester of structured observations of professional ESL educators and participated in corresponding debriefings, novice teachers engage in the full scope of ESL teaching activities. They plan and deliver lessons, assess learners and their language development, and conduct managerial tasks and other appropriate duties.

Prerequisites: EESL 697 [Min Grade: C]

EESL 717. Teaching English in Global Context. 3 Hours.

This course provides a sociolinguistic perspective on the globalization of English and on the emergence and teaching of English as an International Language. Students explore dialectology, language change, language diversity, language ideology and power, national language policies, World Englishes, the growing number of non-native English speakers, and attitudes of native and non-native English speakers toward the domination of English.

EESL 737. Teaching English as an International Language. 3 Hours.

The primary purpose of this course is to guide educators in exploring the teaching of English as a second, new, or foreign language to English learners of all ages. With the goal of expanding an educator's repertoire for teaching speakers of languages other than English, this course considers the relevance of historical approaches and methods used in language teaching during the past century and reviews language methods and approaches used in today's ESL and EFL classrooms. Educators analyze selected methods and approaches in differing contexts that include English as a Second Language (ESL), English as a Foreign Language (EFL), and English as an International Language (EIL) or English as Lingua Franca (ELF).

EESL 743. Promoting Global Peace through TESOL. 3 Hours.

This course guides doctoral students in understanding and facilitating the promotion of global peace within their classroom and educational setting as well as in other settings, both locally and globally.

EESL 747. Instruction and Assessment: Reading and Writing. 3 Hours.

This course explores the linguistic, sociocultural, psychological, and educational factors that affect literacy development in English as a second or foreign language (ESL/EFL). Educators will analyze literacy-learning needs of English learners (ELs) in diverse contexts and multiple age groups and will participate in effective and engaging ways to meet those needs.

EESL 757. Instruction and Assessment: Listening and Speaking. 3 Hours.

Based on linguistic perspectives and language acquisition research from earlier in their careers, educators will use research, experience, and reflection to further inform their own teaching practice in TESOL. To that end, they will explore the complexities of linguistic, sociocultural, psychological, and educational factors that affect ELLs' aural and oral development.

EESL 763. Facilitating Intercultural Communicative Competence. 3 Hours.

This course guides doctoral students in understanding and facilitating their students' intercultural communicative competence within and out of the classroom.

EESL 780. Research in ESL/EFL. 3 Hours.

Exploration of research methods conducted in second and foreign language teaching and applications of these methods to inform teaching in the ESL and/or EFL contexts.

EGR-Engineering

EGR 500. Special Topics in (Study Away). 0-9 Hours.

Independent studies in various subject and/or service areas outside the state of Alabama or the continental United States.

EGR 510. ESL in Education. 1-6 Hour.

Course provides students an opportunity to help students in K-12 to analyze and solve problems using engineering concepts and design process to engage and excite them about engineering, science, and technology.

EGR 520. Engineers in Service and Learning in EiSAL. 0-6 Hours.

This course will allow engineering students the opportunity to communicate and live in other cultural environments allowing them to share interdisciplinary engineering design and analysis in a real-world setting. It will also allow them the opportunity to work in multi-cultural groups to solve a common problem.

EGR 540. Social Responsibility. 1 Hour.

This course provides students with an understanding of key social and economic concepts of global health that, together with an understanding of interprofessional collaboration and community partnerships, will enable them to participate in developing and implementing sustainable global health projects in collaboration with local and international community partners. The course is open to undergraduate and graduate students who are enrolled in two co-requisite courses that are requirements for students participating in the interprofessional global health service learning program at the University of Alabama at Birmingham.

EGR 541. Interprofessional Collaboration (IPC) and Community Partnerships in Global Health. 1 Hour.

This course provides students with an understanding of principles of interprofessional collaboration and community partnerships that, together with key social and economic concepts of global health, enables them to participate in developing and implementing sustainable global health projects in collaboration with local and international community partners.

EGR 542. EGR Service Learning: Interprofessional Global Health Service Learning I: Project Planning. 1 Hour.

This course provides students with an opportunity to apply principles of interprofessional collaboration, community partnerships, and global health in the development of a plan to address a global health problem in collaboration with a community partner. The course is open to undergraduate and graduate students who are enrolled in two co-requisite courses that are requirements for students participating in the global health service learning program at the University of Alabama at Birmingham.

EGR 550. Engineering Service Learning: Teaching Experiences. 1 Hour.

This course provides engineering students the opportunity to assist engineering faculty and students in a tutorial environment by serving as teaching assistants in engineering service courses.

EGR 590. Special Topics. 0-6 Hours.

Special Topics.

EGR 601. ASEM Seminar. 0 Hours.

Seminar focusing on student research and guest presentations of various topics of interest to safety and risk management engineers and personnel.

EGR 602. Methods for Engineering Practice I. 3 Hours.

First of two course sequence oriented toward introducing the student to modern methods in engineering practice including design methodologies to project management and risk analysis; mathematical and statistical methods; data analysis; reliability; fault detection and analysis; and safety analysis methods.

EGR 603. Methods for Engineering Practice II. 3 Hours.

Second of a practical two course sequence that are oriented toward introducing the student to modern methods in engineering practice including design methodologies to project management and risk analysis; mathematical and statistical methods; data analysis; reliability; fault detection and analysis; and safety analysis methods.

EGR 610. Introduction to System Safety - Prevention through Design. 3 Hours.

Best practice in any business sector requires the pursuit of a triple bottom line – protecting people, planet, and profit. This course provides an overview of system safety in general and Prevention through Design in particular and explores their efficacy in helping companies achieve a bottom line that is socially, environmentally, and financially rewarding. Topics of inquiry include the processes of hazard analysis and risk assessment, the concept of "acceptable" risk, the safety decision hierarchy of controls, safety standards (the mandatory minimum vs. the voluntary best practice), safety as a cost control strategy, and the critical elements of a comprehensive, advanced safety program. Course content is presented within the framework of real-world case studies from a variety of industry sectors, including, but not limited to, manufacturing, utilities, and health care and includes several guest lectures by leaders in the profession. Students apply course content to their own business environment. Live participation in a weekly 1.5 hour online forum is required. The EGR 610 forum is typically held on Sunday from 1:30-3:00 CDT. EGR 610 must be taken during the first semester.

EGR 611. Hazard Analysis & Waste Elimination. 3 Hours.

Hazards have the potential to cause harm to people, planet, and profits. Hazard analysis is a process that begins with the identification of a hazard and proceeds into an estimate of the severity of harm or damage that could result if the potential is realized and a hazard-related incident occurs (ASSE TR-Z790.001 – 2009). This course examines engineering techniques utilized to systematically and logically identify and analyze hazards in the workplace. These techniques include preliminary hazard list (PHL), preliminary hazard analysis (PHA), system hazard analysis (SHA), subsystem hazard analysis (SSHA) and others. Students work in teams to use these techniques to retrospectively analyze a real-world disaster. Live participation in a weekly 1.5 hour online forum is required. The EGR 611 forum is typically held on Sunday from 1:30-3:00 CDT.

Prerequisites: EGR 610 [Min Grade: C]

EGR 612. Engineering Risk. 3 Hours.

Engineering risk is defined both quantitatively and qualitatively as an estimate of the probability that a hazard-related incident will occur and of the severity of harm or damage that could result. This course provides students with tools to assess and reduce safety risks in their own company. These tools include risk assessment matrices, probabilistic risk assessment (PRA) measures, including event tree analysis, fault tree analysis, and other prevention through design concepts. The role of a structured, formalized decision analysis process in preventing serious injuries and fatalities is also explored. Students engage in a risk mitigation decision analysis project, which is specific to their company and/or business sector. Guest lecturers from diverse industries discuss their experiences in assessing and managing risk. Live participation in a weekly 1.5 hour online forum is required. The EGR 612 forum is typically held on Sunday from 1:30-3:00 CDT.

Prerequisites: EGR 610 [Min Grade: C] and EGR 611 [Min Grade: C]

EGR 613. Human Performance & Engineering Design. 3 Hours.

Companies can miss important opportunities to eliminate waste if they rely primarily on training to prevent human error. This course explores the historical perspective on human error and serious injury. The course material will provide a solid understanding of the principles of occupational biomechanics and human tolerance to injury with focus on human anthropometry and mechanical work capacity. This course also includes studies of human reliability, static analysis of systems in equilibrium and mechanical systems' design and performance. Due to the quantity of back related injuries and related lost time in the workplace, back pain and injury is studied along with the effect of vibration on the human body. Real-world case studies provide for application of the engineering hierarchy of controls: hazard elimination, hazard substitution, engineering controls, warnings, administrative behavior controls, and personal protective equipment. The course also examines the design aspects of ergonomics, the biomechanical engineering basis of injury prevention, and the long term economic consequences of seemingly minor injuries. In semester projects, students perform incident investigations using biomechanical and other data. After gathering and analyzing data to determine injury causation, they will identify and re-design error-provocative environments in their own workplaces. Live participation in a weekly 1.5 hour online forum is required. The EGR 613 forum is typically held on Sunday from 1:30-3:00 CDT.

Prerequisites: EGR 610 [Min Grade: C]

EGR 614. Engineering Ethics & Acceptable Risk. 3 Hours.

This course explores the economic, social, and political consequences of safety risk and considers provocative real world dilemmas: What is acceptable risk? Are the fundamental canons of engineering ethics contrary to the concept of acceptable risk? What is the worth of human life? Students will conduct critical reviews of corporate safety and ethics policies from market leaders in all major industries as well as their own company. Real-world case studies provide the framework for exercises in resolving conflicts of interest and avoiding the dilemma of "whistle blowing." Live participation in a weekly 1.5 hour online forum is required. The EGR 614 forum is typically held on Sunday from 3:00-4:30 CDT.

Prerequisites: EGR 610 [Min Grade: C](Can be taken Concurrently)

EGR 615. Leading through Climates of Change. 3 Hours.

All progressive companies are moving toward greater sustainability – protecting people, planet, and profits. To guide their companies through these changes and integrate safety into the priorities at the executive level, safety engineers and professionals must have strong leadership skills. This course explores engineering leadership best practices, including the eight steps of transformational leadership – creating a sense of urgency, creating a guiding coalition, developing a vision and strategies, communicating the vision, empowering broad-based action, generating short term wins, consolidating gains and anchoring the culture. Guest lecturers from diverse industries discuss their experiences in managing change in today's global business environment. Live participation in a weekly 1.5 hour online forum is required. The EGR 615 forum is typically held on Sunday from 3:00-4:30 CDT.

Prerequisites: EGR 610 [Min Grade: C]

EGR 616. Policy Issues in Prevention through Design. 3 Hours.

This course provides an overview of best practices in four major policy areas: (1) cost-benefit analysis; (2) corporate culture and the "HR Department"; (3) standards, codes, and regulations; and (4) strategic alliance development. Case studies are used to illuminate both the role of engineers and other safety professionals in shaping public policy on the local, national and international levels and the ethical challenges they encounter. The significance of an organization's corporate culture in developing and implementing advanced safety management plans is also explored. Students conduct "gap analyses" of their company's policies by comparing them to best practices and identifying unintended consequences of poor safety policy in their own business and industry sector. Students will engage in discussion board posts on contemporary policy issues and participate in exercises related to federal rulemaking. Live participation in a weekly 1.5 hour online forum is required. The EGR 616 forum is typically held on Sunday from 3:00-4:30 CDT.

Prerequisites: EGR 610 [Min Grade: C]

EGR 617. Crisis Leadership & Safety-Critical Design. 3 Hours.

Unique technical and leadership skills are required to avert or manage a crisis. This course teaches students those skills in an experiential learning environment. Case studies of real-world industrial and environmental disasters provide the framework for exploring critical human-machine interfaces; crisis communication; coping with people in recovery and developing and implementing a business continuity response. Guest lecturers from diverse backgrounds will discuss their experiences in managing crisis events. Students will engage in discussion board posts and develop a Business Impact Analysis report for their work environment or business unit. Live participation in a weekly 1.5 hour online forum is required. The EGR 617 forum is typically held on Sunday from 3:00-4:30 CDT.

Prerequisites: EGR 610 [Min Grade: C]

EGR 618. Intrapreneurship & Calculated Risk Taking. 3 Hours.

Intrapreneurs are innovative change agents inside an existing corporation -- insider entrepreneurs. This course prepares students to become and/or identify effective intrapreneurs within their own business environment. Topics include the history of intrapreneurial success inside technology-based corporations and the fundamentals of recognizing opportunity and launching a new, promising enterprise within an existing business. Students also learn to recognize and effectively manage intrapreneurial risk, including the safety readiness of technology for the market place and the corporate "immune response" to new ideas and inside innovators. Case studies of real-world intrapreneurial success and failure provide a framework for group discussion and student exercises. Live participation in a weekly 1.5 hour online forum is required. The EGR 618 forum is typically held on Sunday from 3:00-4:30 CDT.

Prerequisites: EGR 610 [Min Grade: C]

EGR 619. Capstone Project - Part I. 3 Hours.

Bringing to bear the competencies acquired through the program, students develop a proposal, outline, schedule and rough draft of a comprehensive, advanced safety engineering and management plan for their business unit/specialty area that is consistent with the ANSI/AIHA Z10-2005, Occupational Health and Safety Management Systems standard. Judicious selection of the Capstone topic and of projects throughout the ASEM curriculum allows students to build on and use earlier course products to support their Capstone report. Live participation in a quarterly 1.25 hour online forum is required. Must be taken during the penultimate or final semester.

Prerequisites: EGR 610 [Min Grade: C] and EGR 611 [Min Grade: C] and EGR 612 [Min Grade: C] and EGR 613 [Min Grade: C] and EGR 614 [Min Grade: C] and EGR 615 [Min Grade: C] and EGR 616 [Min Grade: C] and EGR 617 [Min Grade: C]

EGR 620. Capstone Project-Part 2. 3 Hours.

Students complete the development of their comprehensive, advanced safety engineering and management (ASEM) plan that was begun in EGR 619, including background information of the project, an ASEM plan (management and employee participation, planning, implementation and operation, evaluation and corrective action and management review), and rollout strategy. Students must submit completed report with detailed attachments, and orally present project highlights to the class in a live online classroom setting. Live participation in a quarterly 1.25 hour online forum is required. EGR 620 must be taken during the final semester.

Prerequisites: EGR 610 [Min Grade: C] and EGR 611 [Min Grade: C] and EGR 612 [Min Grade: C] and EGR 613 [Min Grade: C] and EGR 614 [Min Grade: C] and EGR 615 [Min Grade: C] and EGR 616 [Min Grade: C] and EGR 617 [Min Grade: C]

EGR 642. Technical Entrepreneurship. 3 Hours.**EGR 690. Special Topics. 1-4 Hour.****EGR 695. Innovation-Commercialization Project. 3 Hours.**

Through hands on activities, as well as mentorship by professional engineers and local industrial designers, the students will develop products ready for mass production.

EGR 696. Internship in Design and Commercialization. 3 Hours.

An internship is designed to provide real world experiences in a profession of interest. It enables correlation of classroom learning with application in industry; broadens understanding of the types of employment available in the field; helps students discover their individual interests; builds resume credentials for the students; and develops relationships between UAB and industry.

EGR 697. Engineering Grad Internship. 0-6 Hours.

Student works in a professional environment reflective of research interests pursuant to graduate degree.

EGR 710. Intro to Interdisciplinary EGR. 3 Hours.

Introduces current trends and cutting-edge research in areas related to engineering that require interdisciplinary approaches.

EGR 711. Methodology for IEGR Research. 3 Hours.

Presents a detailed perspective on methods of approach for interdisciplinary problems, including experimental design, laboratory experimentation, physical modeling, simulation, and analysis.

EGR 790. Special Topics. 1-4 Hour.**EGR 792. Interdisciplinary EGR Seminar. 1 Hour.**

Discussions and presentations of research involving engineering in a number of disciplines. Required for graduate students in the interdisciplinary engineering Ph.D. program.

EGR 796. Journal Club in Interdisciplinary Engineering. 1 Hour.
Journal club to discuss current research and investigations in areas of interdisciplinary engineering.

EGR 797. Interdisciplinary Engineering Internship. 1-6 Hour.
Student works in a professional environment reflective of research interests pursuant to doctoral degree.

EGR 798. Non-Dissertation Research. 0-12 Hours.
Non-Dissertation Research.

EGR 799. Dissertation Research. 0-12 Hours.
Dissertation Research.

Prerequisites: GAC Z

EH-English

EH 501. Tutoring Writing. 3 Hours.
Designed to improve writing skills through understanding theories of tutoring and to prepare future teachers for tutor training and writing center development.

EH 502. Writing in Popular Periodicals. 3 Hours.
An exploration of current theory regarding the production, distribution, and consumption of popular periodicals and practice contributing to these sources.

EH 503. Business Writing. 3 Hours.
Advanced writing concentration on letters, resumes, and professional reports.

EH 504. Technical Writing. 3 Hours.
Advanced writing concentrating on short informal and long formal reports.

EH 505. Poetry Writing Workshop. 3 Hours.
Advanced work in poetry through critique of student writing. This course may be taken twice for a maximum 6 semester hours of credit.

EH 506. Poetry Writing Workshop. 3 Hours.
Advanced work in poetry through critique of student writing. May be taken twice for credit.

EH 507. Creative Nonfiction Writing Workshop. 3 Hours.
Advanced work in creative nonfiction through critique of student writing. This course may be taken twice for a maximum 6 semester hours of credit.

EH 508. Creative Nonfiction Writing Workshop. 3 Hours.
Advanced work in creative nonfiction through critique of student writing. May be taken twice for credit.

EH 509. Fiction Writing Workshop. 3 Hours.
Advanced work in prose fiction through critique of student writing. This course may be taken twice for a maximum 6 semester hours of credit.

EH 510. Fiction Writing Workshop. 3 Hours.
Advanced work in prose fiction through critique of student writing. May be taken twice for credit.

EH 511. Novel. 3 Hours.
Techniques of prose fiction: Selections from British, American, European, and Russian Literature.

EH 512. Forms of Poetry. 3 Hours.
Songs, sonnets, elegies, odes, and dramatic monologues.

EH 513. Drama. 3 Hours.
Techniques and problems of drama, classical through contemporary.

EH 514. Modern British and European Drama. 3 Hours.
Techniques and problems of modern European drama: Ibsen, Shaw, Chekhov, Synge, Pirandello, Brecht, Beckett, and others.

EH 515. Forms of Fiction. 3 Hours.
Intensive study of one or more aspects of fiction. Includes writing and critique in a workshop setting.

EH 516. Modern American Poetry. 3 Hours.
Selections from Frost, Stein, Stevens, Pound, Eliot, Williams, Doolittle, Jeffers, Moore, McKay, Loy, Toomer, Crane, Hughes, and others.

EH 517. Creative Writing Workshop: Special Projects. 3 Hours.
Advanced work in genres other than poetry, fiction, or creative nonfiction or a special workshop taught by a visiting writer. May be taken twice for credit.

EH 518. Creative Writing Workshop: Special Projects. 3 Hours.
Advanced work in genres other than poetry, fiction, or creative nonfiction or a special workshop taught by a visiting writer. May be taken twice for credit.

EH 519. Young Adult Literature. 3 Hours.
Close reading of young adult literature; its form and history, its assumptions about adolescent psychology, and its literary relationship to the traditional canon.

EH 520. World Literature I: to 1600. 3 Hours.
Selections in translation from Greek, Roman, and Hebrew classics, other literature, and from oral tradition.

EH 521. World Literature II: 1600 to Present. 3 Hours.
Selections in translation from European, African, and South American writers.

EH 522. African Literature. 3 Hours.
Selected novels, short stories, autobiographies, folk tales, drama, essays, films, songs from pre-colonial Africa to the present, including works by Emecheta, wa Thiong o, Head, Achebe, Ba, Armah, Laye, Salih, Soyinka, and Abrahams.

EH 523. African Women's Literature. 3 Hours.
Works by African women from pre-colonial Africa to present.

EH 524. African-American Special Topics. 3 Hours.
See Class Schedule for topic. May be repeated.

EH 526. Pre-1800 Literature: Special Topics. 3 Hours.
See Class Schedule for topic. May be repeated.

EH 527. Post-1800 Literature: Special Topics. 3 Hours.
See Class Schedule for topic. May be repeated.

EH 529. Creative Writing: Special Topics. 3 Hours.
See Class Schedule for topic. May be repeated.

EH 530. Professional Writing: Special Topics. 3 Hours.
See Class Schedule for topic. May be repeated.

EH 531. Special Topics in Film. 3 Hours.
In-depth study of a specialized topic in film. The course may focus on a particular national cinema (American, Italian, Japanese, etc.); one or more directors (Welles, Hitchcock, Kubrick, etc.); a development in film history or genre (the studio system, the French New Wave, the musical, etc.); or issues in visual representation (film theory; adaptation; sexuality in film, etc.).

EH 533. Academic Writing. 3 Hours.
Introduction, for students in all disciplines, to the process of scholarly inquiry and the most common genres of academic writing, including critiques, bibliographies, proposals, conference presentations, and articles.

EH 535. Teaching Creative Writing. 3 Hours.

Examines current theory and practice in teaching creative writing, particularly in secondary schools and introductory college-level classes.

EH 536. Wkshop Writing for Young Ppl. 3 Hours.

Workshop in writing for young people through critique of student writing.

EH 537. Wkshop Writing for Young Ppl. 3 Hours.

Advanced workshop in writing for young people through critique of student writing.

EH 541. Literary Theory and Criticism I: Ancients to 19 ce. 3 Hours.

Introduction to theories of art and literary production in the contexts of aesthetics and culture from Plato to the end of the nineteenth century.

EH 542. Literary Theory and Criticism II: 20th Cent-Present. 3 Hours.

Introduction to theories of art and literary production in the contexts of aesthetics and culture from Russian formalism to the present.

EH 543. Archetype and Myth. 3 Hours.

Recurring images, underlying patterns, and shapes-of-meaning in poetry, fiction, and fairy tales.

EH 544. Women's Literature and Theory. 3 Hours.

Literary works and theoretical perspectives of Angelou, Chopin, Hong, Kingston, Hurston, Walker, Woolf, Plath, and others.

EH 546. African-American Autobiography. 3 Hours.

Personal narrative by African Americans, including texts by Wheatley, Douglas, Jacobs, Wilson, Dubois, Johnson, Hurston, Hughes, Wright, Baldwin, Angelou, and Moody. 3 hours.

EH 547. African-American Dramatic Tradition. 3 Hours.

Development of African American Dramatic Tradition from the nineteenth century through the Harlem Renaissance and Black Arts Movement to Contemporary Postmodernism, including Brown, Hurston, Baraka, and Wilson. 3 hours.

EH 548. African-American Poetry Tradition. 3 Hours.

Development of African American Poetry from its early works to the present, including Wheatley, Dunbar, Hughes, Brooks, and Angelou. 3 hours.

EH 550. Advanced Grammar. 3 Hours.

Present-day English grammar.

EH 551. Generative Grammar. 3 Hours.

Advanced analysis of English grammar with emphasis on Chomskyan generative grammar.

EH 552. Grammar and Usage for English Teachers. 3 Hours.

Intensive review of structure of English; usage, punctuation, and style as these relate to grammar.

EH 553. Advanced History of the English Language. 3 Hours.

Advanced topics.

EH 554. The Biology of Language. 3 Hours.

Vocal tract and neuroanatomical specializations for language, language acquisition, genetic language disorders, language and other primates, and evolution of language.

EH 555. Digital Publishing. 3 Hours.

Introduces students to new technologies for digital communication and the ways in which these technologies influence how people read, write, interact with, and share information.

EH 556. Visual Rhetoric. 3 Hours.

The nature of public communication is changing. Although words will never die, images have become a fast and effective medium for persuasion, and any writer who is interested in public communication must now have skills in both the analysis and production of visual rhetoric. Visual Rhetoric offers intensive studies in the rhetorical characteristics of image communication, especially as it intersects with verbal communication. Students in this course will learn strategies for incorporating persuasive images into verbal texts, thus enhancing the overall impact of any document.

EH 557. Writing and Medicine. 3 Hours.

Intensive examination of public discourse focusing on health, illness, and medical practice and production of texts as health consumers and health practitioners.

EH 559. Discourse Analysis. 3 Hours.

Intensive studies in public discourse, with particular emphasis on the social politics of linguistic choices.

EH 560. American Women Writers before 1900. 3 Hours.

Survey of American Women's Writing before 1900.

EH 561. American Literature 1620-1820. 3 Hours.

Representative American writing from colonial period to Washington Irving.

EH 562. American Literature 1820-1870. 3 Hours.

Representative writers such as Alcott, Cooper, Poe, Hawthorne, Melville, Emerson, Fuller, Fern, Harper, Thoreau, Jacobs, Whitman, Stowe, and Dickinson.

EH 563. American Literature 1870-1914. 3 Hours.

Realism and naturalism: Twain, James, Howell, Crane, Jewett, Wharton, Dreiser, Norris, and Chopin, among others.

EH 564. American Literature 1914-1945. 3 Hours.

Selected fiction, poetry, and drama of major American writers such as Eliot, Faulkner, Hemingway, Hurston, O'Neill, and Wright.

EH 565. American Literature 1945-Present. 3 Hours.

Selected fiction, poetry, and drama in context of post-war cultural trends and literary movements.

EH 566. The Slave Narrative and Its Literary Expressions. 3 Hours.

Genre of slave narrative, its critical theories, and its nineteenth- and twentieth-century literary expressions. Includes Equiano, Jacobs, Wilson, Douglass, DuBois, Wright, Angelou, and Morrison.

EH 567. Black Women Writers. 3 Hours.

Evolution of Afrocentric feminist consciousness through early and contemporary writings.

EH 568. The Harlem Renaissance. 3 Hours.

Black writers during Harlem Renaissance movement. Includes Johnson, Toomer, Murray, Larsen, McKay, Thurman, Reed, and Morrison.

EH 569. Medieval Culture: Literature and Society. 3 Hours.

Exploration through art, literature, and history of dominant themes of Middle Ages, from Germans to Dante and Chaucer.

EH 570. Arthurian Legend. 3 Hours.

King Arthur and his knights in literature from sixth-century history and formulation of legend in Middle Ages to its use in twentieth century.

EH 571. Beowulf in Context. 3 Hours.

An interdisciplinary course in Anglo-Saxon art and culture bearing upon Beowulf, close study of the Norse analogues of the Old English epic. 3 hours.

EH 573. Chaucer: Pilgrimage to Canterbury. 3 Hours.

Selections from Canterbury Tales and Chaucer's fourteenth-century milieu.

EH 574. English Renaissance Drama(Excluding Shakespeare). 3 Hours.

Plays by Marlowe, Kyd, Jonson, Tourneur, Webster, Middleton, and Ford.

EH 575. English Renaissance Poetry and Prose. 3 Hours.

Topics vary. Broad survey of period or close analysis of genre, theme, or author.

EH 576. Shakespeare. 3 Hours.

King Lear, Othello, and three other plays. Required for English majors.

EH 578. Milton. 3 Hours.

Selected prose and poetry, including Paradise Lost. 3 hours.

EH 580. The Restoration. 3 Hours.

Dryden, Butler, Rochester, Marvell, Bunyan, Congreve, Wycherley, and Ethere.

EH 581. The Eighteenth Century: Literature and Culture. 3 Hours.

Interdisciplinary exploration of texts that focuses on social, economic, and political backgrounds. Topics and authors vary.

EH 582. The Eighteenth Century: Theory and Interpretation. 3 Hours.

Formal and philosophical implications of selected texts. Authors and topics vary.

EH 583. British Romanticism. 3 Hours.

Blake, Wordsworth, Coleridge, Byron, Shelley, Keats, Hazlitt, Lamb, and DeQuincy.

EH 585. British Victorian Poetry. 3 Hours.

Tennyson, Browning, Arnold, and others.

EH 586. Eighteenth Century British Novel. 3 Hours.

Fielding, Defoe, Sterne, Smollet, and Richardson.

EH 587. Nineteenth Century British Novel. 3 Hours.

Austen, Dickens, Thackeray, Bronte, Trollope, and Eliot.

EH 588. British Novel: The Modern Age. 3 Hours.

Conrad, Lawrence, Joyce, Woolf, Ford, and others. 3 hours.

EH 589. James Joyce. 3 Hours.

Study of James Joyce's fiction through Ulysses.

EH 591. Major Writers. 3 Hours.

See class schedule for topic. May be repeated.

EH 592. Special Topics. 3 Hours.

See class schedule for topic. May be repeated for total of 9 hours.

EH 593. Special Topics in Linguistics. 3 Hours.

See course schedule for topic.

Prerequisites: EH 250 [Min Grade: C] or EH 251 [Min Grade: C]

EH 597. Individual Studies(Non-Thesis Option). 1-3 Hour.

Non-Thesis Research. See Graduate Director for procedure to apply for this course.

EH 599. Film Thesis. 3 Hours.

Thesis on an independently designed topic within film history or film aesthetics, allowing the completion of the interdisciplinary film minor.

Prerequisites: EH 210 [Min Grade: C]

EH 600. Seminar: Engineering Communication. 3 Hours.

Strengthens engineering students understanding of and application of effective communication practices in the workplace. Subjects covered included techniques of audience analysis; production of problem/solution formats; analysis and creation of reports, journal articles, and proposals; and presentation of ideas in written and oral formats.

EH 601. Seminar: Classical Rhetorical Theory. 3 Hours.

Review of Rhetoric from Classical period through Renaissance with emphasis on the works of Plato and Aristotle.

EH 602. Seminar: Modern Rhetorical Theory. 3 Hours.

Advanced studies in twentieth-century theories of rhetoric; themes include Marxism, feminism, philosophy, semantics, and ideology.

EH 603. Seminar: Literacy in Communities. 3 Hours.

Examines the theory and practice of literacy instruction in varied cultural contexts.

EH 604. Research Methods in Composition and Rhetoric. 3 Hours.

Examination of traditional and current methods of research in composition and rhetoric with practice designing and implementing research tied to students interests.

EH 605. Introduction to Graduate Studies in English. 1 Hour.

An introduction to the UAB Graduate Program in English and to the discipline of English. Topics covered will include the discussion of the role of graduate students and graduate assistants, effective use of the university libraries, responsible conduct of research, genres of scholarly publication, conferences and professional societies, the academic job market, etc.

EH 611. Teach Intern in Creative writi. 3 Hours.

Off-campus teaching positions in creative writing in conjunction with elementary, middle, secondary, and community schools or groups. Students should contact the Director of Creative Writing for listings of available positions and application procedures. The Director of Creative Writing in conjunction with the English Department's Graduate Program Committee will determine who will be approved for a teaching internship. Requires admission to the Graduate Program in English, EH 535, and 6 hours of creative writing workshops at the 500 or 600 level.

EH 615. Graduate Poetry Writing Workshop. 3 Hours.

Extensive work in poetry resulting in a manuscript of publishable quality.

EH 617. Graduate Creative Nonfiction Writing Workshop. 3 Hours.

Extensive work in creative nonfiction resulting in a manuscript of publishable quality.

EH 619. Graduate Fiction Writing Workshop. 3 Hours.

Extensive work in fiction resulting in a manuscript of publishable quality.

EH 644. Practicum in Teaching Lit.. 3 Hours.

This course focuses on the methods and pedagogical philosophy of teaching English and American literature at the early post-secondary level. Required admission to the MA program in English or registration as a non-degree graduate student.

EH 645. Seminar: Bibliography and Methods of Research. 3 Hours.

Emphasis on how materials in Sterne Library may be used effectively. Includes computer searching, listserv, and the internet. Field trips to special collections.

EH 646. Seminar: Practicum in Teaching Writing. 3 Hours.

Theory and practice of teaching writing at the postsecondary level.

EH 647. Practicum in Tutoring Seminar. 1 Hour.

English grammar review and effective tutoring strategies. Prerequisites: students must have been awarded an assistantship and be scheduled to tutor in the Writing Center. 1 hour.

EH 655. Seminar: History of the English Language. 3 Hours.**EH 677. Seminar: Shakespeare: The Body Gender and Sexuality. 3 Hours.**

Investigates languages of the body, sexuality, and gender in seven plays, as well as historical materials and current criticism and theories of the body.

EH 690. Major Writers Seminar. 3 Hours.

See class schedule for announcement of subjects. May be repeated for total of 9 hours credit if focus is on different subjects.

EH 691. Special Topics Seminar in Rhetoric and Composition. 3 Hours.

See class schedule for announcement of subjects. May be repeated for total of 9 hours credit if focus is on different subjects.

EH 693. Special Topics Seminar. 3,6 Hours.

See class schedule for announcement of subjects. May be repeated for total of 9 hours credit if focus is on different subjects.

EH 697. 30-Books Semester. 3 Hours.

The English Graduate Program, Plan II, requires that students prepare a reading list of 30 books, spend a semester reading & studying those books, and then sitting for both written and oral exams. The principal objective of EH 697 is to allow students time to work with their individual mentors to complete this exercise.

EH 698. Directed Studies Seminar. 1-6 Hour.

See departmental description of the M.A. program for special restrictions on this course. Prerequisite: Permission of Associate Chair. 1-3 hours.

EH 699. Thesis Research. 1-6 Hour.

Prerequisites: GAC M

EHS-High School Education

EHS 530. Practicum. 1-2 Hour.

Field experience in school-based setting. Admission to Alternative Master's Program required.

Prerequisites: EDU 500 [Min Grade: C](Can be taken Concurrently)

EHS 535. Methods I Mathematics 6-12. 3 Hours.

Introduction to teaching mathematics in secondary school settings. Developing basic skills in planning, instruction, and assessment. Supervision fee.

EHS 536. Methods I: English Language Arts, 6-12. 3 Hours.

Introduction to teaching English language arts in secondary school settings. Developing basic skills in planning, instruction, and assessment. Field supervision fee.

EHS 537. Methods I: Science, 6-12. 3 Hours.

Introduction to teaching science in secondary school settings. Developing basic skills in planning, instruction, and assessment. Admission to Alternative Master's Program required. Field supervision fee.

EHS 538. Methods I: Social Science, 6-12. 3 Hours.

Introduction to teaching the social sciences in secondary school settings. Developing basic skills in planning, instruction, and assessment. Supervision fee.

EHS 539. Methods I: World Languages. 3 Hours.

Introduction to teaching world languages in school settings. Developing basic skills in planning, instruction, and assessment. Admission to Alternative Master's Program required. Supervision fee.

Prerequisites: EDU 500 [Min Grade: C]

EHS 556. Classroom Mgt in Sec Schools. 3 Hours.

Designed to help teachers build their own personal system of discipline, consonant with their philosophies and personalities as well as with realities of students and schools. Emphasis on successful classroom management techniques.

EHS 558. Science Technology and Society. 3 Hours.

Explores nature of momentous changes: origin, current status, and future direction. Emphasis on role of educational community in helping young people to better understand and deal with various issues raised.

EHS 565. Methods II: Mathematics, 6-12. 3 Hours.

Preparation to plan, teach and assess mathematics in secondary school settings: making informed decisions about context, learners, learner differences, teaching strategies, methodologies, curricula, and assessment.

Prerequisites: EHS 535 [Min Grade: C]

EHS 566. Methods II: English Language Arts, 6-12. 3 Hours.

Preparation to plan, teach and assess English language arts in secondary school settings: making informed decisions about context, learners, learner differences, teaching strategies, methodologies, curricula, and assessment.

Prerequisites: EHS 536 [Min Grade: C]

EHS 567. Methods II: Science, 6-12. 3 Hours.

Preparation to plan, teach and assess science in secondary school settings: making informed decisions about context, learners, learner differences, teaching strategies, methodologies, curricula, and assessment.

Prerequisites: EHS 537 [Min Grade: C]

EHS 568. Methods II: Social Science, 6-12. 3 Hours.

Preparation to plan, teach and assess social science in secondary school settings: making informed decisions about context, learners, learner differences, teaching strategies, methodologies, curricula, and assessment.

Prerequisites: EHS 538 [Min Grade: C]

EHS 569. Methods II: World Languages. 3 Hours.

Preparation to plan, teach and assess world languages in school settings: making informed decisions about context, learners, learner differences, teaching strategies, methodologies, curricula, and assessment.

Prerequisites: EHS 539 [Min Grade: C]

EHS 570. Practicum II. 1 Hour.

Field experience in school-based setting.

EHS 571. Special Education Accommodation/Modification Lab. 1 Hour.

Problems and issues in special education and the regular classroom.

EHS 597. Special Problems in Education. 3 Hours.

Seminar for graduate students; readings and research projects based on special interests. May be repeated for total of 6 hours. Field Supervision Fee.

EHS 599. Field Studies in (Selected Educational Settings). 1-3 Hour.

Field visits to locations of high educational impact, preceded by organized group meetings to develop background and concepts on which visits will be based; summation meetings follow visits. Individual projects and papers prescribed as appropriate. Credit determined by complexity of area or topic under study and necessary length of time rather than by distance involved. Cost for travel and other related arrangements to be announced for each study group.

EHS 600. Secondary Education Curriculum and Methods I. 3 Hours.

Introductory course in Alternative Masters Program for secondary school education. Developing basic teaching skills and understanding of interdependence among all levels within school and community. Course requires 40 hours of field experiences beyond class meetings.

EHS 611. Advanced Methods: World Languages. 3 Hours.

Advanced methods for teaching world languages. Includes curriculum development, classroom interaction, pedagogical activities, technology applications, source materials, current research, society issues, and cognitive development of students. Current classroom teaching required.

EHS 612. Advanced Methods: English Language Arts, 6-14. 3 Hours.

Advanced methods for teaching English language arts in grades 6-14. Includes curriculum development, classroom interaction, pedagogical activities, technology applications, source materials, current research, society issues, and cognitive development of students. Current classroom teaching required.

EHS 614. Advanced Methods: Social Sciences, 6-14. 3 Hours.

Advanced methods for teaching the social sciences in grades 6-14. Includes curriculum development, classroom interaction, pedagogical activities, technology applications, source materials, current research, society issues, and cognitive development of students. Current classroom teaching required.

EHS 615. Advanced Methods: Science, 6-14. 3 Hours.

Advanced methods for teaching science in grades 6-14. Includes curriculum development, classroom interaction, pedagogical activities, technology applications, source materials, current research, society issues, and cognitive development of students. Current classroom teaching required.

EHS 616. Advanced Methods: Mathematics, 6-14. 3 Hours.

Advanced methods for teaching mathematics in grades 6-14. Includes curriculum development, classroom interaction, pedagogical activities, technology applications, source materials, current research, society issues, and cognitive development of students. Current classroom teaching required.

Prerequisites: EHS 565 [Min Grade: C]

EHS 644. Workshop in Teaching. 3 Hours.

Prerequisite: Permission of instructor.

EHS 645. Inquiry in the Social Studies. 3 Hours.

Inquiry and discovery techniques through use of simulation, games, role playing, and other group activities. Social studies projects, programs, and materials.

EHS 647. Secondary School Programs. 3 Hours.

Innovations, programs, and classroom practices; forces leading to recent trends.

EHS 650. Teaching the Emerging Adolescent. 3 Hours.

Curriculum, materials, and methods of instruction reflecting needs and characteristics of age group.

EHS 651. Innovative Practices in Teaching in Secondary School. 3 Hours.

Innovative practices in planning, instructing, and evaluating high school area studies. May be repeated if taken in different areas of study.

EHS 653. Current Issues in Secondary Education. 3 Hours.

Critical problems affecting teacher and curriculum in grades 6-14.

EHS 680. National Board Seminar for Secondary Education. 3 Hours.

Course involves 18 Saturday seminars during the school year to prepare teachers for National Board Candidacy and to support candidates as they go through the certification process. Students enrolled in this course may be either pre-candidates or candidates for National Board Certification.

EHS 681. Special Topics in Education. 1-6 Hour.

Prerequisite: Permission of instructor.

EHS 690. Intern Seminar in Sec Edu. 1-3 Hour.

Observation and teaching in secondary school (15 weeks minimum). Includes attendance at several seminars on campus. Unconditional acceptance in Alternative Master's Program and approval of application for internship required.

EHS 691. Secondary School Internship. 3-9 Hours.

Observation and teaching in secondary school (15 weeks minimum). Includes attendance at a weekly seminar on campus. Prerequisites: Unconditional acceptance in 5th-Year Program and approval of application for internship.

EHS 692. Field Studies (Selected Educational Settings). 1-3 Hour.

Field Studies.

EHS 693. Advanced Field Experience. 3 Hours.

Field Studies.

EHS 695. Secondary School Internship Speech Comm/Theatre. 6 Hours.

Observation and teaching in secondary school (10 weeks or 300 clock hours minimum). Students also attend minimum of five 3-hour seminars designed to meet specific needs. Prerequisites: Unconditional acceptance in 5th-Year Program, completion of graduate methods course 9 hours in certification area, at least 9 hours in professional in addition to methods course, and approval of application for internship.

EHS 697. Individual Readings in Education. 1-3 Hour.

May be repeated for total of 6 hours. Prerequisite: Permission of advisor and instructor.

EHS 698. Individual Research in Education. 1-6 Hour.

Research Prerequisite: Permission of instructor.

EHS 699. Thesis Research. 6-9 Hours.

Thesis Research. Prerequisites: Admission to candidacy and permission of instructor.

Prerequisites: GAC M

EHS 710. Creative Teaching in Secondary School. 1-3 Hour.

Advanced methods and materials for teaching grades.

EHS 720. Individual Research in Education. 3-6 Hours.

Research Prerequisites: Master's degree and permission of instructor.

ELE-Elementary Education

ELE 620. Teaching Mathematics in Elementary School. 3 Hours.

Issues and approaches in elementary mathematics; research and implementation for instruction.

Prerequisites: EEC 600 [Min Grade: C] and EEC 660 [Min Grade: C]

ELE 621. Teaching Language Arts in Elementary School. 3 Hours.

Issues and approaches in teaching elementary school language arts. Implications of research for instruction.

Prerequisites: EEC 600 [Min Grade: C] and EEC 660 [Min Grade: C]

ELE 622. Teaching Social Studies in Elementary School. 3 Hours.

Function and organization of social studies programs in elementary schools. Selection and adaptation of content, resources, teaching materials, and strategies and methods. Emphasis on current trends.

Prerequisites: EEC 600 [Min Grade: C] and EEC 660 [Min Grade: C]

ELE 623. Teaching Science in Elementary School. 3 Hours.

Issues and approaches in elementary science. Implications of research for instruction.

Prerequisites: EEC 600 [Min Grade: C] and EEC 660 [Min Grade: C]

ELE 624. The Elementary School. 3 Hours.

Organizational patterns in American elementary schools.

ELE 690. Practicum in Elementary Education. 3-6 Hours.

Practicum Prerequisite: Permission of instructor.

ELE 691. Internship in Elementary Education. 3-9 Hours.

Full-time internship as elementary education teacher for 10 weeks (300 clock hours). Responsibility as teacher for at least 10 days. 3 or 9 hours.

ELE 692. Practicum Supervision in ELE. 2 Hours.

Supervision of practicum students.

ELE 721. Developing Effective Instruction in Elementary Sch. 3 Hours.

Leadership role of senior teachers; analysis and enhancement of instructional programs; development of teaching staff. Prerequisite: Master's degree.

EMS-Middle School Education

EMS 590. Middle School Internship. 3 Hours.

Observation and teaching in middle school (10 weeks or 300 hours minimum). Students will attend a minimum of five 3-hour seminars designed to meet specific needs. Prerequisites: Unconditional acceptance in the 5th-Year Program and completion of graduate methods course, 9 hours in academic work, and at least 9 hours in professional courses in addition to the methods course.

EMS 616. Advanced Methods – Middle Grades Mathematics. 3 Hours.

Advanced methods for teaching mathematics in grades 6-8. Includes curriculum development, classroom interaction, pedagogical activities, technology applications, source materials, current research, society issues, and cognitive development of students. Current classroom teaching required.

EMS 648. The Middle School. 3 Hours.

Curriculum and principles in middle school education. Development of middle school from early junior high school movement. Examination of middle school programs and activities.

EMS 649. Studies in Middle School Education I II III. 1-3 Hour.

Advanced workshops in various phases of middle school program. Phase I foundations (history, growth and development, philosophy); Phase II, curriculum; and Phase III, instruction.

EMS 698. Individual Research in Education. 1-6 Hour.

Research in Education. Prerequisite: Permission of instructor.

ENH-Environmental Health

ENH 600. Fundamentals of Environmental Health Science. 3 Hours.

We live inextricably with our surroundings, including both the natural and built environments. And in these surroundings both natural and man-made components can impact how we live because they impact our health and our safety. This course will critically examine major factors found around us in our everyday lives and investigate how human health is impacted. Regulatory controls, risk, and preparedness will be discussed with respect to decreasing the negative environmental impacts on public health. Prerequisite: Admission into an MPH program, School of Public Health or special permission from the course director.

ENH 600Q. Fundamentals of Environmental Health Science Online. 3 Hours.

This online lecture course will examine the sources, exposure routes, regulation and health outcomes associated with biological, chemical, and physical agents in the environment, both naturally occurring and man-made. We will examine these agents and how they impact air, water and food quality to cause disease. Regulatory agencies, risk assessment and disaster response and preparedness will be discussed.

ENH 601. Environmental Chemistry. 3 Hours.

The course examines the chemical processes that are responsible for the natural characteristics of the environment (air, water and soil) as well as those impacted by man-made activities. The overall objective is to introduce basic chemistry principles, apply them to understand atmospheric, water and soil environmental systems, and study the fate and impacts of ubiquitous chemical species introduced by man-made activities. The course is structured to analyze the following thematic domains: i) aquatic chemistry and microbial chemistry; ii) atmospheric chemistry; iii) water chemistry; iv) soil chemistry; v) wastes chemistry and (vi) special long-lasting and emerging environmental chemistry issues including climate change, carbon cycling, water quality and resource management, ozone hole, wastes management and recycling.

ENH 602. Environmental Management. 3 Hours.

Comprehensive introduction to environmental management, with emphasis on environmental health issues. Cases from both U.S. and international settings. Key topics include air and water contamination, hazardous materials, ozone depletion, climate change, risk perception, risk management, environmental communication, environmental regulation, and recent strategies for environmental management.

ENH 603. Management of Occupational Health and Safety Program. 3 Hours.

Provides an overview of management principles as they relate to occupational safety and industrial hygiene, emphasizing the development of the "soft" skills. It provides management training as well as communication techniques for illustrating and justifying changes that are technically sound. The course will review theoretical and practical principles of managing safety and industrial hygiene programs. Real world examples are used to support management theories.

ENH 605. Remote Sensing and Public Hlth. 3 Hours.

Observing global patterns via satellites can help with research endeavors, this course will focus on the applications of remote sensing to both health and the social sciences. Hands on experience using satellite remote sensing will enrich the experience. This course will give students the chance to learn about a wide range of remote sensing applications in both classrooms and lab settings. The course will progress from basic remote sensing analysis techniques to the point where the students are responsible for their own research projects.

ENH 608. Real World Remote Sensing. 3 Hours.

This course will give students the chance to learn about a wide range of advanced remote sensing applications in both classroom and lab settings. This course will start out with an overview of article publication preparation and the importance of combining GIS and remote sensing data. This course will progress to students learning GIS applications and analytical techniques and how to input their remote sensing data into their own GIS for additional analysis.

ENH 609. Field Studies in Jamaica. 3 Hours.

This intensive summer course is held in Jamaica and is an overview of infectious disease surveillance and control with an emphasis on practical public health field experience.

ENH 609Q. Climate Change and Global Health Online. 3 Hours.

Climate change is an exceptional global environmental crisis primarily driven by anthropogenic activities with adverse consequences on ecological and life systems. This course will provide students an overview of the driving forces and mechanics of climate change and a comprehensive analysis of the implications on Earth's natural/human ecosystems and health in a local, regional and global scale. The concepts, approaches and uncertainties of methods applied to assess and monitor the health impacts of climate change will be presented and specific disease cases will be discussed. Lastly, ongoing efforts to cope/adapt, mitigate or reduce the impacts and the mechanisms to develop these tools will be examined.

ENH 610. Environmental Disasters. 3 Hours.

Examines the worldwide problem of toxic disasters, particularly those involving invisible agents (chemicals, infectious disease agents, radiation). Theory, case studies, field experience, and current scientific research are reviewed, and the public health, environmental, human services and public policy implications of toxic disasters are discussed.

ENH 610Q. Environmental Disasters Online. 3 Hours.

Examines the worldwide problem of toxic disasters, particularly those involving invisible agents (chemicals, infectious disease agents, radiation). Theory, case studies, field experience, and current scientific research are reviewed, and the public health, environmental, human services and public policy implications of toxic disasters are discussed.

ENH 611. Environmental & Occupational Exposure Assessment. 3 Hours.

This course is intended to develop an understanding and appreciation of environmental exposure assessment and its role in providing the tools and information for toxicology, epidemiology, and risk management. The course material introduces the general concepts of first recognizing environmental exposures to chemicals in human populations, and then using sampling techniques to assess exposures. This is a designated service learning course.

ENH 611Q. Environmental & Occupational Exposure Assessment Online. 3 Hours.

This course is intended to develop an understanding and appreciation of environmental exposure assessment and its role in providing the tools and information for toxicology, epidemiology, and risk management. The course material introduces the general concepts of first recognizing environmental exposures to chemicals in human populations, and then using sampling techniques to assess exposures.

ENH 612. Assessing & Managing Environmental Risks. 3 Hours.

The purpose of this course is to provide students with an overview of environmental policy, with a focus on demonstrating how toxicology and exposure measurements are used in environmental risk assessment and management. Students are presented with the basic elements of a quantitative risk assessment including hazard identification, exposure assessment, dose-response assessment, and risk characterization. This course is designed to instill critical thinking regarding the often conflicting economic, social, and environmental tradeoffs inherent in environmental policy and management.

Prerequisites: ENH 650 [Min Grade: C](Can be taken Concurrently) or ENH 650Q [Min Grade: C](Can be taken Concurrently)

ENH 612Q. Assessing & Managing Environmental Risks Online. 3 Hours.

The purpose of this course is to provide students with an overview of environmental policy, with a focus on demonstrating how toxicology and exposure measurements are used in environmental risk assessment and management. Students are presented with the basic elements of a quantitative risk assessment including hazard identification, exposure assessment, dose-response assessment, and risk characterization. This course is designed to instill critical thinking regarding the often conflicting economic, social, and environmental tradeoffs inherent in environmental policy and management.

Prerequisites: ENH 650 [Min Grade: C](Can be taken Concurrently) or ENH 650Q [Min Grade: C](Can be taken Concurrently)

ENH 615. Environmental Justice and Ethics. 3 Hours.

This course will critically examine one of the fastest growing social movements in the United States, the movement for environmental justice, and will explore the relationships among environmentalism and ethics. We will discuss the ethical considerations underlying the placement of hazardous waste sites and toxic industries in poor communities and communities of color, as well as the economic and social issues that resulted from these actions. The course will also focus on Native American communities in the west, colonialism and global justice/human rights.

ENH 621. Fundamentals of Industrial Hygiene. 3 Hours.

Chemical, physical and other hazards and stresses found in the work environment. Recognizing potential hazards by understanding industrial processes, toxicity of environmental contaminants and occupational disease processes. Study design and preparation for field evaluation, conduct of industrial hygiene surveys, and interpretation of survey results.

ENH 621Q. Fundamentals of Industrial Hygiene Online. 3 Hours.

This course introduces students to the fundamental concepts of industrial hygiene. It provides for other members of an occupational and environmental safety and health team (nurses, physicians, risk managers, loss control, human resource managers and safety engineers) an understanding of the procedures used for anticipating, recognizing, evaluating and controlling hazards found in the work environment. It also serves as a base for future course work in the field of occupational hygiene and environmental health.

ENH 622. Industrial Hygiene Applications for Hazardous Substances. 3 Hours.

This course covers industrial hygiene aspects of hazardous waste operations, and the regulatory aspects of those operations. Students will gain knowledge of the OSHA and EPA regulations related to health and safety issues and will learn about personal safety equipment and techniques, administrative controls, and hazardous waste sampling.

Prerequisites: ENH 621 [Min Grade: C].

Prerequisites: ENH 621 [Min Grade: C](Can be taken Concurrently)

ENH 624. Control of Occupational Hazards. 2 Hours.

Importance of engineering controls in reducing occupational health hazards. Substitution of less toxic substances, modification of work processes, and design of local exhaust ventilation systems; proper selections and use of personal protective equipment, especially respirators, also considered.

ENH 624Q. Control of Occupational Hazards Online. 2 Hours.

This course covers the third aspect of the industrial hygiene process of recognition, evaluation and control. You must have an understanding of the basic principles of industrial hygiene before taking this course.

ENH 625. Industrial Hygiene Case Studies. 2 Hours.

Integrates students' basic knowledge through consideration of real work-place situations. Step-by-Step analysis of case reports covering occupational health problems in representative industrial situations. Sequential presentation of overview of working conditions, survey strategies, interpretation of results, and recommendations.

ENH 626. Physical Agents. 2 Hours.

Sources, effects, and control of occupational and environmental noise, ionizing and non-ionizing radiation, and temperature extremes. Review of exposure standards and introduction of measurement equipment and techniques.

ENH 630. Environmental Hygiene in Developing Countries. 3 Hours.

Environmental hygiene and health problems involving poverty and poor sanitation. History of the sanitation movement in western and northern hemispheres; programs aimed at control of diseases.

ENH 635Q. Foodborne and Waterborne Diseases: Causes and Prevention Online. 3 Hours.

This is a fully online course focusing on foodborne and waterborne diseases designed for public health students and others interested in the safety of food and water as essential elements for the public's health. It provides a broad overview of the major foodborne and waterborne diseases. The course describes how information from surveillance is used to improve public health policy and practice in ways that contribute to the safety of our food and water. We focus on the pathogens responsible for food- and water-transmitted diseases, discussing the diseases they cause, their prevalence and relevance to public health in developed and developing nations; disease pathogenesis and clinical manifestations; reservoirs, modes of transmission, and strategies for detection and prevention. We cover the transport, survival, and fate of pathogens in the environment, the concept of indicator organisms as surrogates for pathogens, the removal and inactivation of pathogens and indicators by water and wastewater treatment processes. Chemical contaminants in food and water will be studied, including the health effects of pharmaceuticals and personal care products that remain in treated water, environmental toxins, and the direct chemical treatment of foods.

ENH 636. Evolutionary Medicine. 3 Hours.

This course explores the relatively recent and rapidly expanding field of evolutionary or Darwinian medicine, which takes an evolutionary approach to issues related to human health and disease, i.e., a synthesis of evolution and health sciences. The course is designed as a broad overview of a number of topics, including infectious diseases and the arms race between pathogen and host, genetic diseases, aging, nutrition, cancer, reproduction and development, and behavioral and mental disorders. Preq: Permission of instructor is required.

ENH 648. Global Perspectives/Disease Prevention and Control. 6 Hours.

Known as the Summer Institute, this intensive summer course seeks to train academicians, students and public health practitioners in the principles of modern public health practice. The goals are for students to obtain disciplinary expertise in the prevention and control of tuberculosis, HIV/AIDS/STD's and common chronic diseases in an international setting, enhance their knowledge base in public policy development and to build skills in applied epidemiology and biostatistics. NOTE: Students must be accepted via a special Sparkman Center coordinated application process and payment of fee.

ENH 649. Global Perspectives/Disease Prevention and Control. 6 Hours.

Known as the Summer Institute, This intensive summer course seeks to train academicians, students and public health practitioners in the principles of modern public health practice. The goals are for students to obtain disciplinary expertise in the prevention and control of tuberculosis, HIV/AIDS/STD's and common chronic diseases in an international setting, enhance their knowledge base in public policy development and to build skills in applied epidemiology and biostatistics. NOTE: Students must be accepted via a special Sparkman Center coordinated application process and payment of fees.

ENH 650. Essentials of Environmental and Occupational Toxicology and Diseases. 3 Hours.

Serves as introductory graduate level course that focuses on multiple aspects of toxicology and disease processes associated with environmental and occupational exposures. Students learn basic terminology and concepts of environmental and occupational toxicology as well as occupational and environmental disease recognition, management and prevention. Emphasis is on scientific foundations rather than on addressing topical issues. The general course orientation is towards basic principles, organ system physiology, diseases and prevention. This is a designated service learning course.

ENH 650Q. Environmental and Occupational Toxicology and Diseases Online. 3 Hours.

Serves as introductory graduate level course that focuses on multiple aspects of toxicology and disease processes associated with environmental and occupational exposures. Students learn basic terminology and concepts of environmental and occupational toxicology as well as occupational and environmental disease recognition, management and prevention. Emphasis is on scientific foundations rather than on addressing topical issues. The general course orientation is towards basic principles, organ system physiology, diseases and prevention.

ENH 651. Risk Assessment of Environmental Hazards. 3 Hours.

Biochemical mechanisms, use of computers to attain toxicity information and preparation of health hazard assessments.

ENH 660. Fundamentals of Air and Water Pollution. 3 Hours.

The course is an integrated introduction to air and water pollution, including its sources, transport and effects. The course focuses on the measurement and characterization of air pollutants and the assessment of water quality. Emphasis will also be given to the regulatory control of pollutants and to the technical aspects of engineering controls. The potential impact of air pollutants on the climate change will also be emphasized.

ENH 660Q. Fundamentals of Air and Water Pollution. 3 Hours.

The course is an integrated introduction to air and water pollution, including its sources, transport and effects. The course focuses on the measurement and characterization of air pollutants and the assessment of water quality. Emphasis will also be given to the regulatory control of pollutants and to the technical aspects of engineering controls. The potential impact of air pollutants on the climate change will also be emphasized.

ENH 661L. Environmental Sampling and Analysis Laboratory. 3 Hours.

This course is designed to provide the students with a thorough understanding of the principles and practice of air and water sampling and familiarize them with the analytical methods used for air and water pollutant analysis. The course will focus on contaminant gases, vapors, suspended particulate material and dissolved chemicals in water. A basic understanding of chemistry and physics is a prerequisite.

ENH 661Q. Environmental Sampling & Analysis Lab Online. 2 Hours.

This course is designed to provide the students with a thorough understanding of the principles and practice of air and water sampling. The course will focus on contaminant gases, vapors, suspended particulate material and dissolved chemicals in water. A basic understanding of chemistry and physics are prerequisites. Working professionals taking the online version of the MPH in Occupational Health & Safety track will not be required to participate in the lectures and laboratory exercises described in the syllabus of the course. However, slides with lecture commentary will be provided to the students and they will have to submit responses to the quizzes and homework assignments. Prerequisite: Admission to the MPH, MSPH or PhD programs in the Department of Environmental Health Sciences, School of Public Health, or special permission from the course director. A basic understanding of chemistry and physics is prerequisite. Registration in ENH 611 Environmental and Occupational Exposure, highly recommended.

ENH 662. Air Sampling and Analysis Lab. 1 Hour.

Air sampling analysis lab.

ENH 670. Fundamentals of Occupational Safety. 3 Hours.

Basic principles of safety and loss control; emphasis on prevention of losses of people, property, and products in the work place. Developing competence in human-factors engineering, fire prevention, physical and behavioral science, product safety, and science of accident prevention. This course is only offered only.

ENH 670Q. Fundamentals of Occupational Safety Online. 3 Hours.

This course will provide students with the basic knowledge in Occupational Health and Safety practice, as would be required of professionals seeking the ASP (Associate Safety Professional) certification in advance of the CSP (Certified). This course will provide an overview of common safety and health problems, programs and requirements, including, but not limited to ergonomics and safety, biomechanics, anthropometry, human error, safety and health programs, hazard avoidance, environmental hazards, and human factors.

ENH 680. Interdisciplinary Field Studies. 1 Hour.

In this course, students will be organized into interdisciplinary teams to include at least one representative of each occupational safety and health academic discipline and participate in team building activities to facilitate group interactions for the interdisciplinary course ENH 681 in the spring. Students will be exposed to basic concepts of occupational hygiene, learn to recognize different types of hazards (i.e. chemical, biological, physical agents) in the workplace and their health outcomes, conduct a walkthrough survey of an occupational setting, attend OHS seminars and meetings, work collaboratively with other OHS students and professionals on projects, and learn how collaborations with other health professionals with complementary skills can help them achieve a comprehensive occupational health and safety goal. Students enrolled in this course must be admitted to one of the academic programs of the Deep South Education and Research Center. This class is a requirement for all NIOSH trainees.

ENH 680Q. Interdisciplinary Field Studies Online. 1 Hour.

In this course, students will be organized into interdisciplinary teams to include at least one representative of each occupational safety and health academic discipline and participate in team building activities to facilitate group interactions for the interdisciplinary course ENH 681 in the spring. Students will be exposed to basic concepts of occupational hygiene, learn to recognize different types of hazards (i.e. chemical, biological, physical agents) in the workplace and their health outcomes, conduct a walkthrough survey of an occupational setting, attend OHS seminars and meetings, work collaboratively with other OHS students and professionals on projects, and learn how collaborations with other health professionals with complementary skills can help them achieve a comprehensive occupational health and safety goal. Students enrolled in this course must be admitted to one of the academic programs of the Deep South Education and Research Center. This class is a requirement for all NIOSH trainees.

ENH 681. Interdisciplinary Worksite Evaluations. 2 Hours.

To assist students in developing critical thinking and analytical skills, provide them with experience in applying discipline-specific knowledge in a broad occupational health and safety context, and provide experience in working in interdisciplinary teams. The course consists of an overview of survey methodology and information sources, with emphasis on job safety analysis, a review of the occupational site or process to be evaluated and a report of the identified hazards and recommended controls. Prerequisites: ENH 680 [Min Grade: C]. This course is also offered online.

Prerequisites: ENH 680 [Min Grade: C](Can be taken Concurrently) or ENH 680Q [Min Grade: C](Can be taken Concurrently)

ENH 681Q. Interdisciplinary Worksite Evaluation Online. 2 Hours.

This course will provide Industrial Hygiene, Occupational Health Nursing, Occupational Safety and Ergonomics students with an interdisciplinary experience in conducting evaluation of workplace settings to identify health and safety hazards and recommend appropriate control measures. Students enrolled in this course must be admitted to one of the academic programs of the Deep South ERC, and have completed ENH 680— Interdisciplinary Field Studies. Prerequisites: ENH 680 [Min Grade: C].

Prerequisites: ENH 680Q [Min Grade: C](Can be taken Concurrently)

ENH 691. Current Topics in Environmental Health and Occupational Health and Safety. 1 Hour.

Development of communication skills through objectively reviewing scientific literature; presentations and summaries of research or professional activities.

ENH 691Q. Current Topics in Environmental Health and Occupational Health and Safety Online. 1 Hour.

Development of communication skills through objectively reviewing scientific literature; presentations and summaries of research or professional activities.

ENH 695. Masters Level Seminar. 1 Hour.

Weekly seminar series of Environmental Health Sciences faculty, postdoctoral fellows, and invited guest lecturers. All PhD candidates in Environmental Health Sciences are required to attend all of the seminars.

ENH 697. Internship. 3 Hours.

The internship provides an opportunity for each student to work in a public health setting in a position that carries responsibility and is of particular interest. ENH 697 is a 3-credit hour course requirement of all MPH-seeking students. In order to register for the internship course, students must have completed all public health core coursework. Usually, this means that students must wait until their 3rd semester to complete the internship. Students must complete a minimum of 180 contact hours with the organization during the semester in which they register for the internship.

Prerequisites: BST 601 [Min Grade: C] or BST 601Q [Min Grade: C] and (ENH 600 [Min Grade: C] or ENH 600Q [Min Grade: C]) and (EPI 600 [Min Grade: C] or EPI 600Q [Min Grade: C]) and (HB 600 [Min Grade: C] or HB 600Q [Min Grade: C]) and (HCO 600 [Min Grade: C] or HCO 600Q [Min Grade: C])

ENH 697Q. Internship Online. 3 Hours.

The internship provides an opportunity for each student to work in a public health setting in a position that carries responsibility and is of particular interest. ENH 697 is a 3-credit hour course requirement of all MPH-seeking students. In order to register for the internship course, students must have completed all public health core coursework. Usually, this means that students must wait until their 3rd semester to complete the internship. Students must complete a minimum of 180 contact hours with the organization during the semester in which they register for the internship.

Prerequisites: (BST 601 [Min Grade: C] or BST 601Q [Min Grade: C]) and (ENH 600 [Min Grade: C] or ENH 600Q [Min Grade: C]) and (EPI 600 [Min Grade: C] or EPI 600Q [Min Grade: C]) and (HB 600 [Min Grade: C] or HB 600Q [Min Grade: C]) and (HCO 600 [Min Grade: C] or HCO 600Q [Min Grade: C])

ENH 698. Masters Directed Research. 1-9 Hour.

Independent study with guidance of appropriate faculty.

ENH 699. Masters Level Project Research. 1-9 Hour.

Research for project under direction of research project committee.

Prerequisites: GAC M

ENH 700. Scientific Basis of Environmental Health. 3 Hours.

This is an overview course that is intended to provide doctoral students with a broad understanding of the scientific principles on which environmental health is based within the context of the interaction of human activities and ecosystems, and the reciprocal impact of those interactions on human health and global ecology.

ENH 701. Advanced Environmental Chemistry. 3 Hours.

The course will describe the underlying physicochemical and mathematical formulations governing environmental physico-chemical processes including the coupling with biological media. Specific attention will be paid in understanding the physical basis of the processes and critical variables rather than memorizing the mathematical equations. The kinetics and thermodynamics of chemical transformations including redox and photolysis reactions will be introduced. Subsequently, specific environmental cases involving aquatic and atmospheric environments will be thoroughly investigated. Students are strongly recommended to have: (1) understanding of organic chemistry and basic thermodynamics; (2) comfort with math.

ENH 702. Advanced Topics in Environmental Management. 3 Hours.

This course extends the grounding of students in environmental management concepts, issues, and strategies with new course material on ecosystem management, ecological risk assessments (using case studies for assessments under TSCA, FIFRA, Non-indigenous species and CERCLA) and frameworks for integrating science and preventive public policy, such as the precautionary assessment framework. Prerequisites: ENH 612 [Min Grade: C] NOTE: If course prerequisite of ENH 612 is not met, permission of instructor is required.

Prerequisites: ENH 612 [Min Grade: C](Can be taken Concurrently) or ENH 612Q [Min Grade: C](Can be taken Concurrently)

ENH 705. Special Topics in Environmental and Occupational Health Occupational Hygiene Research - Journal Club. 1-9 Hour.

This course is designed to provide advanced (doctoral) students in Environmental Health Sciences in general, and Industrial hygiene in particular an overview of the research literature and introduction in advance topics such as nanomaterials, control banding, quantitative occupational exposure assessment, etc. Students will have the opportunity to present their own research, learn about the research conducted by their peers and conduct critical review of published research.

ENH 706. Mitochondria Hlth, Disease,Tox. 3 Hours.

Requirement This course is designed for doctoral students admitted to campus-wide PhD programs in the biomedical, basic, and public health sciences, post-doctoral fellows, medical students, residents, staff and members of the faculty interested in mitochondrial biology. Students outside the School of Public Health and Joint Health Science Doctoral Training Programs must contact the course Director before enrolling in the course to see if slots are still available. Prerequisite: Successful completion of doctoral level biochemistry/molecular biology course Description: The course will consist of didactic lectures by faculty members on a specific topic in the field of mitochondria biology and toxicology. These lectures will be complemented by student presentations of original research articles, which are related to the presented subject matter and that place the discussed topic into the context of human health, disease, and toxicology. This format will allow for students to gain a solid understanding of normal mitochondria physiology, which they can then use to explore the literature to reveal the importance of mitochondrial dysfunction in human diseases and toxicology responses. This course will be guided by the course Director and other faculty members who will assist in the selection of relevant readings and facilitate in-class discussions among the students.

ENH 710. Grant Proposal Writing in Biomedical Sciences. 1 Hour.

This course will train second-year graduate students in the intricacies of writing research proposals in the biomedical sciences.

ENH 720. Integrated Biomedical Science for Environmental Health I. 10 Hours.

The purpose of this course is to provide students with a rigorous background in the principles of biological chemistry and cellular physiology. Students should master and include the application of these principles to research protocols and performance. The knowledge acquired can then be applied to organ-system physiology, pathophysiology, pharmacology, and genomics in ENH 721 and ENH 722. (Course is scheduled with IBS 700).

ENH 721. Integrated Biomedical Science for Environmental Health II. 8 Hours.

The purpose of this course is to integrate the anatomic, physiologic, pathophysiologic and pharmacologic principles of molecular, cellular, whole tissue and organ physiology. The material mastered in this course builds upon the basic principles learned in ENH 720 and will facilitate understanding in genetic-based disorders and genetically generated animal models of disease provided in ENH 722.

ENH 722. Integrated Biomedical Science for Environmental Health III. 3 Hours.

The purpose of this course is to integrate the anatomic, physiologic, pathophysiologic and pharmacologic principles of molecular, cellular, whole tissue and organ biology. The material mastered in this course builds upon the principles learned in ENH 721 and will facilitate understanding in genetic-based disorders and genetically generated animal models of disease provided in this course.

ENH 752. Biochemical and Molecular Toxicology. 3 Hours.

This advanced course serves to equip students to understand at the molecular and cellular levels how environmental and occupational agents exert their toxic properties against specific genetic backgrounds. This course assumes a strong foundational knowledge of cell biology, RNA and DNA metabolism, and gene function, structure and regulation. This course will prepare students to apply advanced toxicology principles to agents of disease in order to understand the molecular mechanism and where interventions may be appropriate. Prerequisite: Admission into a public health or biomedical PhD program or permission of the instructor.

ENH 763. Aerosol Technology. 3 Hours.

Defines properties and behavior of aerosols from industrial hygiene and environmental perspectives. Reviews fundamental particle descriptions and critical fluid properties affecting particle behavior. Methods of defining particle size and particle behavior. Methods of defining particle size and size distribution and theories of particle kinetics and their application to particle disposition and collection This multidisciplinary course covers the fundamental principles that govern the formation, growth, measurement and modeling of particles behavior (both ambient and nanoparticles) with direct application to health sciences and engineering specialties. The course explores the quantitative evaluation of aerosol behavior including the physical and chemical parameters that govern it. Specific applications of atmospheric and occupational aerosol, bioaerosol and nanoparticles are included to link fundamental knowledge to practical implications in industrial hygiene, national security and materials technology.

ENH 770. Advanced Topics in Environmental Disasters in PUH. 3 Hours.

Examines emerging public health challenges posed by incidents involving chemicals, radiation and biological agents. Students are provided with the opportunity to undertake guided research on current topics in the field and discuss their findings with graduate students and faculty members. Course will be graded by letter. Prerequisites: ENH 610 [Min Grade: C] NOTE: If course prerequisite of ENH 610 is not met, permission of instructor is required.

Prerequisites: ENH 610 [Min Grade: C](Can be taken Concurrently) or ENH 610Q [Min Grade: C](Can be taken Concurrently)

ENH 780. Seminars in Free Radical Biology and Medicine. 1 Hour.

This course will consist of research seminars presented primarily by leading national and international scientists working in free radical biology and medicine. These seminars are interactive with questions being asked throughout the presentation. Preq: Requires permission of instructor.

ENH 781. Journal Club. 1 Hour.

The purpose of this course is to provide a forum in which students become comfortable critically reviewing recent refereed publications in the fields of environmental health, toxicology, occupational health, and industrial hygiene. Students will also be expected to become comfortable answering and asking questions in a scientific setting.

ENH 782. Free Radical Chem & Biochem. 2 Hours.

This course is for students to gain expertise in the chemical and biochemical reactions of free radicals as they occur in biological systems. Students should be able to critically evaluate the literature with respect to free radical chemistry principles in the experimental design for their own dissertation research. Course will be graded by letter. Preq: Completion of first year IBS or CMB or permission of instructor.

ENH 783. Free Radical in Health & Disea. 2 Hours.

This course is for students to understand the roles that free radicals play in biological systems both in the maintenance of normal physiology via regulated cell signaling and in contributing to pathology through loss of this regulation. Students should be able to critically evaluate the literature with respect to the roles of free radicals in health and understanding into their own dissertation research. Course will be graded by letter. Preq: Completion of first year IBS or CMB or permission of instructor.

ENH 790. Seminar: Current Topics in ENH Sciences Research. 1 Hour.

Interactive forum in which graduate students and faculty discuss dissertation research projects and topics related to the field of Environmental Health Sciences Research through presentation of journal articles. Course is designed to develop oral communication skills for presenting scientific material to peer groups. Presentations by graduate students are followed by discussion and questions. Preq: Permission of instructor required.

ENH 791. Advanced Environmental Health and Toxicology Seminar. 1 Hour.

Facilitates critical review of recent referred publications in toxicology and presentations of research data. Students exposed to advanced knowledge and diversified subjects. Preq: ENH 650, ENH 651 or ENH 750 or permission of instructor.

Prerequisites: ENH 650 [Min Grade: C] and ENH 651 [Min Grade: C] or ENH 750 [Min Grade: C]

ENH 793. DrPH Practicum. 6 Hours.

Field experience course that bridges professional academic preparation and advanced public health practice. A final grade for the course will be awarded by the faculty practicum advisor and based upon the practicum mentor/supervisor's evaluation and the student's final product.

ENH 796. Environmental Toxicology Laboratory Rotations. 3 Hours.

Doctoral laboratory rotations in Environmental Health Sciences. Required for First and Second year PhD students in the Industrial Hygiene and Environmental Management and Policy foci. Preq: Permission of instructor required.

ENH 798. Doctoral Level Directed Res. 1-9 Hour.

Independent study with guidance of appropriate faculty.

ENH 799. Dissertation Research. 1-9 Hour.

Research for dissertation under the direction of the dissertation committee. Preq: Must be admitted to candidacy before registering for this course.

Prerequisites: GAC Z

EPI-Epidemiology

EPI 600. Introduction to Epidemiology. 3 Hours.

EPI 600 is an introductory course designed to teach graduate level public health students the basic principles, methods, and applications of epidemiology. This course is a CORE requirement for non-Epidemiology MPH majors.

EPI 600Q. Introduction to Epidemiology Online. 3 Hours.

EPI 600Q, Introduction to Epidemiology, is designed for graduate level public health students to learn the basic principles, methods, and applications of epidemiology. The course is a core requirement for MPH students who are not majoring in epidemiology. This course is a CORE requirement for non-Epidemiology MPH majors.

EPI 602. Epidemiology of Chronic Diseases. 4 Hours.

Application of epidemiologic principles to consideration of cancer, cardiovascular diseases, other chronic diseases. Emphasis on classification, rates, association, etiology, prevention, and control. Pertinent literature critically reviewed.

Prerequisites: EPI 610 [Min Grade: C] or EPI 610Q [Min Grade: C]

EPI 602Q. The Epidemiology of Chronic Diseases Online. 4 Hours.

This course will explore the breadth and depth of the epidemiology of chronic diseases including classification, surveillance, frequency, distribution, etiology, natural history, risk factors, and control. It will address details of large-scale epidemiologic studies in cardiovascular diseases and cancer, and will discuss epidemiologic papers relating to the use of various study designs.

Prerequisites: EPI 610Q [Min Grade: C] or EPI 610 [Min Grade: C]

EPI 603. Injury-Epidemiologic Principles and Prevention Strategies. 3 Hours.

Concepts and methods of epidemiology applied to injury; epidemiology of major injury types, utilization of injury data sets; development and evaluation techniques of preventive strategies. EPI 600 or EPI 610 is a recommended prerequisite but is not required.

EPI 604. Infectious Disease Surveillance and Control: Field Studies in Developing Countries. 3 Hours.

The primary focus of the course is vector ecology and biology, infectious disease surveillance and control, and water and sanitation in a developing country, with an emphasis on field and community-based learning. This class will take place in Jamaica and you must be accepted by the Sparkman Center for Global Health.

EPI 605. Epidemiology of Infectious Diseases. 4 Hours.

Introduction to basic principles of infectious disease epidemiology, surveillance, and control. This course will also include critical analysis of the magnitude, distribution, risk factors, and public health significance of selected infectious diseases in community and institutional settings. While the primary geographic focus is the U.S., international comparisons and perspectives will be included. Primary attention is neither on research methods nor on clinical and pathologic aspects of disease. 1 semester in PH master's program & biology background.

Prerequisites: EPI 600 [Min Grade: C] or EPI 610 [Min Grade: C] or EPI 600Q [Min Grade: C] or EPI 610Q [Min Grade: C]

EPI 605Q. Epidemiology of Infectious Diseases Online. 4 Hours.

This class provides an introduction to epidemiological concepts pertaining to various infectious diseases. Students will gain familiarity with epidemiologic characteristics of various infectious conditions significant in the United States and the world. Practical exercises, discussions will help in approaching "real world" problems.

Prerequisites: EPI 600 [Min Grade: C] or EPI 610 [Min Grade: C] or EPI 600Q [Min Grade: C] or EPI 610Q [Min Grade: C]

EPI 607. Fundamentals of Clinical Research. 3 Hours.

This course will provide an overview of principles and practices related to the study of determinants and outcomes of medical interventions. Methods for conducting epidemiologic research in the "clinic", assessing the validity of diagnostic and screening tests, measuring therapeutic efficacy and safety, and describing the natural history of disease will be reviewed. EPI 600 or EPI 610 is a recommended prerequisite but not required.

EPI 607Q. Fundamentals of Clinical Research Online. 3 Hours.

This course will provide an overview of principles and practices related to the study of determinants and outcomes of medical interventions. Methods for conducting epidemiologic research in the "clinic", assessing the validity of diagnostic and screening tests, measuring therapeutic efficacy and safety, and describing the natural history of disease will be reviewed. EPI 600 or EPI 610 is a recommended prerequisite but not required.

EPI 609. Introduction to Pharmacoepidemiology and Drug Safety. 3 Hours.

The purpose of the course is to 1) introduce to students the emerging field of pharmacoepidemiology (PE) and comparative effectiveness research (CER); 2) to have an overview of the shared and unique methodological issues that commonly and negatively affects the validity and interpretation of PE and CER research; and 3) to introduce methods in study design and data analysis to address such issues. The course is a requirement for the MSPH Pharmacoepidemiology and Comparative Effectiveness Research track. NOTE: Introductory training in epidemiology (EPI 610, BST 601 or BST 611) is recommended but not required.

EPI 610. Principles of Epidemiologic Research. 4 Hours.

Concepts and methods of epidemiology. Measures of disease frequency, study design and analysis, indices of disease and health; overview of major categories of acute and chronic disease, analysis of the epidemiologic data sets. Core requirement for Epidemiology majors. Prerequisites: Graduate status in Epidemiology or in another Public Health discipline; or permission of the course master.

EPI 610L. Principles of Epidemiologic Research - LAB. 0 Hours.

Principles of Epidemiologic Research lab.

EPI 610Q. Principles of Epidemiologic Research Online. 4 Hours.

EPI 610Q is the first in the series of methodological courses required of master's students majoring in epidemiology. The official goal is provide a comprehensive introduction to epidemiology, the science of modern public health. In plain English, my goal for this course is to empower you to grapple with key methodologic issues in design and analysis of epidemiologic studies, whether your own or published by other researchers/clinicians.

EPI 611. Data Management of Epidemiologic and Clinical Study. 4 Hours.

Epidemiology is a combination of a subject matter science and research methodology. EPI 611 focuses on the latter component. The course extends knowledge of study designs introduced in EPI 610 as applied to human populations, including randomized trials and four types of observational studies (cohort, case-control, cross-sectional, ecological). Since cause-and-effect relations are at the heart of epidemiologic research, numerous related topics are taught in EPI 611 including causal inference, bias, and effect modification. Descriptive data analysis methods are integrated within each type of design. Preq: EPI 610.

Prerequisites: EPI 610 [Min Grade: C] or EPI 610Q [Min Grade: C]

EPI 611L. Epidemiology Design and Analysis Lab. 0 Hours.

EPI 611 course and lab will focus on the research methodology for designing, implementing, analyzing and interpreting epidemiologic studies including randomized clinical trials and observational studies (case-control, cohort and cross-sectional).

EPI 614. Epidemiologic Methods Applied to Comparative Effectiveness Research. 3 Hours.

This course will focus on methodological issues pertaining to the design, analysis and interpretation of comparative effectiveness research studies. Special focus will be placed on comparative effectiveness research studies using a non-experimental design and large data base analyses. This course is intended for Master of Science in Public Health and doctoral students in epidemiology, biostatistics, or health care and policy. Doctoral students in other disciplines as well as others interested in comparative effectiveness research are also welcome to enroll with the instructor's permission.

Prerequisites: EPI 610 [Min Grade: C] or EPI 610Q [Min Grade: C]

EPI 616. Environmental Epidemiology. 3 Hours.

Design and conduct of studies examining health effects of environmental exposures. Strengths and limitations of research strategies and interpretation of study results. Areas of interest include air and water pollution, lead, and biological marker outcomes.

Prerequisites: EPI 600 [Min Grade: C] or EPI 610 [Min Grade: C] or EPI 600Q [Min Grade: C] or EPI 610Q [Min Grade: C]

EPI 618. Fieldwork in Public Health. 2 Hours.

Application of public health principles in communicable disease control and environmental health programs carried out at Jefferson County Department of Health.

Prerequisites: EPI 605 [Min Grade: C] and EPI 610 [Min Grade: C]

EPI 619. Infection Prevention and Hospital Epidemiology. 3 Hours.

The course will provide students with a basic understanding of the area of hospital epidemiology and infection prevention. Notably, the course will cover a review of basic epidemiological methodology, and will then focus on the main areas of surveillance that are critical to infection prevention in addition to methodologies that are specific to hospital epidemiology. Prerequisites: EPI 600, EPI 600Q, EPI 610, EPI 610Q or equivalent introduction to epidemiology course as approved by the course director.

Prerequisites: EPI 600 [Min Grade: C] or EPI 600Q [Min Grade: C] or EPI 610 [Min Grade: C] or EPI 610Q [Min Grade: C]

EPI 621. HIV/AIDS and STDs. 3 Hours.

Basic biology and pathogenesis, historical and current trends, domestic and international epidemiology, determinants of spread, immunogenetics and host susceptibility, options for prevention, surveillance and control of sexually transmitted diseases (STD's) and HIV/AIDS. If not Public Health student permission of instructor is required.

Prerequisites: EPI 610 [Min Grade: C] or EPI 610Q [Min Grade: C]

EPI 625. Quantitative Methods in Epidemiology. 3 Hours.

The course will provide students with the knowledge of how to perform basic analyses utilized in epidemiological research. The course will be segmented into four modules, with three modules covering how to properly analyze ecological, cross-sectional, cohort, and case control study designs. The course will focus heavily on performing the analyses in SAS, and will continue to expand upon many of the concepts in SAS programming covered in EPI 626. The statistical methods covered will include, but are not limited to, bivariate analyses such as chi-square, t-test, and ANOVA; correlation; and regression methods such as logistic regression, Poisson regression, and Cox proportional hazards regression. The course requires students to have taken EPI 610 or EPI 610Q (Introduction to Epidemiology) and EPI 626 (Introduction to SAS Analysis), BST 601 (Biostatistics) or BST 611 (Intermediate Statistical Analysis I).

Prerequisites: BST 601 [Min Grade: C] or BST 601Q [Min Grade: C] or BST 611 [Min Grade: C] or BST 611Q [Min Grade: C] and (EPI 610 [Min Grade: C] or EPI 610Q [Min Grade: C]) and (EPI 626 [Min Grade: C] or EPI 626Q [Min Grade: C])

EPI 625Q. Quantitative Methods in Epidemiology Online. 3 Hours.

The course will provide students with the knowledge of how to perform basic analyses utilized in epidemiological research. The course will be segmented into four modules, with three modules covering how to properly analyze ecological, cross-sectional, cohort, and case control study designs. The course will focus heavily on performing the analyses in SAS, and will continue to expand upon many of the concepts in SAS programming covered in EPI 626. The statistical methods covered will include, but are not limited to, bivariate analyses such as chi-square, t-test, and ANOVA; correlation; and regression methods such as logistic regression, Poisson regression, and Cox proportional hazards regression. The course requires students to have taken EPI 610 or 610Q (Introduction to Epidemiology) and EPI 626 or EPI 626Q (Introduction to SAS Analysis), BST 601 or 601Q (Biostatistics) or BST 611 or BST 611Q (Intermediate Statistical Analysis I).

Prerequisites: BST 601 [Min Grade: C] or BST 601Q [Min Grade: C] or BST 611 [Min Grade: C] or BST 611Q [Min Grade: C] and (EPI 610 [Min Grade: C] or EPI 610Q [Min Grade: C]) and (EPI 626 [Min Grade: C] or EPI 626Q [Min Grade: C])

EPI 626. Introduction to Data Analysis with SAS. 2 Hours.

The general content will be basic SAS programming focused on fundamental statistical procedures. Upon completion of the course, the student should be able to do simple analysis and programming when given a SAS data set, and complete exercises from more advanced classes in epidemiology and biostatistics. Permission of instructor if not Public Health major.

EPI 626Q. Introduction to Data Analysis with SAS Online. 2 Hours.

The general content will be basic SAS programming focused on fundamental statistical procedures. Upon completion of the course, the student should be able to do simple analysis and programming when given a SAS data set, and complete exercises from more advanced classes in epidemiology and biostatistics. Permission of instructor if not Public Health major.

EPI 627. Data Analysis and Presentation of Epidemiologic Studies. 3 Hours.

Analyze data from an epidemiologic study, addressing a specific questions, and prepare a manuscript from the analysis. There are 3 possibilities regarding choice of data: 1) from a list of the instructor's datasets, 2) public use data, 3) from the student's research. Students working on an MSPH or another degree project may use data for that degree-project with approval of their advisor and course master. Upon completion of the course, the student should be able to analyze data from an epidemiologic study and prepare a manuscript.

Prerequisites: BST 601 [Min Grade: C] or BST 601Q [Min Grade: C] or BST 611 [Min Grade: C] or BST 611Q [Min Grade: C] and (BST 612 [Min Grade: C] or BST 612Q [Min Grade: C]) and (EPI 610 [Min Grade: C] or EPI 610Q [Min Grade: C]) and (EPI 625 [Min Grade: C] or EPI 625Q [Min Grade: C])

EPI 627Q. Data Analysis and Presentation of EPI Studies Online. 3 Hours.

This course is designed for students who wish to increase their experience with the statistical analysis of data from epidemiologic studies. Students will also gain experience interpreting the results of those statistical analyses in the context of a scientific publication. Prior experience with epidemiologic study design and statistical analysis is required.

Prerequisites: BST 601 [Min Grade: C] or BST 601Q [Min Grade: C] or BST 611Q [Min Grade: C] or BST 611 [Min Grade: C] and (BST 612 [Min Grade: C] or BST 612Q [Min Grade: C]) and (EPI 610 [Min Grade: C] or EPI 610Q [Min Grade: C]) and (EPI 625 [Min Grade: C] or EPI 625Q [Min Grade: C])

EPI 635. Genetics in Public Health. 2 Hours.

This course will provide a topical overview of issues in public health genetics. The purpose of this course is to introduce students to the complex issues involved in applying and integrating genetic technology and information into public health. Must have permission of instructor to register.

EPI 640. Cancer Epidemiology. 2 Hours.

This course will address methodologic and substantive issues in cancer epidemiology. The content will include definition, biological origins and pathological and clinical aspects of cancer; an introduction to information sources and methods in cancer epidemiology; the global burden of cancer; descriptive epidemiology and major risk factors for various forms of cancer; strategies for cancer prevention and the role of epidemiology in developing and evaluating those strategies. NOTE: Non-Degree students and interested students in other programs and schools are required to get instructors permission before attempting to register.

Prerequisites: EPI 600 [Min Grade: C] or EPI 610 [Min Grade: C]

EPI 680. Topics in Clinical Research. 2 Hours.

Provide health sciences professionals interested in clinical trials, clinical epidemiology, and other forms of population research with both essential principles and specific technical knowledge in a variety of areas relevant to the conduct of biological and behavioral investigation of human subjects. NOTE: Limited to health professionals planning clinical research careers who have been accepted into the MSPH in Clinical Research. This course begins in the Spring term and extends into the Summer term. Registration for this course is during the Summer semester. Please contact the Program Coordinator for the course syllabus and course schedule.

EPI 681. Special Topics in Epidemiology Research. 3 Hours.

To engage infectious disease research practice encompassing design, conduct, analysis, and interpretation. Students participate in supervised research and/or in research design. Doctoral students are expected to engage in supervised research. NOTE: Permission of instructor.

EPI 682. Gorgas Course in Tropical Med. 3-9 Hours.

Hands-on exposure to tropical diseases and emerging pathogens in various teaching formats: didactic lectures, roundtables, laboratory work, clinical and hospital rounds, case conferences, computer training, field fied trips and independent study. Course is held in during the Spring Term in in Lima, Peru. NOTE:9 hours (3 or Course can be taken for 3, 6 hours are also accepted with or 9 hours; however, evaluation will be restricted to selected sections of the course). course. Spring (Freedman).

EPI 690. Population and Health Outcomes Research Seminar Series. 1 Hour.

The purpose of this class is to provide an opportunity for students interested in population and health outcomes research to participate in seminars related to methodology and career development and to present their work.

EPI 695. Epidemiology Seminar. 1 Hour.

The purpose of the epidemiology seminar series is to provide a venue for faculty and students of epidemiology to participate in the presentation of a variety of topics and concepts related to the field of epidemiology, biostatistics and public health.

EPI 696. Masters Epidemiology Seminar. 3 Hours.

Critical evaluation of selected epidemiologic papers from published literature. Consideration of composition, study design, and validity of analysis. Editorial review and disposition of manuscripts.

Prerequisites: EPI 610 [Min Grade: C] and EPI 610L [Min Grade: C] and EPI 611 [Min Grade: C]

EPI 697. Internship. 3 Hours.

The internship provides an opportunity for each student to work in a public health setting in a position that carries responsibility and is of particular interest. EPI 697 is a 3-credit hour course requirement of all MPH-seeking students. In order to register for the internship course, students must have completed all public health core coursework. Usually, this means that students must wait until their 3rd semester to complete the internship. Students must complete a minimum of 180 contact hours with the organization during the semester in which they register for the internship.

Prerequisites: BST 601 [Min Grade: C] or BST 601Q [Min Grade: C] and (ENH 600 [Min Grade: C] or ENH 600Q [Min Grade: C]) and (EPI 600 [Min Grade: C] or EPI 600Q [Min Grade: C] or EPI 610Q [Min Grade: C] or EPI 610 [Min Grade: C]) and (HB 600 [Min Grade: C] or HB 600Q [Min Grade: C]) and (HCO 600 [Min Grade: C] or HCO 600Q [Min Grade: C])

EPI 697Q. Internship Online. 3 Hours.

The internship provides an opportunity for each student to work in a public health setting in a position that carries responsibility and is of particular interest. EPI 697 is a 3-credit hour course requirement of all MPH-seeking students. In order to register for the internship course, students must have completed all public health core coursework. Usually, this means that students must wait until their 3rd semester to complete the internship. Students must complete a minimum of 180 contact hours with the organization during the semester in which they register for the internship.

Prerequisites: (BST 601 [Min Grade: C] or BST 601Q [Min Grade: C]) and (ENH 600 [Min Grade: C] or ENH 600Q [Min Grade: C]) and (EPI 600 [Min Grade: C] or EPI 600Q [Min Grade: C] or EPI 610 [Min Grade: C] or EPI 610Q [Min Grade: C]) and (HB 600 [Min Grade: C] or HB 600Q [Min Grade: C]) and (HCO 600 [Min Grade: C] or HCO 600Q [Min Grade: C])

EPI 698. Master's Level Directed Research Epidemiology. 1-9 Hour.

Independent study with guidance of appropriate public health faculty.

EPI 699. Master's Level Project Research Epidemiology. 1-9 Hour.

Research for project under direction of research committee.

Prerequisites: GAC M

EPI 703. Grant Proposal Writing. 3 Hours.

To provide the student with information about grant writing and practice in preparing a grant proposal for submission. The proposal must relate to an epidemiologic topic. Human subjects issues are discussed. NOTE: Must be a doctoral student or obtain permission of instructor to enroll.

EPI 703Q. Grant Writing Online. 3 Hours.

This course is designed to help students develop the critical thinking and writing skills relevant to the preparation of a grant application. The course is most appropriate for doctoral candidates who are preparing their dissertation proposals.

EPI 704. Advanced Epidemiologic Methods. 3 Hours.

This course provides an advanced introduction to fundamental epidemiologic concepts and methods, including causal inference, bias, and study design. This course is the first course in the sequence of the three required core epidemiology courses for doctoral students in epidemiology.

EPI 706. The Epidemiology of Cardiovascular Disease. 2 Hours.

The purpose of this course is to provide exposure to the epidemiology of cardiovascular disease.

EPI 710. Analysis of Case Control Studies. 3 Hours.

This course is designed to provide doctoral students in epidemiology with practical experience in the analysis and interpretation of data from case-control studies. Specific aims are: To outline a strategy for data analysis and review relevant methodologic issues and to apply stratified analysis methods and regression models in the study of diseases of multifactorial etiology. Preq: Requires permission of instructor.

Prerequisites: EPI 704 [Min Grade: C]

EPI 712. Nutritional Epidemiology. 3 Hours.

Nutritional epidemiology will cover core concepts in human nutrition including nutrient classification, nutrient sources, nutritional deficiencies, nutritional excesses, recommended daily allowances, basic anthropometry, dietary assessment methods in free-living populations, validation of dietary assessment methods, identification of biomarkers of dietary intake, study designs used in nutritional epidemiology, issues in the analysis and presentation of dietary data, diet-disease associations, gene-diet associations and special topics in nutrition (e.g., folic acid and neural tube defects, fatty acids and the metabolic syndrome, diet and obesity, vitamin A and immune function, vitamins and mother-to-child transmission of HIV, etc).

EPI 713. Cancer Epidemiology and Control. 3 Hours.

In this course students will learn what is known about the causes of cancer and the control measures used to decrease cancer incidence, decrease cancer mortality, extend cancer survival, and improve quality of life for cancer patients.

EPI 720. Analysis of Follow-Up Studies. 3 Hours.

This course is designed to provide doctoral students in epidemiology with practical experience in the analysis and interpretation of data from follow-up studies. Specific aims are: to outline a strategy for data analysis and review relevant methodologic issues and to apply stratified analysis methods and regression models in the study of diseases of multifactorial etiology.

Prerequisites: EPI 710 [Min Grade: C]

EPI 721. HIV/AIDS and STDs. 3 Hours.

The course will cover the epidemiology, prevention and control of Sexually Transmitted Diseases (STDs) including the human immune deficiency virus (HIV) infection in both the domestic and international settings. EPI 621 is intended as an elective for second year students and students who have a graduate degree in the Medical Health Professions who are enrolled in any degree track in the School of Public Health. It is considered an elective for the MPH and MSPH programs in Epidemiology. EPI 721 is intended only for doctoral students in the School of Public Health.

Prerequisites: EPI 610 [Min Grade: C] or EPI 610Q [Min Grade: C]

EPI 731. Genetic Epidemiology. 4 Hours.

This course will cover core concepts of designs, methods and statistical tools in genetic epidemiology studies for determining the contribution of genes to disease risk. Methods for incorporating genetic markers into conventional epidemiologic study designs as risk factors including genetic risk models, familial correlations, migration and admixture, quantitative and qualitative traits, association and linkage analyses in family based designs, allele/haplotype frequency estimation, Hardy Weinberg Equilibrium and linkage disequilibrium and application in both family and population based studies will be discussed. Methods for gene-gene and gene-environment interaction assessment, genome wide association studies are also presented. Students not meeting the prerequisites must get permission from the instructor.

Prerequisites: (EPI 600 [Min Grade: C] or EPI 610 [Min Grade: C]) and (BST 601 [Min Grade: C] or BST 611 [Min Grade: C] or BST 621 [Min Grade: C])

EPI 731L. Genetic Epidemiology Lab. 0 Hours.

EPI 731 course and lab will cover core concepts of design, methods and statistical tools in genetic epidemiology studies for determining the contribution of genes to disease risk.

EPI 781. Special Topics in Epidemiology Research. 3 Hours.

To engage infectious disease research practice, encompassing design, conduct, analysis, and interpretation. Students participate in supervised research and/or in research design. NOTE: Doctoral students are expected to engage in supervised research and must obtain permission of instructor.

EPI 788. Principles and Methods in Molecular Epidemiology. 4 Hours.

Molecular biology and its relevance to the epidemiology, etiology and natural history of human diseases. The course will develop knowledge and skills in molecular biology, genetics and epidemiology methods, and facilitate the application of this information to evaluate susceptibility, etiology, natural history, treatment, and prevention of diseases. 4 hours (Brown).

EPI 790. Doctoral Seminar in Epidemiology. 2 Hours.

In depth study of several areas of epidemiologic methodology not covered in other courses. Students responsible for selecting and presenting topics. Considerable reading and outside preparation required. NOTE: Requires permission of instructor.

EPI 793. DrPH Practicum. 6 Hours.

Field experience course that bridges professional academic preparation and advanced public health practice. A final grade for the course will be awarded by the faculty practicum advisor and based upon the practicum mentor/supervisor's evaluation and the student's final product.

EPI 795. Epidemiology Seminar. 1 Hour.

The purpose of the epidemiology seminar series is to provide a venue for faculty and students of epidemiology to participate in the presentation of a variety of topics and concepts related to the field of epidemiology, biostatistics and public health.

EPI 797. Analysis and Presentation of Epidemiologic Data. 2 Hours.

To gain experience with the analysis, interpretation, and presentation of epidemiologic data by successfully analyzing a data set and presenting the results in the form of a publication quality manuscript. NOTE: Restricted to PhD students in Epidemiology. Permission of instructor.

EPI 798. Doctoral Level Directed Research Epidemiology. 1-9 Hour.

Independent study with guidance of appropriate faculty.

EPI 799. Dissertation Research. 1-9 Hour.

Research for dissertation under direction of dissertation committee.

Prerequisites: GAC Z

EPR-Educational Psychology

EPR 510. Measurement and Evaluation in Education ECE. 3 Hours.

For early childhood/elementary education majors only. Basic concepts and principles of measurement and evaluation of personal and academic progress in classroom. Elementary descriptive statistics and measurement techniques used in student evaluation. Quantitative literacy is a significant component of this course (QEP).

Prerequisites: EEC 600 [Min Grade: C] (Can be taken Concurrently)

EPR 511. Measurement and Evaluation in Education Secondary Ed. 3 Hours.

For secondary education majors only. Basic concepts and principles of measurement and evaluation of personal and academic progress in classroom. Elementary descriptive statistics and measurement techniques used in student evaluation. Quantitative literacy is a significant component of this course (QEP).

EPR 590. Research & Prgm Eval in Coun. 4 Hours.

This course will provide an introduction to major principles, strategies, and instruments in social science research and program evaluation. Students will become familiar with (1) basic strategies used to conduct research; (2) basic methodology for collecting and interpreting data typically reported in counseling; (3) basic conventions for published reporting research in his/her field of interest; (4) basic program evaluation; and (5) the knowledge and skills to become consumers and producers of counseling research.

EPR 594. Introduction to Educational Research Design. 3 Hours.

Introduction to educational research design purposes and characteristics of the research process, including: types of research approaches and research design; procedures for collecting; analyzing and evaluating data; critical review of published research; research ethics; and institutional review.

EPR 596. Introduction to Qualitative Methods in Educational Research. 3 Hours.

The purpose of this course is to provide a practical introduction to qualitative research and its application in education, social, and behavioral sciences.

Prerequisites: EPR 594 [Min Grade: C]

EPR 607. Microcomputer Applications to Statistical Analysis. 1 Hour.

Excel and SPSS will be used for statistical analyses and data interpretation. Lab to accompany EPR 608. Must be taken concurrently.

EPR 608. Statistical Methods and Action Research. 3 Hours.

This statistics course will cover descriptive and inferential statistics to include the following: measures of central tendency; measures of variability; frequency distributions; normal curve; probability; sampling; regression; hypothesis testing; and analysis of variance. Excel and SPSS will be used for statistical analyses and data interpretation.

EPR 609. Statistical Methods and Research in Education: Intermediate. 3 Hours.

This course will cover basic inferential techniques including hypothesis testing and parametric and non-parametric techniques related to factorial ANOVA and within-subjects ANOVA designs. A significant focus of this course is on assumptions, rationale, application and interpretation of various analysis of variance techniques.

Prerequisites: EPR 607 [Min Grade: C] and EPR 608 [Min Grade: C] and EPR 594 [Min Grade: C]

EPR 610. Child Psychology. 3 Hours.

This course covers human development through infancy, preschool, and preadolescence.

EPR 611. Adolescent Psychology. 3 Hours.

This course offers an in-depth examination of selected topics in the psychological, social, emotional, moral, cognitive, cultural and physical development of adolescents and how these aspects affect classroom and school behavior.

EPR 614. Lifespan Human Development. 3 Hours.

The objective of this course is to further students' knowledge of human development, the multidisciplinary study of how people change and how they remain the same over time. Topics to be covered will include developmental theories, biological development, social developing, language development, cognitive development, young adulthood, and aging.

EPR 616. Personality Theories. 3 Hours.

This course covers the major theoretical perspectives of the development of personality.

EPR 622. Learning Theories. 3 Hours.

This course covers the application of learning theories to educational practice, behavioral theories, information processing, biochemical basis of memory and learning, as well as other major learning theories.

EPR 650. Educational and Psychological Testing. 3 Hours.

This course will cover the basic principles, research, and theories on the testing and measurement of psychological and educational constructs. Students should expect to complete the course with knowledge of various techniques for educational and psychological testing, familiarity of several professionally developed tests, in-depth knowledge on one test of student's choice, and knowledge of measurement theory which includes reliability and validity.

Prerequisites: EPR 607 [Min Grade: C] and EPR 608 [Min Grade: C]

EPR 688. Seminar on Current Issues: Measurement/Eval School. 3 Hours.

This course provides advanced training on current issues, policies, and methods in educational measurement and evaluation relevant to classroom teachers.

EPR 691. Independent Readings in Educational Psychology and Research. 3 Hours.

Independent Readings in Educational Psychology and Research.

EPR 692. Introduction to Educational Research Design. 3 Hours.

Introduction to educational research design purposes and characteristics of research process, types of research approaches and research designs, procedures for collecting, analyzing and evaluating data, critical review of published research, research ethics and institutional review.

EPR 695. Survey Methods in Educational Research. 3 Hours.

Provides an overview of the basic principles, applications, and types of survey research in education. Students completing this course should have basic knowledge of the survey implementation procedures, use of appropriate sampling techniques and principles of survey instrument construction. Students should be able to develop reliable survey items, establish reliability and validity of survey scales and instruments, and demonstrate awareness of ethical issues related to conducting survey research. Finally, students will learn how to evaluate and critique published survey research studies.

Prerequisites: EPR 594 [Min Grade: C] and EPR 607 [Min Grade: C] and EPR 608 [Min Grade: C]

EPR 696. Qualitative Research: Inquiry and Analysis. 3 Hours.

The purpose of this course is to provide an in-depth insight into the history, philosophy and applications of qualitative research. The course provides a structured field experience of designing and conducting a qualitative small-scale research study within a select qualitative approach.

Prerequisites: EPR 594 [Min Grade: C] and EPR 596 [Min Grade: C] (Can be taken Concurrently)

EPR 700. Data Based Decision Making. 3 Hours.

Provides an overview of key issues related to data-based decision making for students who are interested in moving into leadership positions within their own school and school system. Issues such as Response to Intervention (RTI), progress monitoring, formative and summative evaluation, basic statistical and measurement issues, and other related topics are introduced and discussed.

EPR 700L. Field Experience/Data Based Decision Making. 1 Hour.

Field-based experience to accompany Data Based Decision Making.

EPR 700R. School Based Problem Research Project/Data Based Decision. 1 Hour.

Action-research project to accompany Data Based Decision Making.

EPR 710. Computer Applications and Advanced Statistical Methods. 3 Hours.

Provides an overview of multivariate analyses including multiple regression, MANOVA, logistic regression, discriminant function analysis, factor analysis, cluster analysis, and related procedures. The course focuses on conducting analyses, interpreting results, and conducting studies that require multivariate analyses.

Prerequisites: EPR 607 [Min Grade: C] and EPR 608 [Min Grade: C] and EPR 609 [Min Grade: C](Can be taken Concurrently)

EPR 728. Seminar on Research in Education. 3 Hours.

Seminar on Research in Education. Special topics to be determined each semester.

EPR 790. Mixed Methods Approaches in Action Research. 3 Hours.

Application of mixed methods research to designing and conducting action research studies involving collecting and analyzing both quantitative and qualitative data. Types of action research models and their major characteristics; steps in designing and conducting mixed methods action research studies; specific types of mixed methods action research designs; sampling, data collection, analysis, validation, and evaluation of mixed methods action research projects. Applied knowledge of designing and conducting a small-scale mixed methods action research study.

Prerequisites: EPR 594 [Min Grade: C] and EPR 596 [Min Grade: C] and EPR 607 [Min Grade: C] and EPR 608 [Min Grade: C]

EPR 792. Mixed Methods Approaches to Educational Research. 3 Hours.

This course will provide an overview of mixed methods research, including the history and philosophy of mixed methods research, relevant emerging literature, types of research problems addressed, types of mixed methods designs, and the writing and evaluation of mixed methods studies.

Prerequisites: EPR 594 [Min Grade: C] and EPR 596 [Min Grade: C] (Can be taken Concurrently) and EPR 607 [Min Grade: C] and EPR 608 [Min Grade: C] and EPR 609 [Min Grade: C](Can be taken Concurrently)

EPR 793. Doctoral Seminar in Research Evaluation and Design. 3 Hours.

Doctoral seminar in educational research and psychology. Topics vary by semester.

EPR 796. Qualitative Research: Doctoral Seminar. 3 Hours.

Qualitative Research: Doctoral Seminar. Topics vary by semester.

Prerequisites: EPR 596 [Min Grade: C] and EPR 696 [Min Grade: C]

ESP-Education School Psychometry

ESP 600. Seminar in School Psychometry. 3 Hours.

This course is a survey of school psychometry ethics, the historical foundations, guidelines, and standards, legal issues, roles and functions, and contemporary professional issues in the field of school psychometry. Specific items/ideas of discussion will include roles and functions of school psychologists and IDEA 2004 law, NCLB, confidentiality, NASP code of ethics, and cultural and human diversity.

ESP 627. Practicum in Schl Psychometry. 1 Hour.

The purpose of this course is to ensure that the candidate has met proficiency criteria in areas related to the administration, scoring, and interpretation of frequently administered standardized instruments in the following areas: Intellectual/cognitive assessments; Global achievement assessments; Adaptive behavior assessments; Early childhood assessments; Behavioral assessments; Vocational/transition assessments.

Prerequisites: (ESP 600 [Min Grade: C] and ESP 628 [Min Grade: C] and ESP 629 [Min Grade: C])

ESP 628. Indiv Assess Child/Youth I. 3 Hours.

This course is designed to prepare students to access children and youth in a manner that reflects federal and state mandates and regulations. Students are prepared to appropriately select, administer, and interpret cognitive assessment instruments designed to answer questions related to eligibility determination and, intervention programming.

ESP 629. Indiv Assess Child/Youth II. 3 Hours.

This course is designed to prepare candidates to access children and youth in a manner that reflects federal and state mandates and regulations. Candidates are prepared to appropriately select, administer, and interpret social/emotional, behavioral, and achievement assessment instruments designed to answer questions related to eligibility determination and, intervention programming.

ESP 689. Internship-School Psychometry. 3-9 Hours.

This course is an individualized field-based experience that meet the internship requirements of the state code. Interns are engaged in the full scope of School Psychometry activities including individual assessment, data based decision-making, referral and MEDC meetings, and other appropriate duties.

FLL-Foreign Language & Literatures

FLL 585. Foreign Language Seminar. 3 Hours.

Advanced seminar on broad cultural and cross-cultural topics in foreign languages; taught in English, readings and assignment in foreign languages.

FR-French

FR 501. Pre-Revolutionary France (1610-1789). 3 Hours.

Literature, culture, and civilization of seventeenth and/or eighteenth-century France reflecting the historical and literary ambience in which Ancient Regime writers, philosophies, and artists worked. Selected works of representative authors. Conducted in French.

FR 502. Post-Revolutionary France (1789-1913). 3 Hours.

Literature, culture, and civilization of late-eighteenth, nineteenth, and early twentieth century France illustrating the impact of the French Revolution on the historical and literary ambience of Europe and the Americas. Selected works vary according to instructor. Conducted in French.

FR 503. Fin-de-Siecle France (1895-1940). 3 Hours.

Major authors and art movements of fin-de-siecle France from La Belle Epoque period through World War I. Selected works of representative authors. Conducted in French.

FR 504. French Literature since 1940. 3 Hours.

Cultural trends and literary movements from World War II to the present, including existentialism and the nouveau roman. Selected works of representative authors. Conducted in French.

FR 505. Francophone Literature. 3 Hours.

French-speaking literature outside France that developed through colonization, decolonization, revolution, and emigration. Representative writers from Francophone countries with emphasis on Africa and the Caribbean. Selected works of representative authors. Conducted in French.

FR 510. Special Topics in French. 3 Hours.

Seminar on individual authors, specific genres, important literary movements, or literary discourse/theory. Selections will vary according to instructor. May be repeated for credit. Conducted in French.

FR 512. French Civilization: Pre-Revolutionary. 3 Hours.

Historical and cultural foundation of France from the conquest of Julius Caesar to the French Revolution. Conducted in French.

FR 513. French Civilization: Post-Revolutionary. 3 Hours.

The history and myths of France after the French Revolution that produced French civilization.

FR 521. Literature and the Environment in the French-Speaking World. 3 Hours.

This course examines the poetics of the environment, known as ecopoetics, in the 20th- and 21st-century literary and cultural productions of the Francophone world, notably France, the Caribbean and Africa. It explores how francophone poets, fiction writers and philosophers write and think about the environment in relation to tradition, memory, sexuality, law, poverty and global capitalism. This course pays particular attention to the role of the environment as a space to discuss historical and cultural events, ranging from colonization to the Anthropocene. Students will discuss French-language theories of ecocriticism and examine the many voices of French-language literature that incorporate the environment in their works. Conducted in French.

FR 590. Study Abroad. 1-6 Hour.

Approved program in a French-speaking country.

FR 599. Individual Studies. 3 Hours.

Individual studies.

FS-Forensic Science

FS 550. Instrumental Analysis. 3 Hours.

This course concerns the theory and practice of instrumental methods for the separation, identification and quantitative analysis of chemical substances. Satisfactory completion of this course will afford students a working knowledge of analytical instrumentation typically employed in chemical/biochemical research and industry laboratories. It will also provide the student with an appreciation of the relative strengths and limitations of different instrumental based analysis methods.

FS 565. Cold Case Analysis. 3 Hours.

Introduction to the methods used in analyzing unsolved cases, including innovative uses of technology, 3rd party investigators, and teams.

FS 567. Forensic Toxicology. 3 Hours.

Discussion of drugs and poisons found in biological evidence, including the pharmacokinetic and pharmacodynamic properties of drugs and poisons, evidence collection and handling, selection of the most appropriate evidence, and analytical methods of detection.

FS 572. Molecular Genetics for Forensic Scientists. 3 Hours.

Gene structure, function, and regulation. Chromosome structure and inheritance. An overview of the human genome.

FS 650. Advanced Questioned-Death Investigation. 3 Hours.

Examination of forensic pathology as used in local medical examiners' offices.

FS 653. Advanced Investigation of Fires and Explosions. 3 Hours.

Introduction to arson investigation including overview of specific techniques used in case investigation.

FS 670. Elements of Forensic Science. 3 Hours.

Introduction to philosophical considerations and historic landmarks in the discipline; overview of major sub-disciplines in forensic science; examination of the ethics and expert witnesses and their role in forensic science.

FS 671. Conventional Criminalistics. 3 Hours.

Exploration of basic methodologies and approaches for identifying, collecting, and analyzing trace and pattern evidence, including an overview of microscopy.

FS 672. Advanced Conventional Criminalistics. 3 Hours.

Examination of advanced methods for the analysis of trace and pattern evidence.

Prerequisites: FS 671 [Min Grade: C]

FS 673. Forensic Drug Analysis. 3 Hours.

Exploration of the isolation, identification, and quantification of commonly abused drugs and common poisons; interpretation of findings and correlation with legal applications.

FS 674. Molecular Biology in Forensic Science. 3 Hours.

DNA replication, transcription, and translation. Polymerase chain reaction (PCR) techniques used to amplify human DNA for identification of biological evidence. Methods for identifying and collecting blood and semen stains. DNA extraction. Short tandem repeat typing using capillary electrophoresis.

Prerequisites: FS 572 [Min Grade: C]

FS 676. Advanced Biological Methods in Forensic Science. 3 Hours.

Discussion of current issues and trends in forensic DNA analysis, including advanced analysis of biological evidence samples.

Prerequisites: FS 674 [Min Grade: C]

FS 677. Advanced Drug Chem. & Toxicology. 3 Hours.

Discussion of relevant analyses conducted for drugs and poisons occurring in biological evidence; examination of the pharmacokinetic and pharmacodynamic properties of detected substances.

Prerequisites: FS 567 [Min Grade: C]

FS 679. Seminar in Forensic Science. 3 Hours.

Review of forensic science in the literature. Review, discussion, and presentation of forensic science student research.

FS 680. Graduate Internship in Forensic Science. 1-3 Hour.

Field experience in a forensic science laboratory.

Prerequisites: FS 698 [Min Grade: C] or FS 699 [Min Grade: C]

FS 686. Special Topics in Forensic Science. 3 Hours.

In-depth review of 3-4 topics in forensic science presented by practitioners in the field.

FS 698. Directed Research in Forensic Science (Non-Thesis). 1-6 Hour.

Independent study in a student's substantive area of interest under the direction of a faculty member.

Prerequisites: FS 679 [Min Grade: C]

FS 699. Thesis Research in Forensic Science. 1-6 Hour.

Independent study in a student's substantive area of interest under the direction of a faculty member. Admission to candidacy and successful defense of thesis proposal.

Prerequisites: GAC M

FS 703. Laboratory Rotation III: Drug Analysis. 3 Hours.

Lab Rotation III Drug Analysis.

FS 704. Laboratory Rotation II: Biological Methods. 3 Hours.

Lab Rotation II Biol Methods.

GBS-Graduate Biomedical Science

GBS 700. Molecular Neurodegeneration. 3 Hours.

Advanced Course. This course covers several of the most important molecules involved in neurodegenerative disease, including A β , tau, apoE, TDP-43, α -synuclein, LRRK2, prion protein (PrP), and Huntington (HTT). The goal is to develop a deeper understanding of each protein's normal structure/function and how these are altered in neurodegenerative disease.

GBS 701. Core Concepts in Research: Critical Thinking & Error Analysis. 1 Hour.

Do you love to "think science"? Would you enjoy looking at scientific questions through an unusual lens? Do you find stories about scientific discoveries fascinating, and would you like to learn more about what they mean to our scientific practice? Then this course is for you! This course examines the nature and philosophical foundations of science using an interdisciplinary approach that emphasizes critical thinking and storytelling; discusses the principles of good scientific practice – rigor, reproducibility and responsibility (the 3R's) - by exploring revolutionary discoveries in the life, public health and natural sciences; elaborates the relationship between theory, practice and serendipity in scientific discovery, and concludes with a discussion of the role of scientists in society.

GBS 702. You Teach Me. 3 Hours.

Advanced Course. You Teach Me: Autoimmune Effector Mechanisms and Inflammation in Type 1 and 2 Diabetes. This course will begin with a general overview of Type 1 and 2 diabetes, but in later weeks, students are given the opportunity to teach and describe a particular cell type and/or immune effector molecule that pertains to Type 1 or 2 diabetes pathogenesis. The teaching topic is for the presenter to decide, but the course master will provide guidance and input. Does your favorite immune cell or effector molecule have a role in the pathogenesis of Type 1 or 2 diabetes? You will be surprised at what you uncover.

GBS 707. Basic Biochemistry and Metabolism. 2 Hours.

Core course. This course is intended to provide students a rigorous background in the principles of biological chemistry. The principles taught are those we believe student should master and include the application of these principles to research protocols and performance.

GBS 708. Basic Genetics and Molecular Biology. 2 Hours.

Core course. This course is intended to provide students with a strong foundation in basic genetics and basic molecular biology so that students are able to apply and understand fundamentals in their lab research.

GBS 709. Basic Biological Organization. 2 Hours.

Core course. This course is intended to provide students with exposure to the fundamentals of basic cell biology and begin to build a foundation of knowledge that will be needed as the student progress along the scientific path.

GBS 710. Cell Signaling. 2-3 Hours.

Module Course. This course covers major extracellular and intracellular signal transduction cascades that regulate animal development and physiology. Topics include the mitogen activated protein kinase cascade, transforming growth factor beta, insulin, and cytokines.

GBS 712. Cellular and Molecular Aspects of Developmental Biology. 2-3 Hours.

Module Course. The goal of this course is to provide an introduction to the fundamentals of vertebrate developmental biology. The course will consist of faculty lectures and research paper discussion groups covering a broad range of developmental issues from fertilization to organogenesis.

GBS 714. Developmental Neuroscience. 2-3 Hours.

Module Course. The course will utilize the scientific literature and faculty lectures to cover a broad range of topics related to the mechanisms of building a brain. The topics covered range from neural induction in early development, to axonal guidance and synapse formation, to neuro-gial interactions in the adult nervous system.

GBS 715. Skeletal Development and Disease. 3 Hours.

Advanced Course. This class is designed for understanding Cellular and Molecular Signaling essential for the normal development and remodeling of skeleton and for learning genetic mechanisms associated with skeletal diseases and pathology.

GBS 716. Grantsmanship and Scientific Writing. 2-3 Hours.

The objective of the course is to teach students how to effectively write grant proposals. This course will provide hands on training in the preparation of a grant application and demonstrate effective strategies for assembling a successful proposal. With guidance from the faculty, the students will write a NIH style proposal on their dissertation research topic. After the proposal is complete, each grant will be reviewed in a mock NIH study section. Based on the comments from the study section, the student will revise the application and submit the proposal to his/her thesis committee as part of the qualifying examination for admittance into candidacy.

GBS 717. Methods and Scientific Logic. 1 Hour.

Methods and Logic in Science is a literature-based class in which students have to critically analyze primary research publications. The students will be expected to critique the thinking processes that went into the experimental design, interpretation, and presentation of the papers selected. Through this exercise, it is expected the students will learn to critically evaluate the experimental design and data interpretation, to improve their logical reasoning skills, and to understand the peer-review process behind scientific publication.

GBS 718. Histology of Mammalian Organs and Tissues. 3 Hours.

Advanced Courses. This course will cover the specialized cell biology and microscopic anatomy for each of the mammalian organ systems, as well as consider current research with regards to each system. The objective is to understand how cells organize into tissues and organ systems and how these systems function in the body, as well as appreciate the microscopic appearance of cells, tissues and organs.

GBS 720. Genomic Structure and Function. 2-3 Hours.

Module Course. This course will cover a wide variety of topics related to this topic, including genetic variation and polymorphisms, alternative splicing, microRNAs, and novel sequencing and microarray technologies.

GBS 722. Bioinformatics. 2-3 Hours.

Module Course. This course will cover a wide variety of different bioinformatics applications, which will be taught through using bioinformatics resource websites. The topics covered will include: introductions to large-scale, generic databases at NCBI, European Bioinformatics Institute, SwissProt, PDB, UniProt and Ensembl; Sequence analysis systems such as BLAST; statistical genetics; use of R/Bioconductor in research; super computing; Systems Biology; brief introduction into programming languages; resources that are used in Next Generation Sequencing (NGS) analysis, which includes variant discovery, transcriptomics, ChIP-Seq, epigenetics, micro-RNA, de novo assembly, microbiome and metagenomics.

GBS 723. Model Systems for Genetic Analyses. 2-3 Hours.

This course is designed to introduce various genetic model systems to students. The model organisms discussed in this course include bacteria, yeast, plants, worm, fly, killifish, zebrafish, chick, frog and mouse. Students will learn about the basic physiology and genetic manipulation tools for each organism. There will be one lecture highlighting the strength of each model organism. The students will also learn how to use induced pluripotent stem (iPS) cells in disease models.

GBS 724. Principles of Human Genetics. 2-3 Hours.

Module Course. This course will cover the general concepts of human genetics, including population genetics, dominant, recessive, X-linked, multifactorial, and mitochondrial inheritance and disease, as well as cytogenetics, chromosomal abnormalities, molecular genetics, and triplet repeat disorders.

GBS 725. Grant Writing- Crafting a Research Proposal. 1-3 Hour.

This course is designed to educate students on the best practices of research proposal preparation and review. Several grant mechanisms will be discussed, but the primary focus will be on preparation of NIH "F30/F31 style" proposals. These are six page research strategies focused on the research project of each student. Each week, the class will meet and discuss individual portions of the proposal (e.g. Aims, Significance, Strategy), and student will draft those sections during the intervening week. By the tenth week of the course, students will submit a complete research portion of an F30/F31 grant. These proposals will be reviewed by peers as well as by faculty members of a "live" study section to be held on the last day of class. After completion of the course, students will have substantial critiques of their proposals in hand. It is expected that students will revise these proposals and submit them to committee members as the written portion of the student's qualifying exam. Long term benefits of careful, critical grant preparation extend to many future career paths. Near term benefits of this course are to improve students' writing skills and progress into written qualifying exam. Finally, it is expected that these proposals will be submitted to one or more extramural funding agencies to support the students' training.

GBS 726. Advanced Medical Genetics and Genomics. 3 Hours.

Advanced Course. This course will focus on the medical application of advances in genetics and genomics. Topics include chromosome structure and function and major types of chromosomal abnormalities, cancer genetics and cytogenetics, inborn errors of metabolism, current strategies for detection of mutations associated with genetic disorders, genetic risk assessment and population genetics, and genomic approaches to diagnosis and risk stratification.

GBS 727. Advanced Human Genomics. 3 Hours.

Advanced Course. This course will cover the conceptual basis, major discoveries, and unsolved problems in human genomics, with an emphasis on disease applications. The goal is to make students conversant with the structures, functions, and natural histories of human genomes, the computational and experimental methods used to establish that knowledge, the applications of genomics to medical research, and the broader impacts of genomic research on the community. Each topic will be covered by an approximately 90-minute lecture from a subject-specific PI coupled to reading of pieces of primary literature. Students will also participate in 3 student-led journal clubs in which one or more papers are discussed in detail with the help of the teaching faculty. We will also perform 3 interactive sessions to teach basic computational skills in Unix, Perl and R. Grading will be determined by: discussion interaction, computational problem sets due in weeks 4, 6, and 8, and a "final" project in which students perform a small but cohesive set of bioinformatic analyses to address a question of their choosing, subject to approval/discussion with the teaching faculty. Format: Each of the 7 weeks will include two, 90 minute lectures performed at UAB. In weeks 2, 4, and 6, we will convene at HudsonAlpha for four-hour sessions. Each four-hour session will include ~1 hour of paper discussion, ~1 hour of teaching on a relevant computational topic, and ~2 hours of hands-on interactive data manipulation with commonly used data types and computational tools. Course meets both on UAB Campus and at Hudson-Alpha in Huntsville.

GBS 728. JC- Bio-Nano Technology. 1 Hour.

This journal club will focus on the use of biological materials as paradigms, structural scaffolds, and active elements of nanoscale materials.

GBS 729. Translational Approaches in Neurodegeneration. 3 Hours.

Advanced Course. With the current emphasis on "bench to bedside" strategies, successful translational research approaches may be helpful for a productive career in academic and industrial settings. This course uses the field of neurodegeneration as a vehicle for conceptualization to the failures, current challenges, and successes of different translational approaches. This course emphasizes active learning principles by placing students into scenarios of direct relevance to a career in science (e.g., emulation of study section discourse, formal critical debate that happens at international symposia, and informal discussions between colleagues).

GBS 730. Introduction to Neurobiology (Dauphin Island Course). 1-9 Hour.

Hands on experiments and classroom lectures onsite at the Dauphin Island Sea Lab. Students live onsite the entire course.

GBS 733. Diseases of the Nervous System. 2-3 Hours.

Major advances have been made in understanding diseases of the nervous system at a cellular and molecular level. Several new findings have had direct therapeutic implications and have resulted in the development of novel drugs or new disease management strategies. This course intends to review the most common brain and CNS disorders.

GBS 736. JC- Cognition. 1 Hour.

Journal club exploring various literature on cognition and cognitive disorders.

GBS 737. Neuro Student Summer Seminar Series. 1 Hour.

This seminar series features neuroscience graduate students presenting their research to their peers.

GBS 739. Neuropharmacology. 3 Hours.

Advanced Course. This course which will focus on the mechanism of action of CNS-active drugs. The first one-third of the course will consist of lectures that emphasize basic principles of neuropharmacology including neurotransmitter and receptor concepts, pharmacokinetics, pharmacodynamics and pharmacogenomics. The next two-thirds of the course will focus on the mechanism of action of different drug classes, including classical behavioral and biochemical studies, as well as genetic and molecular analyses of drug action. In each section, the instructor will give an overview lecture followed by student presentations. Student performance will be evaluated based on homework, oral presentation and written examination.

GBS 740A. Introduction to Immunology Part 1. 2-3 Hours.

Module Course. Introductory Immunology is a team-taught survey course that covers basic concepts of innate and adaptive immunity. These integrated series of lectures provide a firm foundation in immunology, especially for those with minimal immunology background, and serve as an important refresher for the developing immunologist.

GBS 740B. Introduction to Immunology Part 2. 2-3 Hours.

Module Course. Introductory Immunology is a team-taught survey course that covers basic concepts of innate and adaptive immunity. These integrated series of lectures provide a firm foundation in immunology, especially for those with minimal immunology background, and serve as an important refresher for the developing immunologist.

GBS 741. Lymphocyte Biology. 2-3 Hours.

Module Course. The objective of this course is to provide first year immunology students with the opportunity to gain a more in-depth understanding of selected aspects of lymphocyte biology. Possible topics include T cell subsets, B cell biology, lymphocyte activation, and transplantation immunology. The course is literature intense, and students are required to read and present numerous scientific papers.

GBS 742. Dendritic Cell Biology. 3 Hours.

Dendritic cells (DCs) are considered the bridge between the innate and the adaptive immune system. After recognizing pathogens in infected tissues, activated-DCs migrate into the secondary lymphoid organs where they prime pathogen-specific T cell responses. In the absence of DCs, T cell responses are not generated and protective immunity to pathogens, tumors, and vaccines are severely compromised, thus highlighting the importance of DCs in generating effective immune responses. In this course we will provide a comprehensive overview of DC biology, focusing on understanding DC heterogeneity, mechanisms of action and the roles played by the different populations of DCs during viral and allergic responses. The class will also focus on key functional differences between human and mouse DCs and the potential therapeutic use of DCs in immunotherapy.

GBS 744. Mucosal Immunology. 2-3 Hours.

Module Course. The mucosal immune system is essentially the primary site of interaction between invading pathogens and the immune system. Mucosal immunity has always been a strength of the immunology community at UAB and is rarely covered at most other institutions. This class will provide in-depth analysis of the structural features that distinguish the mucosal immune system from the peripheral immune system. Features of innate and adaptive immunity as they relate to mucosal immune responses will also be covered. The course will involve student presentations on selected topics.

GBS 746. GBS Special Topics. 1-4 Hour.

Varying topics offered to advanced graduate students in the GBS program.

GBS 746J. Exercise Medicine Journal Club. 1 Hour.

Exercise training in various forms induces a complex array of coordinated cellular and molecular processes that improve symptoms and comorbidities associated with numerous chronic conditions including musculoskeletal, cardiorespiratory, metabolic, immunologic, and neurologic disorders—and disease risks associated with chronic physical inactivity are widespread. Understanding the biological mechanisms underlying exercise-induced adaptations and their clinical utility in disease treatment and prevention is therefore a truly interdisciplinary effort. Students will interact with scientists and clinicians from several disciplines, and will present and discuss the latest and most impactful exercise-based research in both human and animal model systems.

GBS 747. Special Topics. 1-6 Hour.

Varying topics offered to advanced graduate students in the GBS program.

GBS 747J. Circadian Clocks Journal Club. 1 Hour.

In this journal club, we will bring together researchers with diverse perspectives, specialized techniques, and scientific backgrounds in order to develop a take-home message from recent circadian literature that may be applicable to all of our specific fields. Nearly all organisms possess an endogenous circadian clock that governs a wide array of rhythms, from biosynthetic to behavioral, and synchronizes (entrains) them to the 24-h environmental day-night cycle. The central circadian clock in the suprachiasmatic nucleus of the hypothalamus orchestrates rhythms in many peripheral clocks located throughout the brain and body, resulting in 24-h regulation of many physiological processes (including sleep and reproduction, metabolism, organ function, and seasonal behaviors). This regulation allows for a predictive, rather than purely reactive, homeostatic control. In humans, dysregulation of the circadian system has been implicated in some insomnias, cancers, affective disorders, and in aging and cognitive impairment. The discovery and characterization of oscillating “circadian clock” genes during the last decade has been largely due to cross-talk between researchers working on fruitflies and mice; this approach fueled insights into the likely design principles underlying the intracellular oscillatory machinery. Similar discussion and collaboration at a systems level of analysis may lead to new discoveries and approaches. Students will choose and present papers from any field as long as there is a circadian component to the paper.

GBS 748. Special Topics. 1-4 Hour.

Varying topics offered to advanced graduate students in the GBS program.

GBS 749. Mitochondria in Health, Disease & Toxicology. 3 Hours.

Advanced Course. The course will consist of lectures given by faculty members on specific topics in the field of mitochondrial biology and toxicology. These lectures will be complemented by student presentations of original research articles, which are related to the presented subject matter and that place the discussed topic into the context of human health, disease, and toxicology. This format will allow for students to gain a solid understanding of normal mitochondrial physiology, which they can then use to explore the literature to reveal the importance of mitochondrial dysfunction in human diseases and toxicology responses.

GBS 750. Nerves, Muscles and Bones. 2-3 Hours.

Module Course. This course will include an overview of basic cellular physiology and the neurological and musculoskeletal systems. Neurologic and neuromuscular diseases such as Parkinson's, multiple sclerosis, and myasthenia gravis will be discussed, along with primary myopathies (e.g., dystrophinopathies), joint diseases (osteoarthritis, acute arthritis, arthropathies, fibrosing disorders), and bone diseases (osteoporosis, osteopetrosis, osteonecrosis).

GBS 751. Heart, Lung, and Kidney. 2-3 Hours.

Module Course. Course will introduce the exquisitely integrated cardiovascular, respiratory, and renal systems. This integration will be reinforced with examination of numerous disease states (acidosis, hypertension, heart failure, atherosclerosis/chronic vascular inflammation, genetic and environmentally-induced pulmonary diseases, chronic kidney disease).

GBS 752. GI, Endocrine, and Immune System. 2-3 Hours.

Module Course. This course will examine the physiology and pathobiology of the gastrointestinal tract, followed by sub-modules focused on endocrinology and immunology. Students will learn how the endocrine system integrates homeostasis of multiple organ systems through a comprehensive approach—influencing all systems examined in the previous modules. The mechanisms and consequences of abnormal GI function (e.g., peptic ulcer disease, diarrhea), endocrine dysregulation (type II diabetes mellitus, gigantism, hyperthyroidism, Cushing's syndrome), and immune dysfunction (HIV, rheumatoid arthritis, type I diabetes mellitus) will be discussed. The course is divided into three blocks (GI, Endocrine, & Immune)—each with a block leader.

GBS 753. Pharmacology, Toxicology, and Molecular Medicine. 2-3 Hours.

Module Course. Students taking this course will be expected to have a thorough understanding of normal and abnormal organ system function as discussed in the three-modules described above. Lectures will build on that foundation to cover recent advances in drug design and development based on approaches of molecular pharmacology and molecular medicine. In addition, drug targeting strategies that take advantage of specificity in cellular structure and cell signaling processes will also be discussed.

GBS 754. Autophagy in Disease and Medicine. 3 Hours.

Advanced Course. This course reviews the pathobiology of autophagy and how it is essential for survival, differentiation, development, and homeostasis and how it serves an adaptive role to protect organisms against diverse pathologies, including infections, cancer, neurodegeneration, aging, and heart disease.

GBS 756. Cardiometabolic Disease Journal Club. 1 Hour.

The review of recently published articles focused on understanding the complex gene-environment interactions that contribute towards common metabolic diseases, such as obesity, diabetes, and cardiovascular disease. Articles most commonly reviewed range from the whole organism (e.g., physiology, energy balance, metabolism, endocrinology, genetics) to individual cells (e.g., cellular metabolism, signal transduction, and transcriptional regulation), in both animal models and humans. In addition, articles investigating novel lifestyle (e.g., diet and/or exercise), pharmacological (e.g., appetite suppressants), and surgical (e.g., gastric by-pass) interventions designed to treat cardiometabolic diseases are routinely discussed.

GBS 757. Biology of Disease. 3 Hours.

Advanced Course. Biology of Disease is a comprehensive course in general pathophysiology designed for graduate students in the GBS program or other science related graduate programs. This course will begin with an overview of general anatomy and histology and then will investigate basic pathophysiologic principles emphasizing pathogenic mechanisms and clinically important diseases where current research areas will be highlighted. The biomedical science students will learn the mechanisms involved in disease processes and will develop an understanding of diseases and clinical medicine to help them converse knowledgeably with medical colleagues and target their research towards clinically relevant issues.

GBS 758. Cardiovascular Biology. 2-3 Hours.

This course will consist of didactic lectures given by faculty members from UAB and guest lecturers from other institutions on a specific topic in the field of cardiovascular biology, which will then be followed up by student presentations of original research articles which are related to the presented subject matter and that place the discussed topic into the context of human health and disease. This format will allow for students to first gain a solid understanding of normal and pathological aspects of cardiovascular physiology, the basic experimental approaches that can be used in bench to bedside studies and the current perspectives on a broad range of current hot topics in the field. In addition, this course has unique components including instruction on how to review a research paper and prepare for an interview for an entry level position (e.g. postdoctoral) in academia and/or industry. These exercises will provide an appreciation of the issues related to a career scientific research. This course will be guided by the Course Director and other faculty members who will assist in the selection of relevant readings and facilitate in-class discussions among the students.

GBS 760. Prokaryotic Genetics and Molecular Biology. 2-3 Hours.

Module Course. This course is designed to familiarize students with advanced knowledge in recombination, transcription, translation, regulation of gene expression, transport mechanisms and protein export. The students will learn the fundamental principles how structural components of bacterial cells are built and how bacteria-specific metabolic pathways can be exploited by antibiotics. We will also cover state-of-the-art technologies such as whole genome sequencing, microarray experiments, methods to analyze protein-protein interactions and the metabolome of bacteria. In this course, we emphasize the training of critical thinking and foster the ability of the students to design their own experiments to solve scientific problems in bacteriology. The goal of the course is to provide a strong foundation for advanced bacteriology classes and for doing research in any bacteriology lab.

GBS 762. Virology. 2-3 Hours.

Module Course. This course is designed to familiarize students with the general steps involved in viral lifecycles and use this knowledge as a framework for understanding the similarities and differences in the lifecycles of (+) and (-) stranded RNA viruses, DNA viruses, and retroviruses. The course also covers the role of viruses in oncogenesis, the origin and evolution of viruses, the innate immune response to viral infections, and the development of antiviral chemotherapeutics. The goal of the course is to provide a strong foundation for advanced virology classes and to provide students with enough background in virology to be comfortable teaching in a college level microbiology class.

GBS 763. Microbial Pathogenesis. 2-3 Hours.

Module Course. The course in Bacterial Pathogenesis contains introductory lectures that provide an overview of major concepts including virulence factors, and host immune mechanisms. Most of the lectures describe the unique aspects of specific bacterial (and fungal) pathogens. Although many of the most important medical pathogens are covered, the course focuses especially on those bacterial and fungal pathogens studies most intensively at UAB. Each week students will be given a quiz based on the lectures of the preceding week. To answer the questions, an understanding of the lecture material will be needed. The questions are designed to help the students thinking about hypotheses and concepts in Bacterial Pathogenesis.

GBS 764. Structural Biology for Micro. 2-3 Hours.

Module Course. Structural biology is central to understanding the function of biological macromolecules and is to relevant to all fields of modern biological science. This course will provide a basic introduction to the elements of structural biology including the levels of protein structure (primary, secondary, tertiary, quaternary), the basis of structure determination by X-ray crystallography, NMR, and cryo-electron microscopy, and will explore the structure/function relationships in select systems.

GBS 765. Hybrid Structural Techniques as Applied to Cellular & Molecular Biology. 3 Hours.

Advanced Course. This course will focus on the use of X-ray crystallography, Cryo-Electron microscopy and Image Reconstruction, NMR, and Mass Spectrometry to obtain structures of biological macromolecules. Each component will be taught separately. Each module will focus on insuring the student has a basic understanding of the essential principles of the technique and its practical application. Examples will generally be drawn virology and immunology.

GBS 766. JC- Inflammation. 1 Hour.

Inflammation Journal Club presents the state of the art papers that fall broadly in the area of inflammation, which include aspects of basic cellular and molecular mechanisms, animal models and immunopathology of human diseases including, infectious diseases, cancer and chronic lung diseases.

GBS 768. Communicating Science: Reading, Writing and Presentation. 2-3 Hours.

This course will teach students how to make formal scientific oral presentations and how to write a paper for publication in a scientific journal.

GBS 769. Carcinogenesis. 2-3 Hours.

Module Course. The course is intended to introduce the concepts in carcinogenesis, followed by understanding the etiology, molecular events and signaling pathways involved.

GBS 770. Pathobiology of Cancer. 2-3 Hours.

Students will gain an understanding of the pathology of cancer in general and an appreciation of the gross, histologic and molecular pathology of cancers of multiple organs, including the brain, lungs, breast, prostate, colon, bone, bone marrow and lymph nodes. The students will learn the basis of the pathologic classification of cancers of particular organs, including the gross, microscopic and molecular features that aid in classification. Then the clinical implications (i.e., prognostication and treatment) of the classification systems will be discussed. Also, current controversies and topics of research interest may be introduced. In addition, several lectures will focus on the epidemiology of cancer and translational research in cancer, including animal models of cancer.

GBS 774. Cancer Immunology. 2-3 Hours.

Module Course. A summary of key signaling pathways that regulate cancer cell growth, death and behavior will be presented. An intense evaluation of mechanisms involved in pro- and anti-tumor immunology will be presented along with theoretical aspects of cancer immunotherapy.

GBS 775. Cancer Treatment. 3 Hours.

Advanced Course. Students will study current theories regarding chemotherapy, radiation therapy, chemoprevention and imaging. Students will also be exposed to state-of-the-art for each of these treatment/diagnostic modalities. This course uses a combination of textbook and literature readings and classroom discussions to provide students with an understanding of the different classes of drugs used to treat cancer. The course focuses on the mechanisms of drug action, the basis for selectivity and therapeutic applications. Traditional as well as novel approaches to therapeutics will be discussed, as well as the role of drug resistance and strategies for its management.

GBS 776. Cancer Biology Journal Club. 1 Hour.

This journal club focuses on current topics in all areas of Cancer Biology. Each week, a student will present and discuss a recently published paper related to a selected monthly cancer theme. All students are expected to actively participate in the discussion. The goals of this course are to enhance one's ability to critically read the literature, to stay abreast of current findings, and to improve presentation skills.

GBS 777. Cancer Biology Seminar. 1 Hour.

Required of Cancer Biology Theme students. Seminars on various topics in cancer biology or other biomedical science topics. Students will attend a seminar offered by a Joint Health Sciences department/theme, keeping a journal that includes each seminar date, title and a brief synopsis of the seminar. Journals are to be kept electronically and emailed in on time. Anyone turning in a journal after deadline will receive NP for the course. Students may include no more than 2 student public defenses as a seminar entry each semester.

GBS 778. Cancer Metastasis. 3 Hours.

Advanced Course. The majority of cancer associated deaths are due to complications arising from metastatic disease. The process of metastasis is highly selective and is the result of a tumor cell completing a series of complex interrelated steps. Despite our improved knowledge of this disease, we still do not fully understand the molecular mechanisms regulating tumor progression and metastasis. This advanced course will cover basic mechanisms of how a tumor cell progresses from growth at the primary site to forming an overt lesion in a secondary organ and techniques used to study this disease.

GBS 779. Translational Research in Cancer. 3 Hours.

Advanced Course. This course covers topics on patient-based research efforts that may be important adjuncts to basic science studies. Topics include tissue collection, ex vivo assays, animal models, high-throughput arrays, drug development, epidemiologic studies, basics of clinical trials, and other topics.

GBS 781. Molecular Enzymology. 2-3 Hours.

Module Course. Course intends to touch on the various mechanisms of enzymes in biological systems.

GBS 782. Molecular Genetics. 2-3 Hours.

Module Course. Course studying the structure and function of genes at a molecular level.

GBS 783. Advanced RNA Biology. 3 Hours.

Course exploring the biology, biochemistry, structure and function of RNA at a research level.

GBS 784. Stem Cell Biology. 2-3 Hours.

Module Course. This course will explore the derivation, manipulation, and differentiation of embryonic, fetal, and adult stem cells in both mice and humans. Topics to be discussed include stem cell self-renewal, teratoma formation, hematopoietic stem cells, neural stem cells, trans-differentiation, nuclear transfer, and reproductive and therapeutic cloning. The course will be a mixture of instructor lectures and interactive journal club style presentations from the current stem cell literature by the students.

GBS 786J. Journal Club in Structural Biology. 1 Hour.

The journal club will discuss peer-reviewed scientific articles of interest to the structural biology community. In general, the majority of articles will contain macromolecular structural data determined by one or more of the following methods: X-ray crystallography, cryo-EM, NMR and Mass Spectroscopy. It will help students become familiar with our present understanding of the structure/function for different classes of macromolecules and gain an appreciation of state-of-the-art biophysical techniques available to determine macromolecular structures.

GBS 787. Special Topics. 1-4 Hour.

Varying topics offered to advanced graduate students.

GBS 788. Special Topics. 1-4 Hour.

Varying topics offered to advanced graduate students.

GBS 789. Evolutionary Developmental Biology. 2-3 Hours.

The class is aimed at introducing the concepts of evolution and describing how changes in gene expression and function during embryonic development represent the central molecular mechanism underlying evolution.

GBS 790. Clinical Evaluation of Cognitive Disorders. 2 Hours.

This course will provide clinical exposure to the evaluation and care of patients with cognitive disorders through a combination of didactic sessions and practicum visits, including observation of visits for patients with developmental and age-related cognitive impairment, neuropsychological testing, and functional MRI.

GBS 791. Graduate Neuroscience Journal Discussion. 1 Hour.

Students will participate in journal club style discussion on current topics in neuroscience research and develop presentation skills.

GBS 792. CMDB Seminar. 1 Hour.

Seminars on various topics in cellular and molecular biology or other biomedical science topics. Students will attend a seminar offered by a Joint Health Sciences department/theme, keeping a journal that includes each seminar date, title and a brief synopsis of the seminar.

GBS 793. Alzheimer's and Frontotemporal Dementia Journal Club. 1 Hour.

Discussion of important current research on Alzheimers disease and frontotemporal dementia, with a focus on basic and translational science.

GBS 794. Lab Rotation 4. 1-9 Hour.

Rotation for students needing a fourth rotation.

GBS 795. Lab Rotation 1. 1-9 Hour.

First rotation for first year GBS Theme students.

GBS 796. Lab Rotation 2. 1-9 Hour.

Second rotation for first year GBS Theme students.

GBS 797. Lab Rotation 3. 1-9 Hour.

Third lab rotation for first year GBS theme students.

GBS 798. Non-Dissertation Research. 1-12 Hour.

Lab hours for students in the GBS Theme who have not entered candidacy.

GBS 799. Dissertation Research. 1-12 Hour.

Lab hours for students in the GBS Theme who have entered candidacy.

Prerequisites: GAC Z

GBSC 700. Journal Clubs. 1 Hour.

Journal Clubs.

GBSC 701. Seminars. 1 Hour.

Seminars.

GBSC 703. Bioinformatics Courses. 1-6 Hour.

Various Bioinformatics courses.

GBSC 704. Practical Course in Cryo-Electron Microscopy. 2-3 Hours.

This is a two-week practical course in high resolution electron microscopy (EM) with emphasis on cryo-EM and the preparation and observation of frozen-hydrated particulate samples such as protein complexes, viruses and whole bacterial cells. The first week will cover some theoretical aspects and general EM theory in morning lectures, followed by practicals and demos in the afternoon. The second week will consist of independent, hands-on practical work on the Tecnai F20 cryo-electron microscope. Students have the opportunity to work on their own samples.

GBSC 705. Protein Mass Spectrometry. 3 Hours.

Advanced Course. Students participating in this course become familiar with standard analysis of proteins and protein mixtures by analytical mass spectrometry. This includes the analysis of recombinant and native isolations of proteins including the analysis of post translational modifications. The first month of the course will focus on the fundamentals of mass spectrometry and protein analysis and will be open to first year students. The second and third months of the course is followed by an applications section for students who have completed their first year course requirements. Included topics throughout the course include, sample preparation, mass spectrometry instrumentation, mass spectral interpretation, proteomic experimentation, database searching, analysis of protein modifications, targeted analysis of proteins in complex mixtures, and structural techniques in mass spectrometry.

GBSC 706. NMR Spectroscopy. 3 Hours.

Advanced Course. The main purpose of this course is to provide fundamental understanding (physics) to graduate students who want to utilize NMR spectroscopy as a major tool in their structural biology research. Students with elementary Quantum Mechanics background will gain the optimum benefit from this course. The course is offered every two years. This course covers basic NMR Theory and Concepts (Nuclear Spin-1/2, Bloch Equations, FT-NMR, Rotating Frame, Various Relaxation Mechanisms, Chemical shifts, J couplings, etc.), Density Matrix Theory, Product Operator Description of 2D- and 3D-NMR, Nuclear Overhauser Effect, Conformational Exchange, Solomon-McConnell equations, Residual Dipolar Couplings, NMR spectra of Amino acids, Peptides and Proteins, Solvent Suppression Methods, Random Coil Chemical shifts, 2D-NMR methods for assignments and structure calculations of peptides and small proteins, 3D/4D-NMR methods for assignment and structure studies of large proteins, CYANA Structure-Refinement calculations, NMR of nucleic acids, Protein Dynamics, and study of Protein-Ligand complexes including applications in drug design (STD-NMR, trNOESY, SAR-by-NMR and ILOE).

GBSC 707. Metabolic Regulation of Gene Expression. 3 Hours.

Advanced Course. This course will focus on the impact of various metabolites on gene expression, cell growth, and differentiation in health and disease. The key topics for discussion will include the types of biologically active molecules in mammalian tissues, the mechanisms that regulate their concentrations at different stages of life, and the mechanisms by which these bioactive molecules regulate gene transcription through binding to nuclear receptors/transcription factors. Primary literature applicable to these topics will be the basis for discussion. Each section on a specific type of signaling molecule will start with an introductory lecture, followed by student presentations focusing on various aspects of the topic. The goal of this course is to familiarize students with the mechanisms of action and diversity of bioactive metabolic compounds that directly affect the expression of proteins at the level of gene transcription as well as mRNA translation during development and in adulthood.

GBSC 709. Advanced Stem Cell Biology & Regenerative Medicine. 4 Hours.

Advanced Course. Patient-specific cell therapies promise to transform medicine in the next two decades. In order for these regenerative therapies to be safe and effective, basic mechanisms of stem cell biology must be better understood. The goal of this course is to provide students with the basic science foundation to contribute to this field and to provide examples of translating this information to next generation medical therapies.

GBSC 710. Advanced Chromatin Biology. 3 Hours.

Advanced Course. Chromatin biology may hold the keys for discovery of novel cures for cancer and other chronic genetic diseases. Chromatin state directly influences the development of regenerative medicine. Over the last few years, there has been an explosion of new insights into chromatin biology. This course will focus on four key topics: chromatin structure and gene regulation, chromatin in cancer biology, chromatin in developmental biology, and practical approaches in chromatin research. The format will be 1/3 lecture and 2/3 student presentations. Primary literature related to these topics will be assigned for discussion. The goal of this course is to help students to understand the cutting edge knowledge in chromatin biology and to be able to address questions on chromatin in their own research.

GBSC 712. Evolution of Immunity. 3 Hours.

Advanced Course. Every form of multicellular life on earth has the capacity to carry out host defense. In higher order vertebrates the necessity for immunity against pathogens has given rise to an elaborate and complex system that involves a variety of specialized cell types and effector molecules. How did this complex system evolve? This course will explore immunity across the animal kingdom with a special emphasis on points of convergent and divergent evolution of immune mechanisms and strategies.

GBSC 713. Epigenetics Discussion. 1 Hour.

This course provides the student with an exposure to a wide range of basic epigenetics research topics and will promote scientific literacy, discussion skills, and critical thinking skills. In addition, students will gain experience developing lectures and providing constructive criticisms to their peers.

GBSC 714. Applications of Microscopy. 3 Hours.

Advanced Course. Light and fluorescence microscopy are widespread research tools, used in many biological disciplines. This course focuses on technique fundamentals as well as powerful applications in the study of cellular structures, dynamics, and functions. We will examine how different types of microscopy work, sample preparation, and how to select the best technique for your biological question. A microscopy image is much more than a pretty picture; we will cover image processing, quantitative analysis, presentation, and ethics concerning image manipulation. To further explore the theoretical and practical principles of imaging, students will participate in hands-on microscopy projects.

GBSC 715. Molecular Basis of Disease. 3 Hours.

Advanced Course. This course that explores the molecular and cellular mechanisms that underlie the causes, symptoms, and complications of various diseases, including diabetes, autoimmune diseases, atherosclerosis, and cancer. An integrative approach to the clinical, pathologic, biochemical, and molecular perspectives of diseases is introduced. This will help the students to understand how metabolic pathways, cell cycle regulation, signal transduction, transcription factors, and protein glycosylation impacts on our ability to understand and treat human disease.

GBSC 716. Special Topics in Microbiology. 1-9 Hour.

Various topics in Microbiology.

GBSC 717. Protein/DNA Xray Crystallography. 3 Hours.

Advanced Course. Xray crystallography is an important technique to resolve protein/DNA structures and it requires specialized training. Covered in this will not only be the theoretical aspects, but there will also be hands-on training sessions on each topic. Some topics covered: protein crystallization, data collection and reduction, structure solution, refinement and how to report structures.

GBSC 718. Epigenetics. 2-3 Hours.

This course introduces the fundamentals of epigenetic controls and how epigenetic regulation is being investigated and utilized in basic and translational research. Specifically, students learn of changes in gene expression or cellular phenotype caused by mechanisms other than changes in the underlying DNA sequence. Students also gain an understanding of the differences between genetic and epigenetic influences on gene expression; epigenetic mechanisms that regulate gene expression; how epigenetic modifications are propagated; and the phenotypic consequences of normal versus abnormal epigenetic regulation in disease, development, and evolution.

GBSC 720. Journal Club 2. 1 Hour.

This will house various journal clubs, differentiated by Section numbers. To be considered like a Special Topics course.

GBSC 721. Brain Tumor Biology. 3 Hours.

Advanced Course. This course will review the types of adult and pediatric brain tumors with a focus on 3 major components: 1-cellular genetics and signaling, 2-pro-tumorigenic cellular biology, and 3-preclinical models and clinical treatments. At the end of the course, the student should have a thorough understanding of the changes in tumor vs. normal tissue that promote cancer initiation and growth. The student should understand how these changes provide the foundation for current and cutting edge treatment strategies. The focus will be on gliomas, but other tumors will be discussed.

GBSC 722. Special Topics. 1-9 Hour.

Courses offered for only 1 semester.

GBSC 723. Career Dev Courses. 1-9 Hour.

Various courses relating to Career Development.

GBSC 724. Metabolomics. 3 Hours.

Advanced Course. The goal of the course is to provide training on (1) the new vision of the chemical composition of the metabolome, (2) its impact on phenotypes in normal health and disease, (3) how to design experiments that (a) reduce systematic variation and (b) deal with the effects of the microbiome, (4) recovery of the metabolome from body fluids/excreta, cells and tissues, (5) analytical methods used in metabolomics, (6) post-acquisition data processing and univariate and multivariate statistical analysis, (7) metabolite confirmation, (8) unknown (new) metabolite identification, (9) pathway analysis, (10) targeted quantitative analysis of specific pathways, (11) use of stable-isotopically labeled precursors to measure pathway dynamics, (12) metabolomics in human and animal models of disease (atherosclerosis, cancer, diabetes, eye diseases, immune diseases and neurodegeneration), (13) metabolomics in situ (imaging mass spectrometry and direct analysis in the clinic and the operating room) and (14) integration of metabolomics with other 'Omics (genomics, transcriptomics and proteomics).

GBSC 725. Cancer & Micro Environment. 3 Hours.

Advanced Course. The growth and progression of cancer is closely regulated by the tumor microenvironment. Through this course students will gain a comprehensive understanding of the tumor microenvironment by studying topics that include, for example, the cellular and a cellular composition of the microenvironment, mechanisms of communication between tumor and host cells and how the tumor microenvironment promotes tumor growth, metastasis and drug resistance. Students will also learn the in vitro and in vivo models utilized for studying the tumor microenvironment and current approaches for targeting the tumor microenvironment for cancer therapy.

GBSC 726. Science Communication & Review. 2-3 Hours.

This course will familiarize students on four major components of science communication and review: 1) how to read and review scientific manuscripts, 2) how to review scientific proposals, 3) how to give effective poster presentations and elevator summaries, and 4) how to give an oral research presentation. The course will offer the opportunity for students to be fluent and effective communicators and scientific reviewers.

GBSC 727. Neuro Systems. 2-3 Hours.

Module Course. Systems neuroscience studies how neural circuits and systems work together to create behavior. This course is a short overview of systems neuroscience ideas and concepts, from alpha oscillations to zebra-finch song.

GBSC 728. Cancer Genomics, Epigenetics, & Therapeutics. 3 Hours.

Advanced Course. Recent advances in high throughput technologies have enabled researchers to decipher the genomic and epigenetic alterations in cancer in great detail. In this course "Cancer Genomics and Epigenetics", students will learn the technologies used for investigating the genomic and epigenetic alterations in cancer and effect of these changes on cancer progression and potential application of understanding these changes. The goal of this course is to provide the students with an exposure to a wide range of high throughput technologies used in cancer genomic research, basic and translational genomic and epigenetics research. In addition, the course will highlight the major discoveries in the area of gene mutations and gene fusions as well as therapeutic targeting some of the critical molecular alteration. This course will give exposures to students to state of the art cancer research topics, promotes scientific literacy, discussion skills, and critical research integration skills. In addition, students will also gain experience in presentation and ideas to develop new projects in cancer genomics and epigenetics research areas.

GBSC 729. Cell Neurophysiology. 2-3 Hours.

Module Course. This course presents the fundamental principles of how nerve cells work. Starting with ion channels themselves, it integrates them into the functioning of individual neurons. The way in which voltage-dependent ion channels act in concert to generate action potentials and synaptic potentials is discussed in the framework of basic physical laws. The mechanisms of transmitter release and the postsynaptic actions of transmitter are studied. The overall aim is to provide students with a quantitative understanding of how individual nerve cells communicate with each other.

GBSC 730. Respiratory Tract Pathogens. 3 Hours.

Advanced Course. This course will examine major bacterial, viral, and fungal pathogens that infect the respiratory tract in humans, each using different mechanisms in attempts to evade host defenses. It will also introduce fundamental aspects of respiratory tract anatomy, lung function, and the clinical approach to patients suspected to have pneumonia. Classes will consist of an introduction to each topic provided by the faculty preceptor followed by a critical analysis of the primary literature in the form of presentations by individual students and in-class discussion.

GBSC 732. Advanced Study of Renal Physiology. 3 Hours.

Advanced Course. The objective of this course is to increase familiarity with classic renal physiology terminology, improve understanding of mechanisms for evaluating renal function, and to become familiar with the forefronts in research related to renal physiology and disease.

GBSC 733. Art of Reproducible Science. 2 Hours.

This course is open only to GBS students on a T32 grant. The goal of the Mastering the Art of Reproducible Science course is to advance the visibility and awareness of this critical issue and to equip students to better recognize and eliminate sources of irreproducible data. The course will explore the fundamental causes and consequence of data irreproducibility, discuss best-practice procedures to minimize data irreproducibility, and discuss the responsibility of the scientific community to confront the irreproducibility crisis. The course is structured around 4 month-long modules using a team-based learning strategy.

GBSC 734. Experimental Model Systems, Scientific Stringency and Qualification Exam Preparation. 3 Hours.

Advanced Course. This course is designed to help students gain in-depth knowledge and understanding of a broad range of experimental model systems used in immunology studies. All enrolled students will give a brief presentation of their research projects in the beginning weeks. Then, based on the students' research interests/projects, the experimental model systems that are involved or have the potential to be involved will be identified to form specific topics for the rest of the course.

GBSC 735. Discoveries in Molecular Biology. 3 Hours.

Advanced Course. The aim of the course is to familiarize students with landmark, historical discoveries in biological research. The course will focus on seminal publications in different disciplines, predominantly but not limited to: biochemistry, cell biology and genetics. The course will be organized as student-led discussions of selected papers. In-depth analysis of the presented literature will facilitate gaining broadened knowledge of selected fields and improve capability of critically reading manuscripts. For each publication, special emphasis will be placed on examining the experimental design, interpretation of results, and organization and reporting of the findings. Classes will consist of an instructor-led introduction to the topic and presentation of a historical perspective followed by a group discussion of the paper. An important goal of the course is to help students understand and appreciate principal discoveries.

GBSC 736. Electron Microscopy: Methods & Applications to Cell and Structural Biology. 3 Hours.

Advanced Course. The purpose of this course is to provide an in-depth understanding of electron microscopy (EM) and 3D reconstruction, especially as applied to high-resolution cryo-EM and single-particle reconstruction methods. The course will cover both theoretical and practical aspects of EM, and will incorporate practical use and hands-on training in preparation and imaging on the FEI Tecnai F20 electron microscope and 3D reconstruction with EMAN and Relion.

GBSC 737. Independent Study. 1-3 Hour.

This course is offered to students for special circumstances. See course director for approval.

GBSC 738. HudsonAlpha Courses. 1-3 Hour.

This course is offered to students at HudsonAlpha. See course director for more information.

GBSC 739. Training Grant Course. 1-3 Hour.

This course is offered to students taking training grant initiated courses. See course director for more information.

GBSC 740. Advanced Topics in Bacterial Pathogenesis. 3 Hours.

The Advanced Topics in Bacterial Pathogenesis course provides a detailed examination of major concepts related to host-pathogen interactions. Its primary focus will be the molecular mechanisms responsible for subversion of host defense by pathogenic bacteria. Select topics will be covered in two parts on different dates: 1) a general presentation by expert faculty, 2) student presentations on assigned subtopics in form of a 10-15 minute PowerPoint presentation and handout.

GBSC 741. Fundamentals of Renal Physiology. 3 Hours.

This course objective is to provide detailed understanding of renal physiology through a series of lectures, histology analyses, small group discussion, workshop based study problems, and simulations.

GBSC 742. GBS Student Theme Meeting Course. 1 Hour.

This course will be utilized for GBS theme meeting courses.

GBSC 743. Glycobiology. 3 Hours.

Glycobiology is the study of the structure, biosynthesis, and biology of glycans. Glycans modulate or mediate a wide variety of cellular functions. Glycoproteins and polysaccharides are also important components of bacterial cells and glycoproteins play important roles in biology of some viruses. The primary aim of this course is to provide a current overview of the fundamental facts, concepts, and methods in Glycobiology with emphasis on aspects relevant to human health and disease. The course will combine faculty lectures, student presentations of selected papers, and discussions. The course will be taught by faculty who have studied different aspects of glycobiology and made seminal discoveries in the field.

GC-Genetic Counseling

GC 501. Genetics in Medicine. 3 Hours.

Overview of the clinical evaluation and assessment of an individual with a congenital anomaly, mental retardation and/or genetic condition; includes introduction to etiology of common genetic conditions, pediatric genetic counseling, and testing and treatment options for genetic disorders.

GC 504. Prenatal Genetics, Embryology and Teratology. 3 Hours.

Basic concepts of embryology, teratology and physiology as related to human development and genetic disease and their applications in prenatal genetic counseling.

GC 505. Principles of Cancer and Adult Genetics and Counseling. 3 Hours.

Genetic mechanisms of cancer syndromes, cancer predisposition, and adult onset disorders; psychosocial issues related to these conditions that influence the genetic counseling process.

GC 506. Theory and Practice of Genetic Counseling. 3 Hours.

Development of advanced genetic counseling skills for application in clinical settings.

GC 510. Introduction to Genetic Counseling. 3 Hours.

Introduction to the field of genetic counseling and the basic principles of the profession.

GC 560. Genetic Counseling Journal Club. 1 Hour.

Review, presentation and discussion of relevant literature in medical genetics and genetic counseling.

GC 600. Advanced Clinical Skills in Genetic Counseling - SL. 2 Hours.

Advanced genetic counseling clinical skills utilized in reflective practice, industry, and psychosocial counseling. Students will have opportunities to understand and participate in the lived experiences of people with disabilities through clinical and non-clinical professional duties as a genetic counselor. Attention will be placed on personal and group reflection of these experiences, including service learning and simulations.

GC 602. Advanced Topics in Genetic Counseling. 1-4 Hour.

Exploration of advanced topics in genetic counseling related to clinical practice and non-clinical professional duties as a genetic counselor.

GC 650. Clinical Laboratory Rotation. 2 Hours.

Exposure to genetic testing protocols, laboratory genetic counseling, and specimen processing and reporting through rotation in biochemical, molecular, and cytogenetic laboratories.

GC 651. Clinical Rotation I. 4 Hours.

Initial clinical rotation to establish basic skill sets in genetic counseling. Supervised and direct patient contact in prenatal, pediatric, adult, cancer, and specialty clinics will allow students to acquire cases for ABGC certification.

GC 652. Clinical Rotation II. 2 Hours.

Students utilize intermediate clinical skills in assigned clinical setting. Students interact with an array of genetic specialists. Supervised and direct patient contact in prenatal, pediatric, adult, cancer and specialty clinics will allow students to acquire cases for ABGC certification.

GC 653. Clinical Rotation III. 2 Hours.

Students will apply progressive genetic counseling skills in a clinical setting. Students will interact with an array of genetic specialists. Supervised and direct patient contact in prenatal, pediatric, adult, cancer and specialty clinics will allow students to acquire cases for ABGC certification.

GC 654. Clinical Rotation IV. 2 Hours.

Students will apply progressive genetic counseling skills in a clinical setting. Students will interact with an array of genetic specialists. Supervised and direct patient contact in prenatal, pediatric, adult, cancer and specialty clinics will allow students to acquire cases for ABGC certification.

GC 655. Clinical Rotation V. 2 Hours.

Students will apply progressive genetic counseling skills in a clinical setting. Students will interact with an array of genetic specialists. Supervised and direct patient contact in prenatal, pediatric, adult, cancer and specialty clinics will allow students to acquire cases for ABGC certification.

GC 698. Non Thesis Research. 2 Hours.

Graduate level research project under the supervision of clinical faculty.

GC 725. Advanced Medical Genetics and Genomics. 3 Hours.

Medical application of advances in genetics and genomics; chromosome structure and function and major types of chromosomal abnormalities, cancer genetics and cytogenetics; current strategies for detection of mutations associated with genetic disorders, genetic risk assessment and population genetics; genomic approaches to diagnosis and risk stratification.

GER-Gerontology

GER 540. Biology of Aging. 3 Hours.**GER 590. Seminar in Sociological Substantive Areas. 1-3 Hour.****GER 593. Educational Gerontology. 3 Hours.****GER 595. Independent Study in Longterm Care. 1-3 Hour.****GER 603. Politics of Aging. 3 Hours.**

Analysis of the role of aging in the political process. Focus on political demands made by elderly, role of aging in political decision making, and policy outputs relevant to older population.

GER 610. Health and Economics of Aging. 3 Hours.

Overview of economic aspects of aging focusing on the role of health and health care in the United States. The financing of health care for the aged will be the primary topic of the course. The economic factors influencing formal and informal sources of long term care also will be addressed. A final topic will be the role of health in retirement decisions and pension policies.

GER 611. Managed Care. 3 Hours.

Examination of factors that influence future direction of managed care. Changing relationships among major stakeholders. Broad areas of discussion including marketing dynamics, product characteristics, reimbursement methodologies, contracting issues, management information systems, government initiatives, legal and ethical issues, and future trends. 3.000 Credit Hours.

GER 638. Gerontology and Geriatrics Multidisciplinary Core. 3 Hours.

The curriculum consists of lectures and discussions sessions on the multidisciplinary treatment of health and aging.

GER 643. Long-Term Care Administration. 3 Hours.

Seminar analysis of effect of chronic conditions and aging on delivery of health services, nursing homes and alternatives, mental health facilities and agencies, and rehabilitation facilities and services. Field trips and individual research projects. 3.000 Credit Hours.

GER 655. Minority Aging. 3 Hours.**GER 665. Geriatric Rehabilitation for the Health Profession. 3 Hours.**

Rehabilitation of the elderly person from the perspective of age-related changes, the impact of selected functional problems, psychosocial aspects of decreasing function, personal and environmental adaptations, and the continuing autonomy of the individual.

GER 680. Health Promotion for the Aged. 2 Hours.

Problems and public health solutions for older Americans examined. Sub-areas of aging are explored; biological, social, behavioral, and economic aspects of aging.

GER 690. Independent Study in Gerontological Nursing. 1-3 Hour.**GER 691. Seminar in Gerontological Substantive Areas. 1-3 Hour.**

Seminar in Gerontological Substantive Areas.

GER 734. International Medical Sociology. 3 Hours.

Cross-cultural, comparative analysis of health and health care delivery systems in both industrialized and developing countries.

GER 738. Gerontology and Geriatrics Multidisciplinary Core. 3 Hours.

Gerontology and geriatrics multidisciplinary core.

GER 755. Race and Ethnic Relations. 3 Hours.

Income inequality, school and residential segregation, intermarriage, and interracial crimes.

GER 759. Social Gerontology. 3 Hours.

Structural and behavioral implications of older adulthood. Relationships of aged to political, economic, educational, medical, religious, and other structures in society.

GER 760. Sociology of Death and Dying. 3 Hours.

Sociological, social psychological and existential perspectives on death and dying; recent trends in definition, distribution, and practices surrounding death and dying.

GER 769. Sociology of the Life Cycle. 3 Hours.

Theories of life; social construction of age categories, aging and family life, work, careers, and aging; men, women, and life cycle.

GER 777. Demography of Health and Aging. 3 Hours.

Focus on demographic processes, such as mortality, morbidity, migration, and fertility; how each influences number and proportion of elderly; how such processes shape age/sex structure; other demographic characteristics of older people.

GER 780. Medical Sociology. 3 Hours.

Theory and research in medical sociology; systematic overview of relevant literature.

GER 781. Sociology of Health. 3 Hours.

Subjective experience of illness; predictions of health behavior; social networks and health.

GER 785. Psychology of Aging. 3 Hours.

Age differences in perception, memory, intelligence, personality, adjustment, and psychopathology.

GER 786. Aging Seminar. 1 Hour.

Contemporary topics in aging, including basic science, clinical, and psycho-social issues.

GER 788. Social Medicine. 3 Hours.

Socioenvironmental factors in etiology of disease; social movements and health policy; medical ethics and broad ethical issues; place of social science in medical care.

GER 789. Social Medicine Seminar. 3 Hours.**GER 790. Independent Study in Gerontological Nursing. 1-3 Hour.****GER 791. Seminar in Gerontological Substantive Areas. 3 Hours.**

Seminar in Gerontological Substantive Areas.

GER 796. Research Seminar in Health and Aging. 3 Hours.

GHS-Global Health Studies

GHS 600. Fundamentals of Global Health. 3 Hours.

This course is one of three intergrated core courses in the UAB Certificate in Global Health designed to introduce students to the foundations of global health programs, policies and practices.

GHS 604. Infectious Diseases of Global Health Significance. 3 Hours.

The purpose of this course is to equip participants with up-to-date-knowledge on major infections of global importance, and prevention and control strategies so that infections and large disease outbreaks can be prevented and/or easily contained.

GHS 605. Disabilities and Global Health. 3 Hours.

This course explores current paradigms and models for defining and categorizing disability based on various international agreements and documents.

GHS 606. Critical Issues in Global Maternal and Child Health. 3 Hours.

This course is an elective module for students enrolled in UAB Certificate in Global Health program. Mothers and children in developing countries are among the most vulnerable and disadvantaged sectors of the world's population. This course defines the Maternal and Child Health (MCH) discipline, describes the current practices and challenges, and compares global strategies and potential solutions.

GHS 607. Global Health and Gender. 3 Hours.

Sex and gender are both important determinants of health. Biological sex and socially constructed gender interact to produce differential risks and vulnerability to ill health, differences in health seeking behavior, in health care providers' response and in health outcomes for women and men. Gender differences in morbidity and mortality represent `avoidable¿ and/or `unfair¿ inequalities in health. Because gender is socially constructed, gender-based inequities in health are amenable to policy and program interventions. This course is designed to help public health students, policy makers, health care providers and health researchers understand concepts related to gender and to apply them in an analysis of specific policies and programs. The course will enable participants to identify the gendered nature of issues like violence and sexuality and how these affect health. The course provides participants with support to apply a gender perspective to program planning, policy analysis, or a research design as part of their final assignment.

GHS 608. Food and Nutrition in Resource Limited Settings. 2 Hours.

This course will provide to graduate and professional students a general overview of the facts, research finding underlying nutrition and the relationships to acute and chronic diseases worldwide and their impact productivity and economic development.

GHS 609. Environmental Health in Resource Limited Settings. 3 Hours.

Demonstrate an understanding and appreciation of the complex roles played by the environment as a major determinant of health and identify the major environmental health issues confronting populations in a resource-limited setting.

GHS 610. Refugee Health Care. 3 Hours.

This course is one of the elective courses of the UAB Global Health Studies Certificate program, and is designed for professionals undertaking the GHS continuing education certificate as well as UAB graduate students enrolled in the GHS graduate certificate program. The course addresses the issues of refugees and the agencies concerned with their protection, human rights, and coordination and provision of care.

GHS 611. International NGO Management. 3 Hours.

The course addresses issues for managers of NGOs primarily at the field level of operation with special emphasis on project management. It begins with the history of international organizations and their roles in aid, development, and human rights. It follows with analysis of NGO organizational structure and function, roles, and the responsibilities of various stakeholders at the macro and micro level. Project development, planning, implementation, and evaluation will be addressed. Management principles and skills will also include budget preparation and staff/human resource management.

GHS 617. Global Health: Principles & Practice. 3 Hours.

This course introduces students to the world's vast diversity of determinants of good- and ill-health. It examines major global health policies, and stimulates students to analyze health problems, prevention, early detection, and treatment priorities in different nations. The course provides an opportunity to analyze the role of national and international development agencies and NGOs in global health policy and practice and to critically appraise health care delivery systems in different parts of the world. Current and emerging global health priorities are analyzed. New health challenges brought about by globalization, environmental changes, and economic development are discussed.

GHS 618. Global Health: Principles & Practices II. 3 Hours.

This course will explore in depth the causality of major diseases in underdeveloped and developing nations and the creation of health care systems and social policies to counteract them. This course will also focus on the interventions targeting the UN's Millennium Development Goals as they pass the halfway point to achieve them.

GHS 620. Infect Dis Surveillane & Contr. 3 Hours.

The primary focus of the course is vector ecology and biology, infectious disease surveillance and control, and water and sanitation in a developing country, with an emphasis on field and community-based learning. This class will take place in Jamaica and you must be accepted by the Sparkman Center for Global Health.

GHS 629. Intensive Global Health Training - SIFAT. 3 Hours.

Become a better Global Citizen by learning critical issues on Household Energy use in the developing world that affect health, environmental sustainability, gender equity, economics, and the development of millions of families and communities globally. Learn what you can do to make a difference. Be a part of the solution for a better world!.

GHS 630. Field Training in World Hunger and Malnutrition: Practical Skills to Make a Difference. 3-6 Hours.

This two week intensive field training course will take place at SIFAT's 176-acre international training campus in Lineville, AL. Students will attend didactic sessions and participate in hands on activities and simulations. SIFAT trainers are experienced in international development and cross-cultural dynamics. On-site Field Training.

GHS 640. Social Responsibility in Global Health. 1 Hour.

This course provides students with an understanding of key social and economic concepts of global health that, together with an understanding of interprofessional collaboration and community partnerships, will enable them to participate in developing and implementing sustainable global health projects in collaboration with local and international community partners. The course is open to undergraduate and graduate students who are enrolled in two co-requisite courses that are requirements for students participating in the interprofessional global health service learning program at the University of Alabama at Birmingham.

GHS 641. Interprofessional Collaboration (IPC) and Community Partnerships in Global Health. 1 Hour.

This course provides students with an understanding of principles of interprofessional collaboration and community partnerships that, together with key social and economic concepts of global health, enables them to participate in developing and implementing sustainable global health projects in collaboration with local and international community partners.

GHS 642. Introprofessional Global Health Service Learning I: Project Planning. 1 Hour.

This course provides students with an opportunity to apply principles of interprofessional collaboration, community partnerships, and global health in the development of a plan to address a global health problem in collaboration with a community partner. The course is open to undergraduate and graduate students who are enrolled in two co-requisite courses that are requirements for students participating in the global health service learning program at the University of Alabama at Birmingham.

GHS 643. IGHSL2 Project Implementation. 3 Hours.

This course provides students with an opportunity to work in interdisciplinary teams of 3-8 members (minimum of 2 disciplines) and in collaboration with a community partner; the groups will apply principles of interprofessional collaboration, community partnership, and concepts and theories of global health in the implementation of a plan for a service project (developed in GHS 642) that addresses a specific global health problem identified by the community.

Prerequisites: GHS 642 [Min Grade: C]

GHS 649. Interprofessional Global Health Service Learning. 3 Hours.

This course provides students with an opportunity to work in small teams to address a global health problem in collaboration with a community partner. The global health problem to be addressed can be at a local site (with a local agency or partner), a site within the US, or an international site (with a US or non-domestic agency or partner). Interprofessional teams of 4-6 graduate and professional students will apply concepts and theories related to global health, interprofessional collaboration, team building, leadership, community partnerships, business models, and appropriate framework for developing and implementing a plan to address a specific global health problem with a community partner.

GRD-Graduate School

GRD 617. Critical Thinking and Scientific Integrity for Masters Students. 3 Hours.

This course will give masters students an introduction to the rules of logic and reason that are necessary for effective scientific discourse and debate. In addition, students will be introduced to best practices in the responsible conduct of research, including rigor and reproducibility.

GRD 701. Presentation and Discussion Skills. 3 Hours.

Develops professional communication skills, including public speaking skills, conversation management, adapting to audience, and overall comprehensibility. Presentations critiqued by self, peers, and instructor.

GRD 703. Special Topics. 1-4 Hour.

This course addresses topics of current interest related to professional development.

GRD 704. Specialized Instruction. 1-9 Hour.

This individualized course addresses particular communication needs of students actively writing theses, dissertations, articles for publication, and grant proposals. Individual plans approved by instructor are required.

GRD 705. Teaching at the College Level and Beyond. 3 Hours.

Introduces many of the basic principles needed to teach effectively at the college level and addresses current issues relevant to college teaching. Topics include creating a learning environment, course and syllabus design, effective lecturing, active learning approaches, evaluation and grading, and using technology to enhance learning.

GRD 706. Grants and Fellowships 101. 1 Hour.

Introduces the extramural funding process. Topics include types of awards, funding sources, components of an application, the review process, and writing effective grant proposals. One-day workshop.

GRD 707. Presenting Effectively. 1 Hour.

Provides an overview of giving effective oral presentations in academic and professional settings. Topics include analyzing audience and purpose, characteristics of an effective delivery, strategies for planning and design, handling questions and answers, boosting confidence, and using technology in presentations. One-day workshop.

GRD 708. Writing Successfully. 1 Hour.

Addresses issues involved in writing for academic and professional settings. Topics include analyzing audience and purpose, addressing common writing problems, developing effective writing practices, writing for publication, communicating research to the general public, and productivity strategies for writers. One-day workshop.

GRD 709. Writing Fellowships. 3 Hours.

Participants are introduced to ways to construct a biosketch, search for funding sources, how to construct a fellowship budget, and grant-related administrative policies. The importance of peer review and how to respond to reviewer critiques is covered as well as training plans, team-building and peer-review skills.

GRD 710. Career Workshop for Graduate Students. 1 Hour.

This workshop introduces a variety of career choices for students working on advanced degrees in the life sciences. Topics may include sources of career information, self-assessment, resume construction, interviewing, using new technologies in job searches, career choices, the hidden job market, networking, and negotiating.

GRD 711. Special Topics. 1-3 Hour.

This course addresses topics of current interest related to professional communication, career development, and ethics.

GRD 713. Mentoring 101. 1 Hour.

This seminar will cover the science and theory on mentoring, including the mentor-mentee relationship, issues of gender, culture, age, and other power differentials; contemporary mentoring strategies as they relate generally and specifically to situations and fields; applying different mentoring models to real life/workplace.

GRD 715. Preparing TAs to Be Effective Teachers. 2 Hours.

Prepares teaching assistants to meet the educational needs of undergraduate students by developing effective teaching practices. Topics include preparing to teach, presenting material effectively, handling questions, handling difficult students and situations, leading laboratory sections, and ethical issues related to teaching.

GRD 716. Developing a Teaching Portfolio. 2 Hours.

This hybrid course guides students in developing a Teaching Portfolio for improving teaching practices and enhancing job search potential. The web-based curriculum introduces essential elements of the portfolio and guides students in drafting a personal Philosophy of Teaching.

GRD 717. Principles of Scientific Integrity. 3 Hours.

Surveys ethical issues and principles in the practice of science.

GRD 719. Introduction to Mentoring & Leadership. 3 Hours.

This course covers the principles of mentoring and leadership, focusing on the student's ability to demonstrate, analyze, and evaluate contemporary mentoring and leadership practices. Application positions students to tailor practices to their respective fields, articulate a mentoring and leadership philosophy and develop new career skill sets while producing a mentoring and leadership portfolio.

GRD 722. Writing Research for Broad Audiences. 3 Hours.

Introduces students to effectively writing about research for broad audiences, including the media, policy makers, and general public. Students learn to write various genres of texts, such as blog posts, press releases, letters-to-the-editor, and feature articles.

GRD 723. Writing Research for Academic Audiences. 3 Hours.

Introduces students to effectively writing about research for academic, scientific, and specialist audiences. Students learn to write various genres of texts, such as abstracts, reviews, and research papers.

GRD 727. Writing & Reviewing Research. 3 Hours.

Introduces writers to research writing "best practices," criteria for evaluating writing, plus editing and peer review. Writers analyze and write short, strategic texts (on their own topics) in 5 research genres – critiques, annotated bibliographies, introductions, empirical, and review articles – based on peer and instructor feedback, for a draft presentation or proposal. For anyone writing course papers, theses, and/or proposals.

GRD 728. Professional Writing & Publishing. 3 Hours.

Introduces writers to "best practices" in academic/professional writing and publishing, plus editing, and peer review. Writers analyze and write short, strategic texts (in their own topics) in 7 academic/professional genres: abstracts, scholarly/empirical articles, review/historical articles, book chapters, opinion, professional philosophy statements, and digital journalism (writing for the public), based on peer review and instructor feedback, to produce a draft submission and publishing plan. For anyone writing for publication (including a dissertation).

GRD 729. Writing Your Journal Article in 12 Weeks. 3 Hours.

Introduces writers to a systematic approach to writing a journal article, including essential structures, stylistic conventions, and smart strategies for planning and completing projects under a deadline. Writers begin with their own working manuscripts (unpublished course paper, thesis, dissertation, etc.), identify a target journal, and draft short, strategic sections, based on peer review and instructor feedback, to create a final submission, per author's guidelines. For anyone with active publishing goals.

GRD 730. Developing and Managing Your Professional Image. 3 Hours.

This course is designed to raise student awareness of their professional image. Topics include professional perception, polishing professional image, adjusting to professional contexts, and professional image and social media.

GRD 733. Managing & Leading Teams. 1 Hour.

This workshop will cover the latest science in managing and leading teams across disciplines, focusing on team building, the students' development of team presentations, peer discussion and review.

GRD 734. Ethical Leadership Development. 3 Hours.

Designed for those who want to apply evidence-based models to ethical decisions in a professional setting, this course positions students to tailor practice to their own careers, articulate an ethical philosophy for a portfolio, and model ethics as a leader in their respective fields.

GRD 735. Leadership 101. 1 Hour.

This seminar covers organizational leadership theory, as well as contemporary leadership models and strategies as they relate generally and specifically to situations and fields.

GRD 739. Science Communication Practicum. 3 Hours.

Designed for those who want to expand career options by developing Science Communication skills for the general public, this practicum offers instruction, networking, and experience in key areas, such as science journalism, science public relations, medical writing, and entrepreneurship.

GRD 740. UAB Prep Scholar Workshop. 2 Hours.

This course will provide writing and other enrichment activities to prepare UAB PREP Scholars for entry into graduate school.

GRD 741. UAB PREP Scholar Workshop I. 1 Hour.

This course will provide writing and other enrichment activities to prepare UAB PREP Scholars for entry into graduate school.

GRD 742. UAB PREP Scholar Workshop II. 1 Hour.

This course will provide writing and other enrichment activities to prepare UAB PREP Scholars for entry into graduate school.

GRD 743. Critical Thinking and Quantitative Concepts. 3 Hours.

The goal of this course is to enhance students' critical thinking skills in the context of rigorous experimental design and quantitative analysis. Specifically, students will engage in activities that explore robust and unbiased approaches toward analysis, interpretation, and reporting of experimental results.

GRD 744. Leadership Survival Skills. 1 Hour.

In this course, participants explore the day-to-day activities of leaders, including organizational mission, vision, values, and goals, budgeting, human resources, and project management. Case studies are used to help students reflect on and discuss solutions from a leader's perspective.

GRD 745. Communication and Diversity Leadership. 3 Hours.

Upon completion of the course, students will be able to explain, analyze, and apply approaches to leading and communicating in diverse communities.

GRD 746. Critical Decisions in Mentoring & Leadership. 3 Hours.

This course explores the critical thinking skills related to the decision making processes for mentors and leaders.

GRD 747. Navigating the Job Market. 3 Hours.

This course explores the academic and non-academic job markets and the documents and professional skills needed to navigate them effectively.

GRD 748. Faculty Mentoring in Higher Education. 1 Hour.

In this one-day workshop, faculty will explore the mentor/mentee relationship in higher education, as well as peer mentoring, role modeling, coaching, and formal/informal mentoring structures.

GRD 749. Improvisational Techniques to Improve Leadership, Teaching, and Research Communication. 1 Hour.

This workshop engages participants through improvisational and theatrical techniques in order to build confidence and improve as leaders, teachers, and/or researchers.

GRD 750. CIRTL Seminar in Teaching and Learning. 1 Hour.

This CIRTL seminar provides opportunities for students to read and discuss basics of effective teaching and learning.

GRD 751. CIRTL Seminar in Teaching and Learning II. 1 Hour.

This CIRTL seminar provides opportunities for students to read and discuss teaching as research projects.

GRD 752. CIRTL Seminar on STEM Teaching. 2 Hours.

This CIRTL Network seminar is designed for graduate students and postdoctoral scholars who plan to teach undergraduate STEM (science, technology, engineering, and mathematics) courses. It addresses a range of topics focused on enhancing STEM teaching.

GRD 753. CIRTL Seminar on STEM Academic Teaching Careers. 1-3 Hour.

This CIRTL Network seminar provides an overview of types of academic teaching positions and addresses topics related to academic careers.

GRD 754. CIRTL Effective STEM Teaching Approaches. 2 Hours.

This CIRTL Network course explores effective research-based teaching approaches for enhancing learning in STEM (science, technology, engineering, and math) courses. Approaches such as collaborative learning, team-based learning, flipped classrooms, inquiry science, case studies, and problem-based learning will be considered.

GRD 755. CIRTL Teaching Practicum. 3 Hours.

This CIRTL course provides students a structured observation and practicum experience in which they shadow a STEM faculty member as he/she teaches a semester-long course and engage in a variety of guided teaching activities.

GRD 756. CIRTL The College Classroom. 2 Hours.

This CIRTL Network course provides students with the basics of effective teaching with an emphasis on the learning-centered classroom and the interconnected cycle of teaching, assessment, and learning.

GRD 757. CIRTL Effective Use of Technology in Teaching and Learning. 2 Hours.

This CIRTL Network course provides students with strategies and technological choices and tools for effective use of instructional technology in their teaching practices.

GRD 758. CIRTL Diversity in the College Classroom. 2 Hours.

This CIRTL Network course addresses different aspects of diversity, particularly in STEM (science, technology, engineering, and math) education, with the underlying principle of equitable access and enhanced learning of all students. Topics include gender, race, culture, disability, first-generation college students, ethnically diverse students (men of color, Latino/as, and international students), and learning style/environment.

GRD 759. CIRTL Teaching-as-Research in STEM Courses. 3 Hours.

This CIRTL course introduces Teaching-as-Research project design and guides students through the TAR planning process.

GRD 760. CIRTL Teaching-as-Research Project. 3 Hours.

This CIRTL course is designed for students who are conducting a Teaching-as-Research project.

GRD 761. CIRTL Special Topics. 1-5 Hour.

This CIRTL course addresses topics of current interest related to college teaching.

GRD 762. CIRTL Individualized Seminar. 1-3 Hour.

This CIRTL seminar addresses teaching and learning projects related to STEM (science, technology, engineering, and math). Individual plans approved by the instructor are required.

GRD 763. CIRTL Individualized Teaching and Learning Project. 1-3 Hour.

This CIRTL individualized course provides students with opportunities to engage in teaching and learning projects related to undergraduate STEM (science, technology, engineering, and math) education. Individual plans approved by the instructor are required.

GRD 764. CIRTL Individualized Teaching Experience I. 1-5 Hour.

This CIRTL individualized course provides students with opportunities to teach and reflect on these experiences in a variety of teaching contexts. Individual plans approved by the instructor are required.

GRD 765. CIRTL Individualized Teaching Experience II. 1-5 Hour.

This CIRTL individualized course provides students with opportunities to teach for more extended periods and to reflect on these experiences in a variety of teaching contexts. Individual plans approved by the instructor are required.

GRD 766. Introduction to Online Teaching. 1 Hour.

Learn basics of developing and teaching an online course including how to structure content, effective interaction and communication, active online engagement techniques and assessments.

GRD 770. Intro to Biostats. 2-3 Hours.

This course is intended to provide graduate students with an introduction to biostatistics. The emphasis in this course will be upon understanding statistical concepts and applying and interpreting tests of statistical inference. Content will include but not be limited to: choosing the correct test for a given research design, data and data files, data screening, scaling, visual representations of data, descriptive statistics, correlation and simple regression, sampling distributions, and the assumptions associated with and the application of selected inferential statistical procedures (including t-tests, Chi-square, and ANOVA). Computer software (SPSS) will be employed to assist in the analysis of data for this course. Students should have access to a computer, SPSS software, and the Internet.

GRD 771. ePortfolio Workshop. 1 Hour.

Learn how to Build a personalized website to host your Teaching and/or Mentoring Portfolio or for personal branding/ promotion.

GRD 790. Research/Lab Rotation. 1-10 Hour.

Graduate Lab Rotation Used by MD/PhD Students first summer semester.

HB-Health Behaviour

HB 600. Social and Behavioral Sciences in Public Health. 3 Hours.

This Masters level course fulfills the social and behavioral sciences core requirement for MPH students. It is designed to provide an overview of the social and behavioral sciences in public health to masters' level students in UAB's School of Public Health. Social and behavioral science theories and strategies in public health will be discussed in relation to preventing disease and promoting health over the life course. The course is comprised of two major sections: (1) overview of fundamentals of social and behavioral sciences in public health and (2) social and behavioral science research and strategies and application of social and behavioral sciences in public health practice and policy. This course is intended to provide students with the most current knowledge and analysis of issues influencing people's health and well-being from a social and behavioral science perspective. Theoretical frameworks that draw on major health behavior theories will provide a better understanding of how individuals, families, peers, schools, neighborhoods, and the larger community influence risk and protective factors. Considerations intrinsic to social and behavioral science efforts designed to produce health-related behavior change will be discussed. In the box below is the description of social and behavioral sciences given by the Association of Schools of Public Health. The course will promote intellectual and collaborative learning through course lectures, readings, class discussions, and individual and group work.

HB 600Q. Social and Behavioral Sciences in Public Health Online. 3 Hours.

This Masters level course fulfills the social and behavioral sciences core requirement for MPH students. It is designed to provide an overview of the social and behavioral sciences in public health to masters' level students in UAB's School of Public Health. Social and behavioral science theories and strategies in public health will be discussed in relation to preventing disease and promoting health over the life course. The course is comprised of two major sections: (1) overview of fundamentals of social and behavioral sciences in public health and (2) social and behavioral science research and strategies and application of social and behavioral sciences in public health practice and policy. This course is intended to provide students with the most current knowledge and analysis of issues influencing people's health and well-being from a social and behavioral science perspective. Theoretical frameworks that draw on major health behavior theories will provide a better understanding of how individuals, families, peers, schools, neighborhoods, and the larger community influence risk and protective factors. Considerations intrinsic to social and behavioral science efforts designed to produce health-related behavior change will be discussed. In the box below is the description of social and behavioral sciences given by the Association of Schools of Public Health. The course will promote intellectual and collaborative learning through course lectures, readings, class discussions, and individual and group work.

HB 602. Alcohol and Drug Abuse. 3 Hours.

History and theory of human substance use and abuse. Empirical foundations of alcohol and drug abuse, diagnosis, assessment, treatment, and prevention. Course will be graded by letter. 3 hours.

HB 603. Obesity Prevention & Intervention. 3 Hours.

The aim of this course is to provide students with theoretical and practical knowledge required to develop, implement, and evaluate obesity intervention and prevention programs. The course covers both pediatric and adult obesity intervention and prevention with a focus on lifestyle (dietary intake, physical activity) and environmental factors. Course will be graded by letter. 3 hours.

HB 604. High Technology Approaches to Health Communications and Behavior Change Interventions. 3 Hours.

To present students with an initial, in-depth exposure to concepts, technical skills and research findings associated with the integration of computer technology and health communications.

HB 605. Physical Activity in Public Health. 3 Hours.

This seminar course is an introduction to research and practice related to physical activity promotion from a public health perspective and will describe health benefits, epidemiological data, national recommendations and plans, and global initiatives related to physical activity. Course will be graded by letter. 3 hours.

HB 606. Food Systems and Policies. 4 Hours.

This course will introduce students to elements of food systems and the implications of public policies around food.

HB 606Q. Food Systems and Policies Online. 3 Hours.

This course will introduce students to elements of food systems and the implications of public policies around food.

HB 607. Nutrition of Mothers and Children. 3 Hours.

This course will cover concepts in MCH nutrition at three levels (biology, epidemiology and prevention/policies/practice) specific to 4 core topics over-nutrition/obesity; under-nutrition; infant and toddler nutrition; and pregnancy/fetal nutrition. Half of each class session will be devoted to interactive discussion.

HB 608. Womens Health and Social Behavior. 3 Hours.

This course examines social and behavioral factors that adversely affect women's health. Students learn to apply gender specific theories to design health interventions tailored towards women.

HB 608Q. Women's Health and Social Behavior Online. 3 Hours.

Improvements in women's health require an understanding of the determinants of disease, functioning and well-being and the capacity to intervene in connection with the determinants. This course aids students in developing a better understanding of the social determinants of women's health throughout the life cycle and explores practical strategies for intervention.

HB 609. African-American Health Issues. 3 Hours.

This is an intermediate level course that focuses on: epidemiological data illustrating the health risks experienced by African-Americans; sociocultural factors essential for understanding and enhancing the health of African-Americans; effective health-related prevention programs for African-Americans.

HB 609Q. African American Health Issues. 3 Hours.

This course will explore issues of both physical and psychological issues of African Americans today. Risk and protective factors for specific health conditions will be reviewed. Historical, sociocultural and economic factors that affect the quality and utilization of healthcare services in African American communities will be examined. Evidence-based ways to engage the community and draw on individual and community strengths in prevention and treatment will be highlighted. Students will be equipped and empowered with the knowledge and skills required to develop a Community Action Plan aimed to improve the effectiveness of interventions targeting the African American community.

HB 610. Health Promo/Disease Prevent:Adv Theory/Practice. 3 Hours.

This course is a comprehensive overview of methods used to develop health promotion and disease prevention programs. It focuses on understanding, synthesizing, and applying behavior change theories to public health program development. The course includes the critical review of existing assessment measurements, the development of theory-based measures and evaluation principles in the context of intervention development and implementation.

Prerequisites: HB 600 [Min Grade: C]

HB 611. Mental Health as a Public Health Issue. 3 Hours.

This course is designed to increase knowledge of mental illness at the individual, community, and population levels. It also covers historical and contemporary models and research on the etiology, diagnosis, assessment, treatment and prevention of mental and other behavioral health disorders.

HB 612. Examining Health Inequities in Social and Behavioral Sciences. 3 Hours.

This course is designed to provide a comprehensive overview of race/ethnic health disparities/health inequities in the U.S. Both historical context and more current perspectives of identified determinants of health will be discussed as contributors to current health inequities.

HB 614. Cancer Control in the Community. 3 Hours.

Students will learn to apply basic health behavior and program planning theory and models to develop, plan, implement and assess culturally and socially appropriate interventions within a public school and/or community setting. Through service learning, students will have the opportunity to implement interventions in a community setting intended to promote healthy nutrition choices, institute exercise practices, lower tobacco usage and promote the use of skin protection.

Prerequisites: HB 624 [Min Grade: C] or HB 643 [Min Grade: C]

HB 624. Advanced Social and Behavioral Science Theory. 3 Hours.

The aim of this course is to provide students with a broad understanding of theories of health behavior change with a strong focus on those theories that are most widely used in research and practice. Emphasis will be given to the discussion and elaboration of important theoretical concepts as well as their application in specific health behavior interventions. This class will take an ecological perspective and discuss theories that approach behavior change from various different levels. Basic theories that are covered in this course include individual level models (Health Belief Model, Theory of Planned Behavior, Transtheoretical Model), interpersonal level models (Social Cognitive Theory), and community level models (community organization and other participatory models like Community Based Participatory Research, Diffusion of Innovations). 3 hours.

HB 624Q. Advanced Social and Behavioral Science Theory Online. 3 Hours.

The aim of this course is to provide students with a broad understanding of theories of health behavior change with a strong focus on those theories that are most widely used in research and practice. Emphasis will be given to the discussion and elaboration of important theoretical concepts as well as their application in specific health behavior interventions. This class will take an ecological perspective and discuss theories that approach behavior change from various different levels. Basic theories that are covered in this course include individual level models (Health Belief Model, Theory of Planned Behavior, Transtheoretical Model), interpersonal level models (Social Cognitive Theory), and community level models (community organization and other participatory models like Community Based Participatory Research, Diffusion of Innovations).

HB 625. Dissemination and Implementation in Health. 3 Hours.

The course will offer an introduction to dissemination and implementation science, an interdisciplinary field focused on improving the transition of evidence-based health practices, programs, and interventions from research studies into “real-world” settings. Course will be graded by letter. 3 hours.

Prerequisites: HB 600 [Min Grade: C] and HB 641 [Min Grade: C]

HB 627. GIS for Public Health. 3 Hours.

This is an introductory course covering the theory and application of geographic information systems (GIS) for public health. Through this course, students will develop basic GIS skills, including GIS operations such as buffering, geocoding, layering, and spatial queries. Students will learn how to use those operations to both describe and propose solutions for public health challenges. The course will address introductory cartography and basic statistical aspects of spatial analysis. Learning will occur through lab exercises, case studies and homework exercises. The course will consist of one hour-long lecture/discussion and two hours of supervised lab/lecture each week. Course will be graded by letter. 3 hours.

HB 630. Health Communications: Theory and Practice. 3 Hours.

This course is designed to investigate the role of communication theories and methods in promoting public health and preventing disease. Both theoretical background in communication and behavioral science and practical communication/intervention development methods will be addressed.

HB 630Q. Health Communications: Theory and Practice. 3 Hours.

This course is designed to investigate the role of communication theories and methods in promoting public health and preventing disease. Both theoretical background in communication and behavioral science and practical communication/intervention development methods will be addressed.

HB 635. Communities, Families & Health. 3 Hours.

This course is designed for graduate students in public health and related fields interested in working with families and communities to improve health outcomes. It is intended to provide students with a broader understanding of the structural and psychosocial factors related to health and well-being. To do so, the course will focus on theoretical frameworks that draw on an ecological perspective and examine how factors associated with families, peers, schools, neighborhoods, and communities influence health. Emphasis will also be placed on the relevance of individual and community assets for the science of Health Behavior and the broader public health arena. Course will be graded by letter. 3 hours.

HB 636. Developing Interventions to Promote Public Health. 3 Hours.

This course is required for all Health Behavior MPH programs and the MSPH in clinical research in Health Behavior. The objective is to give Health Behavior and other students a broad overview of scientific methods for quantitative research, qualitative research, mixed methods research and basic concepts in survey development and outcome evaluation. The students will be able to identify the major steps and processes involved in health promotion or behavioral science research projects. These steps begin with the formulation of a research question and end with the reporting of the findings. Pre-requisite HB 624.

Prerequisites: HB 624 [Min Grade: C] or HB 624Q [Min Grade: C]

HB 636Q. Developing Interventions to Promote Public Health Online. 3 Hours.

This course is required for all Health Behavior MPH programs and the MSPH in clinical research in Health Behavior. The objective is to give Health Behavior and other students a broad overview of scientific methods for quantitative research, qualitative research, mixed methods research and basic concepts in survey development and outcome evaluation. The students will be able to identify the major steps and processes involved in health promotion or behavioral science research projects. These steps begin with the formulation of a research question and end with the reporting of the findings.

Prerequisites: HB 624 [Min Grade: C] or HB 624Q [Min Grade: C]

HB 638. Public Health Promotion and Aging Seminar. 3 Hours.

Exploration of current problems of the elderly, introduction to broad principles of health promotion for the elderly and review model health promotion programs. Course will be graded by letter.

HB 638Q. Public Health Promotion and Aging Seminar Online. 3 Hours.

Exploration of current problems of the elderly, introduction to broad principles of health promotion for the elderly and review model health promotion programs. Course will be graded by letter. 3 hours.

HB 639Q. Survey Design and Analysis in the Social and Behavioral Sciences. 3 Hours.

This course provides an in-depth treatment of survey design and elementary data analysis procedures commonly associated with social and behavioral research. What are the best practices for asking individuals potentially uncomfortable questions about risky health behaviors? How do we measure the reliability and validity of self-reported behaviors? This course addresses these issues in addition to those of sampling hard-to-reach populations, best practices in questionnaire design, an overview of index and scale construction, and an elementary introduction to data entry and analysis of survey data using common software packages. This course will improve the student’s ability to (1) develop and administer a survey, (2) identify the prerequisites for the proper analysis of data derived from a survey (e.g., identification and coding of missing data); and (3) interpret data derived from surveys with a special emphasis on the interpretation of data on health behaviors and outcomes.

HB 641. Research Methods in Behavioral Science. 3 Hours.

Review of research methodology in behavioral sciences. Formulation of research questions, causality, experimental and quasi-experimental designs, reliability and validity, reporting findings. Course will be graded by letter. 3 hours Prec: Requires permission of instructor.

HB 641Q. Research Methods in Behavioral Sciences Online. 3 Hours.

This course is required for all Health Behavior MPH programs and the MSPH in clinical research in Health Behavior. The objective is to give Health Behavior and other students a broad overview of scientific methods for quantitative research, qualitative research, mixed methods research and basic concepts in survey development and outcome evaluation. The students will be able to identify the major steps and processes involved in health promotion or behavioral science research projects. These steps begin with the formulation of a research question and end with the reporting of the findings.

HB 643. Health Program Evaluation. 3 Hours.

Principles and procedures to evaluate health promotion/disease prevention programs: data collection methods, instrument-scale development, measurement, evaluation designs and analysis of case studies of disease prevention literature on evaluation. Course will be graded by letter. Prerequisite: HB 641. 3 hours.

Prerequisites: HB 641 [Min Grade: C] or HB 641Q [Min Grade: C]

HB 643Q. Health Program Evaluation Online. 3 Hours.

This course is designed to provide graduate students in public health and related fields an exposure of the basic concepts and principles in program evaluation. The course will provide an overview of major steps and strategies involved in formative, process, and outcome evaluation.

Prerequisites: HB 641 [Min Grade: C] or HB 641Q [Min Grade: C]

HB 660. Adolescent Health: A Social and Behavioral Perspective. 3 Hours.

Designed to provide students with the most current knowledge and analysis of issues influencing the health and well-being of adolescents. Theoretical frameworks that draw on an ecological perspective will provide a better understanding of how families, peers, schools, and neighborhoods influence risk and protective factors in youth. Emphasis will be placed on the relevance of adolescent health issues for the science of Health Behavior and the broader public health arena. Course will be graded by letter. 3 hours.

HB 660Q. Adolescent Health: A Social and Behavioral Science Perspective. 3 Hours.

This Masters level course will provide an overview of critical health issues in adolescence and review the potential of emerging perspectives to advance adolescent health and promote positive youth development. This course is designed to provide students with the most current knowledge and analysis of issues influencing the health and well-being of adolescents. Theoretical frameworks that draw on an ecological perspective will provide a better understanding of how families, peers, schools, neighborhoods, and the larger community influence risk and protective factors in youth. Adolescence is a time of growth and experimentation, a period marked by establishing autonomy and confronting new challenges.

HB 665. Family Violence/Child Victimization. 3 Hours.

Introduction: The purpose of this course is for students to gain a comprehensive knowledge of child maltreatment, family violence, child and youth victimization, and youth perpetration of violence. The course will focus on multi-disciplinary theoretical frameworks to explain family violence and subsequent effects on child/youth/young adult functioning including behavioral, social, and physical and mental health consequences.

Prerequisites: HB 624 [Min Grade: C]

HB 680. Health Promotion through Radio Outreach. 3 Hours.

Alternative methods for delivering health promotion messages to "hard-to-reach" audiences are being explored across the U.S. This course examines the strategy known as "entertainment education", specifically in terms of radio programming. Students who enroll will participate on the "BODYLOVE" script writers group as they learn to apply principals of behavior change in an "entertainment-education" format. "BODYLOVE" is a radio drama that is aired across the state of Alabama to education about risk factors for cardiovascular disease.

HB 681. MSPH Directed Research I. 3 Hours.

MSPH Directed Research I provides MSPH students with the opportunity to work closely with a faculty mentor in the design of a health behavior intervention and collection of data. This course is the first in a three-course sequence that culminates in the presentation of research findings to their faculty mentor and other faculty in a public forum. As such, HB 681 focuses on the development of a health behavior intervention in an area of the student's expertise, including consideration of the PRECEDE/PROCEED model, study population, data collection methods, IRB approval, study registration, previous research, and other activities in consultation with their HB mentor.

HB 682. MSPH Directed Research II. 3 Hours.

MSPH Directed Research II provides MSPH students with the opportunity to work closely with a faculty mentor in the design of a health behavior intervention and collection of data. This course is the second in a three-course sequence that culminates in the presentation of research findings to their faculty mentor and other faculty in a public forum. As such, HB 682 focuses on collection and analysis of data, interpretation of results, and significant progress in the drafting of a scientific manuscript reporting the research project and preliminary results, and other activities in consultation with their HB mentor.

Prerequisites: HB 681 [Min Grade: P]

HB 683. MSPH Directed Research III. 3 Hours.

MSPH Directed Research III provides MSPH students with the opportunity to work closely with a faculty mentor in the design of a health behavior intervention and collection of data. This course is the third in a three-course sequence that culminates in the presentation of research findings to their faculty mentor and other faculty in a public forum. As such, HB 683 focuses on analysis of data, interpretation of results, completion of a scientific manuscript reporting the research project and preliminary results, other activities in consultation with their HB mentor, and the presentation of results in a public forum.

Prerequisites: HB 681 [Min Grade: P] and HB 682 [Min Grade: P]

HB 692. Principles and Practices of Community Organization. 3 Hours.

Seminar designed as an integrative experience for persons working with community groups. The focus is on learning to use available resources and advocating change to maximize community involvement. NOTE: Requires permission of instructor.

HB 695. Seminar on Selected Health Behavior Topics. 1,3 Hour.

Seminar covering a variety of health behavior topics. Course will be graded as Pass/No Pass. Prerequisite: Permission of instructor. 3 hours.

HB 697. Internship. 3 Hours.

The internship provides an opportunity for each student to work in a public health setting in a position that carries responsibility and is of particular interest. HB 697 is a 3-credit hour course requirement of all MPH-seeking students. In order to register for the internship course, students must have completed all public health core coursework. Usually, this means that students must wait until their 3rd semester to complete the internship. Students must complete a minimum of 180 contact hours with the organization during the semester in which they register for the internship.

Prerequisites: (BST 601 [Min Grade: C] or BST 601Q [Min Grade: C] or BST 611 [Min Grade: C] or BST 611Q [Min Grade: C]) and (BST 612Q [Min Grade: C] or BST 612 [Min Grade: C]) and (ENH 600 [Min Grade: C] or ENH 600Q [Min Grade: C]) and (EPI 600 [Min Grade: C] or EPI 600Q [Min Grade: C]) and (HB 600 [Min Grade: C] or HB 600Q [Min Grade: C]) and (HCO 600 [Min Grade: C] or HCO 600Q [Min Grade: C])

HB 697Q. Internship Online. 3 Hours.

The internship provides an opportunity for each student to work in a public health setting in a position that carries responsibility and is of particular interest. PUH 697 is a 3-credit hour course requirement of all MPH-seeking students. In order to register for the internship course, students must have completed all public health core coursework. Usually, this means that students must wait until their 3rd semester to complete the internship. Students must complete a minimum of 180 contact hours with the organization during the semester in which they register for the internship.

Prerequisites: (BST 601 [Min Grade: C] or BST 601Q [Min Grade: C] or BST 611 [Min Grade: C] or BST 611Q [Min Grade: C]) and (BST 612 [Min Grade: C] or BST 612Q [Min Grade: C]) and (ENH 600 [Min Grade: C] or ENH 600Q [Min Grade: C]) and (EPI 600 [Min Grade: C] or EPI 600Q [Min Grade: C]) and (HB 600 [Min Grade: C] or HB 600Q [Min Grade: C]) and (HCO 600 [Min Grade: C] or HCO 600Q [Min Grade: C])

HB 698. Master's Level Directed Research Health Education. 1-9 Hour.

Independent study with guidance of appropriate faculty. Includes activities such as literature review and evaluation. Course will be graded as Pass/No Pass. 1 - 9 hours.

HB 699. Master's Level Project Research Health Education. 1-9 Hour.

Research for project under direction of research project committee. Course will be graded as Pass/No Pass. 3-6 hours.

Prerequisites: GAC M

HB 701. Theory-Based Measurement Development. 3 Hours.

The aim of this course is to introduce students to measurement development based on well-specified behavioral theories. This course will review and discuss key issues related to measurement development such as item/scale development, number of factors to retain rotation options and statistical programs. Prerequisite: Requires knowledge of elementary probability and statistics for non-statistics majors and BST 611. Course will be graded by letter. 3 hours.

Prerequisites: BST 611 [Min Grade: C]

HB 703. Writing for the Behavioral Sciences. 3 Hours.

The aim of this course is to develop and fine-tune scientific writing proficiency. In this course, students will read and critique a variety of books, essays, and articles about science and medicine, and complete numerous writing assignments and participate in peer review.

HB 706. Energetics: Scientific Foundations of Obesity and Other Health Aspects. 3 Hours.

The aim of this course is to acquaint individuals doing scholarly work related to obesity with the fundamental principles of energetics and their applications, and to use those in assessing the causes and treatment of obesity. The first part of the course will go over fundamental knowledge in this area, which will be covered by a midterm examination, and the second part of the course will go over research applications, which will be incorporated into the final term paper. Course will be graded by letter. 3 hours.

HB 707. Nutrition of Mothers and Children. 4 Hours.

This course will cover concepts in MCH nutrition at three levels (biology, epidemiology and prevention/policies/practice) specific to 4 core topics over-nutrition/obesity; under-nutrition; infant and toddler nutrition; and pregnancy/fetal nutrition. Half of each class session will be devoted to interactive discussion.

HB 712. Examining Health Inequities in Social and Behavioral Sciences. 3 Hours.

This course is designed to provide a comprehensive overview of race/ethnic health disparities/health inequities in the U.S. Both historical context and more current perspectives of identified determinants of health will be discussed as contributors to current health inequities.

HB 714. Survey Research Methods. 3 Hours.

This course will provide students with a theoretical and practical overview of survey research methodology. Topics to be covered include questionnaire and interview design; tailoring instruments for specific settings, populations and methods of administration; maximizing reliability of measurement; construction of scales and indices; sampling theory and methods, assessing sampling bias, and maximizing response rates. NOTE: Must have doctoral standing or permission of instructor.

HB 715. Examining Health Inequities in Social and Behavioral Sciences. 3 Hours.

This course is designed to provide a comprehensive overview of race/ethnic health disparities/health inequities in the U.S. Both historical context and more current perspectives of identified determinants of health will be discussed as contributors to current health inequities.

Prerequisites: HB 641 [Min Grade: C] and HB 643 [Min Grade: C]

HB 720. Neighborhood Influences on HB. 3 Hours.

To expose students to classical and current theories of neighborhoods and their affects on development and behavior in such a way that they will develop an appreciation for the importance of neighborhood context and it's impact on development and behavior and the ability to critically evaluate studies of neighborhoods and neighborhood context, and the conceptual tools to be able to incorporate neighborhood (and other) contextual effects into their own research.

HB 724. Advanced Social and Behavioral Science Theory. 3 Hours.

This course focuses on a thorough examination of theories and models of behavior change and their applications in both research and implementation in various fields of health promotion and public health. Basic knowledge of research methodology and statistics is required. Course will be graded by letter. 3 hours.

HB 730. Health Communication Research. 3 Hours.

This course is designed to investigate the role of communication theories and methods in promoting public health and preventing disease. Both theoretical background in communication and behavioral science and practical communication/intervention development methods will be addressed.

Prerequisites: HB 750 [Min Grade: C]

HB 736. Advanced Research Intervention Design. 3 Hours.

This course is intended to provide doctoral students with expert knowledge and application skills for designing a range of public health interventions to change behavioral outcomes in various populations. Emphasis will be placed on skill-building for designing relevant, state-of-the-art interventions tailored to unique population subgroups, and adapting existing evidence-based interventions for use with new populations or in new settings. Students will use two textbooks in this course that they will also use in Part 2 of this course (HB-737: Advanced Intervention Implementation and Evaluation). In addition, weekly readings of scientific articles will be assigned. This course uses lecture and seminar format; class time will be structured around lectures, in-class activities, and class discussions of both the lecture and reading materials. Students will complete writing assignments and develop a comprehensive research intervention development and implementation plan that they will later build on and evaluate in HB-737. This course is required for PhD students in Health Behavior.

Prerequisites: HB 724 [Min Grade: C]

HB 737. Advanced Intervention Implementation and Evaluation. 3 Hours.

This course is the second in a series of courses intended to teach doctoral students how to develop, implement, and evaluate theory-based, consumer-driven behavioral interventions. Students will learn how to assess whether interventions worked, build evidence for effective interventions, and adapt, implement, and disseminate interventions. Assignments will include developing a comprehensive evaluation plan for a mock grant application and describing how to adapt an existing evidence-based intervention to a particular content area, outcome target, setting, or population; students will be expected to present their work in class.

Prerequisites: HB 736 [Min Grade: C]

HB 740. Advanced Health Program Evaluation Seminar. 3 Hours.

Advanced review of evaluation theories, approaches, and methods for assessing the plans, implementation, and effectiveness of health promotion programs. Course will be graded by letter. Prerequisite: HB 643 or other master's level evaluation course and a graduate level multiple regression or multivariate statistics course. 3 hours.

Prerequisites: HB 643 [Min Grade: C]

HB 741. Advanced Research Methods in the Behavioral Sciences. 3 Hours.

This course provides an in-depth treatment of the major research designs used in the behavioral sciences. Emphasis is given to the randomized controlled trial as it forms the cornerstone of causal inference in scientific inquiry; however, other designs intended to approximate a randomized trial will be reviewed. The course will also examine methods of collecting, analyzing, and interpreting data. Other topics include evaluating published research that used the methods reviewed in this course, writing research proposals and reports, and ethical considerations. Students must have taken HB 641: Research Methods in Behavioral Sciences or its equivalent as a prerequisite.

Prerequisites: HB 641 [Min Grade: C]

HB 742. Mediation and Moderation in Behavioral Science Research. 3 Hours.

This course is an elective course for doctoral students in public health and related fields, designed to provide an exposure to statistical mediation and moderation. Mediation and moderation are central in social and behavioral science research. Mediation explains and tests the underlying mechanisms by which the predictor variable affects the outcome variable, while moderation specifies under what conditions the predictor affects the outcome. Statistical techniques investigating mediation and moderation are among the most widely used data analysis techniques in a variety of disciplines. The primary goal of this course is to provide students with theoretical concepts of mediation and moderation and hands-on experience with relevant analytical techniques. Prerequisite: Students should have taken courses on multiple regression such as BST 611, BST or other equivalent courses. Course will be graded by letter. 3 hours.

HB 750. Advanced Theoretical and Scientific Basis of Health Education and Promotion. 3 Hours.

Provides doctoral students with in-depth examination of history and philosophy of health education; reviews professional competencies and outlines major theories of behavior change. Course will be graded by letter. 3 hours.

HB 760. Planning and Administration of Health Education and Promotion Programs. 3 Hours.

The purpose of this course is to teach and practice the three basic phases of comprehensive health education and promotion programs (planning, implementation and evaluation). Course will be graded by letter.

Prerequisites: HB 750 [Min Grade: C] and HB 724 [Min Grade: C]

HB 770. Doctoral Studies Seminar. 1-3 Hour.

The broad intent of the course is to review current issues relevant to the field of Health Promotion/Health Education, critically examine the relationship between scholarship, research, ethics and funding and reflect and discuss theoretical aspects of Health Promotion/Health Education.

HB 771. Seminar in Health Education/Health Promotion Session I. 1 Hour.

The purpose of this course is to teach and practice the three basic phases of comprehensive health education and promotion programs (planning, implementation and evaluation). Course will be graded by letter. 3 hours.

HB 772. Seminar in Health Education/Health Promotion Session II. 1 Hour.

This course is the second in a series of three 1-hour Doctoral Seminar classes. This seminar series is designed to meet the specific needs of graduate students by better preparing them for successful completion of their respective degrees as well as their future as health education professionals. Course will be graded by letter. Pre-requisite HB 771.

Prerequisites: HB 771 [Min Grade: C]

HB 773. Seminar in Health Education/Health Promotion Session III. 1 Hour.

This course is the third of a series of three 1-hour Doctoral Seminar classes. This seminar series is designed to meet the specific needs of graduate students by better preparing them for successful completion of their respective degrees as well as their future as health education professionals. Course will be graded by letter. Pre-requisites HB 771 & 772. 1 hour.

Prerequisites: HB 771 [Min Grade: C] and HB 772 [Min Grade: C]

HB 795. Seminar on Selected Health Behavior Topics. 1-3 Hour.

This course will be used as faculty design and craft course topics based on specific interests. These courses will be taught on a doctoral level.

HB 798. Doctoral-Level Directed Res. 1-9 Hour.

Independent study with guidance of senior public health faculty. Course will be graded as Pass/No Pass. 1 - 9 hours.

HB 799. Doctoral Dissertation Research. 1-9 Hour.

Research for dissertation under direction of dissertation committee. Course will be graded as Pass/No Pass. Prerequisite: Students must be admitted to candidacy in order to register for this class. 1 - 9 hours.

Prerequisites: GAC Z

HCO-Health Care Organization

HCO 600. Management and Policy in Public Health Systems and Services. 3-4 Hours.

Management and Policy in Public Health Systems and Services (HCO 600) is part of the UAB School of Public Health core curriculum. Most MPH students, regardless of program affiliation, must complete this course in order to graduate. The course presents selected information, concepts, and methods from the field of public health. This is a survey class, thus it will introduce the student to the public health system and general health care organization and policy issues. Topics concerning the history, organization, financing, and services of the public health system, as well as the structure, management and current status of the public health system are discussed.

HCO 600Q. Management and Policy in Public Health Systems and Services Online. 3-4 Hours.

Management and Policy in Public Health Systems and Services (HCO 600) is part of the UAB School of Public Health core curriculum. Most MPH students, regardless of program affiliation, must complete this course in order to graduate. The course presents selected information, concepts, and methods from the field of public health. This is a survey class, thus it will introduce the student to the public health system and general health care organization and policy issues. Topics concerning the history, organization, financing, and services of the public health system, as well as the structure, management and current status of the public health system are discussed.

HCO 601. Health Economics. 3 Hours.

Economics as systematic way of thinking about use of resources. Tools of economics applied to issues of organization, delivery, financing, and outcome of health care. Develops economic principles and describes system of health care financing and delivery in the United States, providing basis for analyzing health management and policy options. With didactic coursework provided in HCO 601, doctoral students prepare a major paper under instructor's direction.

HCO 601Q. Health Economics Online. 3 Hours.

Economics as systematic way of thinking about use of resources. Tools of economics applied to issues of organization, delivery, financing, and outcome of health care. Develops economic principles and describes system of health care financing and delivery in the United States, providing basis for analyzing health management and policy options. With didactic coursework provided in HCO 601, doctoral students prepare a major paper under instructor's direction.

HCO 602. Narrative Public Health. 3 Hours.

The purpose of this course is to develop communication skills primarily through written exercises directly relevant to public health. Each exercise will explore and teach students different formats and techniques for communicating complex public health information to different audiences, such as colleagues, the lay public, public officials, or potential future public health students. NOTE: Only available to School of Public Health degree seeking students.

HCO 603. Public Health Policy. 3 Hours.

Theoretical framework and concepts used to understand evolution of public health policies and processes of policy formulation, implementation, and change. Significance of health policy for public health practical foundation of knowledge and skills useful in analyzing and responding to policy environment. Doctoral student will have an emphasis on independent analysis of health policy issues. Preq: HCO 601 or HCO 701 recommended.

HCO 604. Health Economics and Public Health Policy. 3 Hours.

Economics is the study of choices in a world of scarcity. This course applies basic microeconomic principles to the study of the US health care system and public health policy. The first goal of the course is to provide students with an understanding of the core economic concepts (scarcity, economic welfare and market failures) which shape health care and public health policy. Next, students will be introduced to two competing theories of government – public interest theory and the economic theory of regulation – which will serve as a foundation for thinking about the role of government in health policy. Finally, the remainder the semester will provide students with a comprehensive overview of the US health care system including public and private health insurance, hospitals, physicians, the pharmaceutical industry and current issues in health care reform.

HCO 604Q. Health Economics and Public Health Policy Online. 3 Hours.

This course applies basic microeconomic principles to the study of the US health care system and public health policy. The first goal of the course is to provide students with an understanding of the core economic concepts (scarcity, economic welfare and market failures) which shape health care and public health policy. Next, students will be introduced to two competing theories of government - public interest theory and the economic theory of regulation - which will serve as a foundation for thinking about the role of government in health policy. Finally, the remainder the semester will provide students with a comprehensive overview of the US health care system including public and private health insurance, hospitals, physicians, the pharmaceutical industry and current issues in health care reform. Ideally, students will come away from the course with a better understanding of the role of economics in the US health care system, and an improved ability to analyze the motivations and consequences of government intervention in markets.

HCO 605. Foundations of Maternal and Child Health: Programs and Policies for Women, Children, and Families. 3 Hours.

The purpose of this course is to provide students with knowledge about current major Maternal and Child Health (MCH) issues (health, social, economic, and environmental) and programs and policies designed to address these issues among women of reproductive age, infants, and children. This course will focus primarily on public health problems and solutions of MCH populations in the United States. In addition to introductory information on specific health issues related to children and families, the evolution, status, and future performance of selected federal, state, and community programs will be analyzed. Course work also includes a review of factors that influence policy development and program implementation, including: 1) research, 2) data issues, 3) current public policy reform movements, and 4) advocacy. The course will include lectures, discussions, and other activities. Students will gain information on the history of MCH and public health, selected MCH issues for each stage of growth and development, the importance of family and communities in addressing MCH issues, and federal and state-specific programs and policies that address the needs of MCH populations.

HCO 605Q. Foundations of Maternal and Child Health: Programs and Policies for Women, Children, and Families. 3 Hours.

The purpose of this course is to provide students with knowledge about current major Maternal and Child Health (MCH) issues (health, social, economic, and environmental) and programs and policies designed to address these issues among women of reproductive age, infants, and children. This course will focus primarily on public health problems and solutions of MCH populations in the United States. In addition to introductory information on specific health issues related to children and families, the evolution, status, and future performance of selected federal, state, and community programs will be analyzed. Course work also includes a review of factors that influence policy development and program implementation, including: 1) research, 2) data issues, 3) current public policy reform movements, and 4) advocacy. The course will include lectures, discussions, and other activities. Students will gain information on the history of MCH and public health, selected MCH issues for each stage of growth and development, the importance of family and communities in addressing MCH issues, and federal and state-specific programs and policies that address the needs of MCH populations.

HCO 606. Fundamentals of Maternal and Child Health Part II: Application of Essential MCH Skills. 3 Hours.

The purpose of this course is to introduce students to basic research methods used by public health practitioners, with a specific focus on their use in the MCH field and to introduce the needs assessment, program planning, and evaluation processes specifically related to public health and finally to provide practical educational experiences to develop skills in applying several research methods and the range of activities needed to conduct needs assessments and use the information gathered to plan, direct, and evaluate public health programs and impact public health policies.

Prerequisites: HCO 605 [Min Grade: C]

HCO 606Q. HCO 606 MCH Fundamentals II: Application of Essential MCH Skills Online. 3 Hours.

This course is taught entirely in online format, with sessions occurring two times per week for 1 hour and 15 minutes per session. Course sessions will entail a combination of lectures, group discussions via course discussion board, small-group activities, and student presentations based on assigned readings and projects. Active student participation in all class discussions and presentations is essential. Guest presenters may be used to address specific topics.

Prerequisites: HCO 605 [Min Grade: C](Can be taken Concurrently) or HCO 605Q [Min Grade: C](Can be taken Concurrently)

HCO 607. Public Health Law. 3 Hours.

An introductory course in public health law designed for graduate students in public health. There are no prerequisites for this course. The purpose of the course is to introduce non-lawyers to the United States legal system and to the basic principles of law relevant to public health practitioners. It is intended to provide students with basic legal knowledge to assist them in communicating with attorneys about potential legal issues that may arise in formulating policy and exercising managerial authority. An overarching theme of the course is the tension between community interests and individual rights.

HCO 607Q. Public Health Law Online. 3 Hours.

An introductory course in public health law designed for graduate students in public health. There are no prerequisites for this course. The purpose of the course is to introduce non-lawyers to the United States legal system and to the basic principles of law relevant to public health practitioners. It is intended to provide students with basic legal knowledge to assist them in communicating with attorneys about potential legal issues that may arise in formulating policy and exercising managerial authority. An overarching theme of the course is the tension between community interests and individual rights.

HCO 608. Reproductive Health. 3 Hours.

This course is intended to provide students with a foundation in reproductive health. It examines reproductive health issues, problems, policies, programs and services primarily in low-to-middle income countries.

HCO 608Q. Reproductive Health Online. 3 Hours.

This course provides you with a foundation in reproductive health. It examines reproductive health issues, policies, programs and services, primarily in low-to-middle income countries, with comparisons to the US situation. The learning objectives and competencies are listed further below. The course is a HCO elective and is recommended especially for students with a MCH policy and leadership concentration, as well as for students focusing on global health, epidemiology, and health behavior. There are no course prerequisites other than a genuine interest in reproductive health, a willingness to do all the readings and assignments, and to participate fully in class discussion.

HCO 609. Needs Assessment and Program Planning, Implementation, and Evaluation. 3 Hours.

The purposes of HCO 609 are (1) to introduce the needs assessment and program planning, implementation, and evaluation processes specifically related to public health; and (2) to provide practical educational experiences to develop skills in applying rigorous methods and essential skills needed to conduct needs assessments and use the information gathered to plan, direct, and evaluate public health programs and impact public health policies. This course is required for all HCOP students.

HCO 609Q. Needs Assessment and Program Planning, Implementation, and Evaluation Online. 3 Hours.

The purposes of HCO 609 are (1) to introduce the needs assessment and program planning, implementation, and evaluation processes specifically related to public health; and (2) to provide practical educational experiences to develop skills in applying rigorous methods and essential skills needed to conduct needs assessments and use the information gathered to plan, direct, and evaluate public health programs and impact public health policies. This course is required for all HCOP students.

HCO 610. Global Health Law. 3 Hours.

This course will provide a systematic overview of global health law. It will focus on the diplomatic, political, social and economic factors that impact the substance of global health law. I will provide an introduction to the nature and sources of international law as well as the role of multiple international agencies that affect global health (e.g., WHO, UNAIDS, World Bank). Key themes in the course include: health equity; global solidarity; health in all policies; good governance, and the right to health care.

HCO 610Q. Global Health Law Online. 3 Hours.

This course will provide a systematic overview of global health law. It will focus on the diplomatic, political, social and economic factors that impact the substance of global health law. The instructor will provide an introduction to the nature and sources of international law as well as the role of multiple international agencies that affect global health (e.g., WHO, UNAIDS, World Bank). Key themes in the course include: health equity; global solidarity; health in all policies; good governance, and the right to health care.

HCO 611. Child Health and Development:Womb to Young to Adulthood. 3 Hours.

The premise of this course is that an understanding of principles of development is critical to developing, implementing, and evaluating effective programs and services for children and women of childbearing age. Through didactic, experiential, and interactive learning activities students will explore the processes that influence children's health and development and the supports and services that are needed to enhance those mechanisms. Issues for children and adolescents with special health care needs and well as typically developing children and youth will be included in lectures, discussions, and class projects.

HCO 612. Strategic Management in Health Programs. 3 Hours.

Provides a framework for strategic management in health care and public health organizations and provides opportunities to develop strategic plans for health care organization. Objectives are: to relate prior knowledge and experience to specific problem-solving situations; encourage strategic thinking in decision making in health care organizations; provide opportunities to engage in and manage a group decision-making process; gain experience in analyzing the public health environment and prepare a strategic plan for that environment; and develop implementation plans to accomplish strategic plans.

HCO 612Q. Strategic Management in Health Programs Online. 3 Hours.

The overall goal of the course is to provide a framework for strategic management and an opportunity to develop a strategic plan through a case study. In addition, the course provides participants an opportunity to integrate the knowledge and experience they have acquired in previous courses and health care organizational settings into a broad theory of management. The overall goal of the course is to develop strategic thinking, strategic planning, and managing strategic momentum concepts and skills and generally provide a framework for strategically managing an organization.

HCO 613. Health Information in Technology & Policy. 3 Hours.

The overall purpose of this course is to familiarize students with current issues associated with health information technology and their impact on the U.S. healthcare system.

HCO 613Q. Health Information in Technology & Policy Online. 3 Hours.

The overall purpose of this course is to familiarize students with current issues associated with health information technology and their impact on the U.S. healthcare system.

HCO 615. Finance for Health Professionals. 3 Hours.

The goal of this class is to teach the principles necessary for effective financial management in healthcare to individuals who are not experienced financial executives. The focus of the class is on tools and techniques that assist managers in creating information to support managerial decision making. The course uses the case method of instruction, case analysis, and lectures.

HCO 615Q. Finance for Health Professionals Online. 3 Hours.

The goal of this class is to teach the principles necessary for effective financial management in healthcare to individuals who are not experienced financial executives. The focus of the class is on tools and techniques that assist managers in creating information to support managerial decision making. The course uses the case method of instruction, case analysis, and lectures.

HCO 618. Management Concepts in Public Health Programs. 3 Hours.

Management Concepts in Public Health Programs is an overview of management concepts applied to public health agencies and programs. In recognition of public and private managements' responsibility for organizational success the course approaches management by examining recurring themes in management thought. Selected readings are provided for each class session that apply the concepts examined to the health care sector. Some of the articles relate to domestic (USA) while others relate to management in the international context. Some of the articles focus on public health organizations, some on hospitals, others on nursing homes, etc.

HCO 618Q. Management Concepts in Public Health Online. 3 Hours.

Management Concepts in Public Health Programs is an overview of management concepts applied to public health agencies and programs. In recognition of public and private managements' responsibility for organizational success the course approaches management by examining recurring themes in management thought. Selected readings are provided for each class session that apply the concepts examined to the health care sector. Some of the articles relate to domestic (USA) while others relate to management in the international context. Some of the articles focus on public health organizations, some on hospitals, others on nursing homes, etc.

HCO 619. Social Work in Public Health. 3 Hours.

Introduction and overview of the field of public health and the subspecialty of public health social work. Provides practical macro-level skills and explores the role and functions of social workers within major public health programs.

HCO 619Q. Social Work in Public Health Online. 3 Hours.

This course provides information about practical macro-level skills and increases the knowledge of students regarding the role and functions of advanced-trained social workers within major public health programs. Within the course, students will learn about: 1) the history and philosophy of public health and social work; 2) the roles and functions of public health social workers including practice standards; 3) the application of epidemiology and prevention in social work practice; 4) the contribution of social work in selective health programs and with diverse population groups; 5) the organization and administration of public health social work programs at the local, state and federal levels; and 6) the unique practice contexts of public health social workers.

HCO 620. Health Insurance & Managed Care. 3 Hours.

This course provides an overview of health insurance, health insurance regulation, state healthcare reform efforts, and the Affordable Care Act. It begins with a history of the development of health insurance and its theoretical basis. It then turns to the problems of moral hazard and adverse selection. The role of managed care and employer sponsored health insurance are discussed. Regulation of private insurance and the Medicare and Medicaid programs are also reviewed. A significant part of the course will focus on the impact of the Affordable Care Act on private health insurance markets.

Prerequisites: HCO 601 [Min Grade: C] or HCO 604 [Min Grade: C] or HA 645 [Min Grade: C] or AH 701 [Min Grade: C]

HCO 620Q. Health Insurance & Managed Care Online. 3 Hours.

This course provides an overview of health insurance, health insurance regulation, state healthcare reform efforts, and the Affordable Care Act. It begins with a history of the development of health insurance and its theoretical basis. It then turns to the problems of moral hazard and adverse selection. The role of managed care and employer sponsored health insurance are discussed. Regulation of private insurance and the Medicare and Medicaid programs are also reviewed. A significant part of the course will focus on the impact of the Affordable Care Act on private health insurance markets.

Prerequisites: HCO 604 [Min Grade: C](Can be taken Concurrently) or HA 645 [Min Grade: C](Can be taken Concurrently) or AH 701 [Min Grade: C](Can be taken Concurrently) or HCO 601 [Min Grade: C]

HCO 621. Clinical Decision Making and Cost-Effectiveness Analysis. 3 Hours.

Cost-effectiveness analysis applies decision analysis to circumstances where both costs and outcomes are important criteria for making choices. This course is designed to provide students with an understanding of the methods and uses of decision analysis and cost-effectiveness analysis. Students are not assumed to have any prior exposure to the field of decision analysis, but should have basic familiarity with probability and statistics. The course will provide a thorough grounding in the fundamentals of decision analysis and cost-effectiveness analysis, and also will introduce several intermediate-to-advanced topics. This course is open to Master's and Doctoral students from the School of Nursing and the School of Health Professions. The overall purpose is to train informed consumers of cost-effectiveness analyses, able to assess the quality of studies presented in the literature and determine when the results are valid and applicable to policy decisions in public health and medicine. NOTE: If course work (BST 600 or BST 611 and BST 612) are not met, then permission of instructor is required.

Prerequisites: BST 601 [Min Grade: C](Can be taken Concurrently) or BST 601Q [Min Grade: C](Can be taken Concurrently) or BST 611 [Min Grade: C](Can be taken Concurrently) or BST 611Q [Min Grade: C] (Can be taken Concurrently) and BST 612 [Min Grade: C](Can be taken Concurrently) or BST 612Q [Min Grade: C](Can be taken Concurrently)

HCO 621Q. Clinical Decision Making and Cost-Effectiveness Analysis Online. 3 Hours.

Cost-effectiveness analysis applies decision analysis to circumstances where both costs and outcomes are important criteria for making choices. This course is designed to provide students with an understanding of the methods and uses of decision analysis and cost-effectiveness analysis. Students are not assumed to have any prior exposure to the field of decision analysis, but should have basic familiarity with probability and statistics. The course will provide a thorough grounding in the fundamentals of decision analysis and cost-effectiveness analysis, and also will introduce several intermediate-to-advanced topics. This course is open to Master's and Doctoral students from the School of Nursing and the School of Health Professions. The overall purpose is to train informed consumers of cost-effectiveness analyses, able to assess the quality of studies presented in the literature and determine when the results are valid and applicable to policy decisions in public health and medicine.

Prerequisites: (BST 601 [Min Grade: C] or BST 601Q [Min Grade: C]) or (BST 611 [Min Grade: C] or BST 611Q [Min Grade: C] and BST 612 [Min Grade: C] or BST 612Q [Min Grade: C])

HCO 622. Design and Conduct of Cost-Effectiveness Research. 3 Hours.

The purpose of this course is to familiarize students with the design and implementation of cost-effectiveness and cost-benefit analysis.

Prerequisites: HCO 621 [Min Grade: C] or HCO 721 [Min Grade: C]

HCO 623Q. Pharmacoeconomics and Regulation Online. 3 Hours.

The purpose of this course is to provide an introduction to pharmacoeconomics and the regulatory role of the FDA. It is open to students in the MPH program and Master's and Doctoral students from the School of Nursing and the School of Health Professions.

Prerequisites: HCO 604 [Min Grade: C](Can be taken Concurrently) and HCO 621 [Min Grade: C](Can be taken Concurrently) or HCO 621Q [Min Grade: C](Can be taken Concurrently) or HCO 721Q [Min Grade: C] (Can be taken Concurrently) or HCO 721 [Min Grade: C](Can be taken Concurrently)

HCO 624. Healthy Lifestyles for the MCH Population: Integrating Nutrition with Physical Activity. 3 Hours.

This course will examine healthy lifestyles from the community viewpoint. Although nutrition is the primary focus of the course, it will also explore how nutrition and physical activity are integrated in programs and interventions for healthy lifestyles for the MCH population. There will be an emphasis on childhood obesity prevention and intervention. The course will integrate the Life Course model, illustrating the importance of early intervention as well as intervention at critical periods. This course will allow students to design an intervention and develop a policy paper to support MCR nutrition initiatives. Students will learn community-based strategies for promoting healthy lifestyles through improved eating and physical activity behaviors. The application of community-based planning based on "five cornerstones of a healthy lifestyle" (MCRB and ASTPHND, 2008): access, collaboration, science and research, workforce, and communication will be included.

HCO 624Q. Healthy Lifestyles for the MCH Population: Integrating Nutrition with Physical Activity Online. 3 Hours.

This proposed course will look at nutrition and physical activity from the community nutrition and physical activity viewpoint. It will explore nutrition and physical activity in the MCH population and students will become aware of the different public health venues where current interventions are occurring as well as where intervention can occur.

HCO 625. Advanced Leadership and Practice in MCH Part I - Introduction to Leadership. 1 Hour.

The purpose of this course is to provide students with the leadership skills necessary to work effectively at a community, state or regional level in the capacity of designing and advocating for programs and policies necessary to promote the health of women, children and families. This course is required for MPH and DrPH students in the HCOP/Maternal and Child Health track and is open to students from other tracks and departments. It is offered as a 3, one-hour course sequence to allow sufficient time for students to develop the background and skills that build upon each other. Other faculty members and external guest presenters will be invited to address specific topics. The course will include lectures, small group discussions, exercises, individual projects and service-learning field-based activities. Student presentations are required.

HCO 625Q. Advanced Leadership and Practice in MCH Part One - Introduction to Leadership Online. 1 Hour.

The purpose of this course is to provide students with the leadership skills necessary to work effectively at a community, state or regional level in the capacity of designing and advocating for programs and policies necessary to promote the health of women, children and families. This course is required for MPH and DrPH students in the HCOP/Maternal and Child Health track and is open to students from other tracks and departments. It is offered as a 3, one-hour course sequence to allow sufficient time for students to develop the background and skills that build upon each other. Other faculty members and external guest presenters will be invited to address specific topics. The course will include lectures, small group discussions, exercises, individual projects and service-learning field-based activities. Student presentations are required.

HCO 626. Adv Leadership and Practice in MCH Module II - Collaborative Leadership and Advocacy. 1 Hour.

This is the second of a three course sequence designed to equip students with knowledge and skills needed to provide leadership in the development and delivery of needed programs and policies to promote the health and well being of MCH populations.

Prerequisites: HCO 625 [Min Grade: C](Can be taken Concurrently) or HCO 625Q [Min Grade: C](Can be taken Concurrently)

HCO 626Q. Adv Leadership and Practice in MCH Module II - Collaborative Leadership and Advocacy Online. 1 Hour.

This is the second of a three course sequence designed to equip students with knowledge and skills needed to provide leadership in the development and delivery of needed programs and policies to promote the health and well being of MCH populations.

Prerequisites: HCO 625Q [Min Grade: C](Can be taken Concurrently) or HCO 625 [Min Grade: C](Can be taken Concurrently)

HCO 627. ADV Leadership and Practice in MCH Module III - Into the Streets: Lead/Field Experience. 1 Hour.

The purpose of this course sequence is to provide students with the leadership skills necessary to work effectively at a community, state or regional level in the capacity of designing and advocating for programs and policies necessary to promote the health of women, children and families.

Prerequisites: HCO 625 [Min Grade: C]

HCO 627Q. Adv Leadership and Practice in MCH - Module III, Leadership/Field Exp Online. 1 Hour.

HCO 627 is the culminating module in the Advanced Leadership and Practice in MCH. HCO 625 and HCO 626 are the prerequisites for this final course. The overall purpose of this course sequence is to provide students with the leadership skills necessary to work effectively at a community, state or regional level in the capacity of designing and advocating for programs and policies necessary to promote the health of women, children, and families.

Prerequisites: HCO 625 [Min Grade: C](Can be taken Concurrently) or HCO 625Q [Min Grade: C](Can be taken Concurrently) and HCO 626Q [Min Grade: C](Can be taken Concurrently) or HCO 626 [Min Grade: C] (Can be taken Concurrently)

HCO 628. Qualitative and Mixed Methods Research in Public Health. 3 Hours.

The class is designed to be interactive with practice sessions in class for the various skills of qualitative research: observation, writing, coding, analysis, individual interviewing, and focus group discussions. There will be three activities that will give the students a taste for being "in the field": non-participant observation, a mock focus group, and in-depth interviews. Students will experience writing field notes, memo writing, coding, and abstracting from data via these three activities. Because many students will be applying qualitative methods in evaluation and needs assessment projects in the field of public health, we will also focus on these aspects in class.

HCO 629. Immigrant Health. 3 Hours.

The purpose of this course is to provide an overview of key public health issues facing immigrant populations in the US, including the interrelationship between migration processes and health behaviors and outcomes, health and disease burdens for immigrant subgroups (e.g., Latinos, children), health care access and use, and health promotion/ disease prevention.

HCO 631. Public Health Demography. 3 Hours.

Demography (the study of population) has become more important across a range of academic disciplines. There is a growing call on demographers outside academia, such as for policy-making, health care planning and analysis, or business administration. Demographic changes play a critical, though often poorly understood role in influencing the social, economic, and health fabric of our lives. This course introduces the core concepts and methods used in demographic analysis. It also provides a basic understanding of population dynamics and its health and socio-economic implications. Students will gain a firm foundation in how to measure fertility, mortality and migration; how to analyze population change and project population growth; and how to interpret demographic trends, their determinants and consequences.

HCO 631Q. Public Health Demography Online. 3 Hours.

Demography (the study of population) has become more important across a range of academic disciplines. There is a growing call on demographers outside academia, such as for policy-making, health care planning and analysis, or business administration. Demographic changes play a critical, though often poorly understood role in influencing the social, economic, and health fabric of our lives. Demography (the study of population) has become more important across a range of academic disciplines. There is a growing call on demographers outside academia, such as for policy-making, health care planning and analysis, or business administration. Demographic changes play a critical, though often poorly understood role in influencing the social, economic, and health fabric of our lives. This course introduces the core concepts and methods used in demographic analysis. It also provides a basic understanding of population dynamics and its health and socio-economic implications. Students will gain a firm foundation in how to measure fertility, mortality and migration; how to analyze population change and project population growth; and how to interpret demographic trends, their determinants and consequences.

HCO 632. Readings in Maternal Child Health. 1-3 Hour.

Critical analysis of literature in single area of maternal and child health under supervision of faculty member.

HCO 633. Research Design and Analysis. 2 Hours.

The Research Design and Analysis course is designed to provide graduate students with an introduction to fundamental tools needed to propose, conduct, and assess outcomes of their research. The course will take them from the basics of developing hypotheses, conducting literature reviews (including an introduction to legal research) and critically analyzing literature reviewed, formalizing constructs to be addressed and developing valid, accurate and reliable tools/techniques to measure those constructs, and finally, will address how to analyze and interpret results.

HCO 633Q. Research Design and Analysis Online. 2 Hours.

The Research Design and Analysis course is designed to provide graduate students with an introduction to fundamental tools needed to propose, conduct, and assess outcomes of their research. The course will take them from the basics of developing hypotheses, conducting literature reviews (including an introduction to legal research) and critically analyzing literature reviewed, formalizing constructs to be addressed and developing valid, accurate and reliable tools/techniques to measure those constructs, and finally, will address how to analyze and interpret results.

HCO 634. Health Care Innovation. 3 Hours.

This course focuses on sustainable and socially responsible health care innovations. Students will be introduced to the realities of problem identification and will provide a how-to framework and case studies of healthcare ventures.

HCO 635. Writing Grants and Programming Awards in Public Health. 3 Hours.

Whether your public health career path leads you to a position in a public, non-profit, private, or academic setting, you will very likely be involved in some capacity with either writing or managing a grant. This course on grant-writing will provide you with in-demand skills necessary to possess when seeking a job in the field of public health. You will learn how to: 1) communicate your ideas effectively and persuasively, 2) write clearly and succinctly, 3) prepare a coherent, logical research plan, and 4) develop an organizational and management plan for carrying out your work. At the completion of this course, students will have written a grant proposal that is suitable for submission to an extramural funding agency.

HCO 640. Disaster and Emergency Management. 3 Hours.

The course will provide a concerted look into the realm of disaster and emergency management. Discussions in this course will concentrate on how disaster and emergency management has changed since 9/11 including new legislation and governmental structures. The course will culminate with a look at the roles and responsibilities of the public health system in preparing for and responding to both natural and man-initiated disasters. This course is intended for advanced MPH or doctoral students with an interest in preparedness policy, emergency management, or public health preparedness.

HCO 641. Health Preparedness and Response Policy. 3 Hours.

Preparedness policy can be defined as the sum of national and subnational governmental activities with the intent to protect the public's health and security. Discussions in this course will focus on policy and policy making in the U.S. and more particularly on preparedness policy and its evolution since 9/11. The purpose of this course will be to develop a skill set that will allow students to frame issues into social, cultural, regional and ethical norms, consider historical and political influence policy choices. Courses is for advanced MPH or doctoral students with an interest in preparedness policy, emergency, management, or public health preparedness.

HCO 642. Preparedness and Agriculture. 3 Hours.

This course presents the potential effects of an animal disease outbreak, whether natural, accidental or deliberate, on the affected communities. Topics covering the prevention and diagnosis of and the response to an animal disease outbreak will be presented. Examples of the interaction of public health with other disciplines will be provided. This course is designed for MPH students with an interest in preparedness policy, emergency management, or public health preparedness. NOTE: It is preferred that this course be completed during the final year of enrollment; however, any MPH candidate who has completed the entire core curriculum is eligible to enroll in the course.

HCO 643. Emergency Preparedness Exercise, Evaluation & Communication. 3 Hours.

This course will provide participants with an understanding of the psychological processes that occur during crises, how those processes impact human functioning, and how communication plays a critical role in the psychological outcomes of crisis situations.

HCO 644. Needs Assessment, Program Planning and Evaluation: The Public Health Planning Process. 3 Hours.

To introduce the needs assessment, program planning and evaluation processes specifically related to public health and to provide practical experiences to develop skills in the range of activities needed to conduct needs assessments and use the information gathered to plan, direct, and evaluate public health programs and impact public health policies.

HCO 670. Social and Ethical Issues in Public Health. 3 Hours.

This class examines ethical issues related to public health research and practice, and explores the social issues that complicate ethical decision-making. There are no pre-requisites. This class is open to all students with graduate standing. It is a required course for the MPH in Health Policy, the MPH in Public Health Preparedness, the MSPH in Outcomes Research and the DrPH in Public Health Management.

HCO 670Q. Social & Ethical Issues in Public Health Online. 3 Hours.

This class examines ethical issues related to public health research and practice, and explores the social issues that complicate ethical decision-making. There are no pre-requisites. This class is open to all students with graduate standing. It is a required course for the MPH in Health Policy, the MPH in Public Health Preparedness, the MSPH in Outcomes Research and the DrPH in Public Health Management.

HCO 672. Perinatal Health: Issues, Data & Policies. 3 Hours.

The purpose of this course is to provide students with knowledge related to perinatal health issues and policies. In addition, the course will allow students to gain basic skills in analysis of population-based data sets using SAS. This course at the 600-level is an elective for students seeking the Master of Public Health (MPH) degree and the Doctor of Public Health (DrPH) in the Department of Health Care Organization and Policy's MCH Leadership and Policy Track. It is offered at the 700-level for doctoral students. Other students interested in this area are encouraged to register. An introductory SAS course is recommended but not required.

HCO 672Q. Perinatal Health: Issues, Data & Policies Online. 3 Hours.

The purpose of this course is to provide students with knowledge related to perinatal health issues and policies. In addition, the course will allow students to gain basic skills in analysis of population-based data sets using SAS. This course at the 600-level is an elective for students seeking the Master of Public Health (MPH) degree and the Doctor of Public Health (DrPH) in the Department of Health Care Organization and Policy's MCH Leadership and Policy Track. It is offered at the 700-level for doctoral students. Other students interested in this area are encouraged to register. An introductory SAS course is recommended but not required.

HCO 673. Applied Health Policy: Global Child Health Issues. 3 Hours.

The focus of the course will be on four current and complex policy issues (2 domestic; 2 international): refugee health; immunization activities and the link to autism; obesity in children and physical inactivity; and child labor. Pertinent background information related to international, federal, state and local policies and systems will be studied. Students should gain both technical capacity for analysis and an understanding of the health policy process. This course is intended for advanced MPH or doctoral students with an interest in health policy, international health, or maternal and child health.

HCO 675. Improving Health Care Quality and Outcomes. 3 Hours.

Examination of current issues in quality of care and outcomes management. The course includes a review of past and current efforts, tools, and theories of quality assessment, assurance, utilization management, and measuring and improving outcomes.

HCO 677. Patient-Based Outcomes Measurement. 3 Hours.

This course will provide an in-depth overview of the concepts, methods, and instruments used to evaluate health from the perspective of the individual. The overall objective of this course is to provide a detailed examination of patient-based/centered outcomes measurement in the context of health care delivery systems and health care policy.

Prerequisites: BST 601 [Min Grade: C](Can be taken Concurrently) or BST 601Q [Min Grade: C](Can be taken Concurrently) or BST 611 [Min Grade: C](Can be taken Concurrently) or BST 611Q [Min Grade: C](Can be taken Concurrently)

HCO 677Q. Patient-Based/Centered Outcomes Research Online. 3 Hours.

This course will provide an in-depth overview of the concepts, methods, and instruments used to evaluate health from the perspective of the individual. The overall objective of this course is to provide a detailed examination of patient-based/centered outcomes measurement in the context of health care delivery systems and health care policy. The course will incorporate lectures, classroom discussion, in-class exercises, and occasional guest speakers.

Prerequisites: BST 601 [Min Grade: C](Can be taken Concurrently) or BST 601Q [Min Grade: C](Can be taken Concurrently) or BST 611 [Min Grade: C](Can be taken Concurrently) or BST 611Q [Min Grade: C](Can be taken Concurrently) and BST 612 [Min Grade: C](Can be taken Concurrently) or BST 612Q [Min Grade: C](Can be taken Concurrently)

HCO 680. Aging Policy. 3 Hours.

Providing for the physical and economic well-being of the aging population is a continual challenge facing society. The objectives of this course are to develop an understanding of the influence of demographic changes, economic factors, and public policy on the health status and health care of the aging population; investigate the work, retirement, savings, and health insurance decisions facing the elderly; describe the system of health care financing and delivery arrangements for the elderly in the United States and other developing countries. NOTE: Basic biostatistics or equivalent required.

Prerequisites: BST 601 [Min Grade: C]

HCO 686. Integrative Health Policy Analysis. 3 Hours.

The aim of this interdisciplinary course is to engage students in critical thinking about the goals, paradigms, effectiveness and implementation of health care policy in the United States. The course will incorporate several concepts from public policy analysis, public policymaking, health politics, public opinion research, media research, and technical-writing communication. NOTE: There are no prerequisite course requirements; however, students are expected to be familiar with the basics of the U.S. health care system and prior experience in health policy will be useful.

HCO 687. Empirical Methods for Health Research. 3 Hours.

The course aims to provide a thorough treatment of simple and multivariate regression models, simple binary dependent variable models, simple panel data models, and instrumental variables methods. Particular emphasis is placed on methods used to address omitted variable bias, such as difference-in-difference. The course is structured to provide students with ample opportunity to acquire hands-on experience in working with data by performing empirical analysis using the statistical software STATA.

Prerequisites: BST 601 [Min Grade: C](Can be taken Concurrently) or BST 601Q [Min Grade: C](Can be taken Concurrently) or BST 611 [Min Grade: C](Can be taken Concurrently) or BST 611Q [Min Grade: C](Can be taken Concurrently)

HCO 687Q. Empirical Methods for Health Research Online. 3 Hours.

The course aims to provide a thorough treatment of simple and multivariate regression models, simple binary dependent variable models, simple panel data models, and instrumental variables methods. Particular emphasis is placed on methods used to address omitted variable bias, such as difference-in-difference. The course is structured to provide students with ample opportunity to acquire hands-on experience in working with data by performing empirical analysis using the statistical software STATA.

Prerequisites: BST 601 [Min Grade: C](Can be taken Concurrently) or BST 601Q [Min Grade: C](Can be taken Concurrently) or BST 611 [Min Grade: C](Can be taken Concurrently) or BST 611Q [Min Grade: C](Can be taken Concurrently)

HCO 690. Integrative Experience. 3 Hours.

This course has been designed "to synthesize and integrate knowledge acquired in course work and other learning experiences and to apply theory and principles in a situation that approximates some aspect of professional practice" through the analysis of actual cases from the annals of public health practice, participation in a strategic planning exercise, and the development of a new case from current and emerging areas of critical interest to public health. Students working in multi-disciplinary groups will demonstrate their ability to apply the general and specific public health knowledge they have acquired through their courses of study and effectively apply that knowledge across disciplines to the effective resolution of public health problems.

HCO 691. Policy Analysis: Modeling & Simulation. 3 Hours.

This course shows how models are built and used for public policy making and clinical decision analysis. The goal is for you to develop basic skills with building various types of models. Models include spreadsheets with various types of randomness, bootstrapping historical data to estimate how much a model's results may vary, discrete event modeling, queuing, Markov models, System Dynamics models and Agent Based models. If time permits, we will also look at Linear Programming.

Prerequisites: BST 601 [Min Grade: C](Can be taken Concurrently) or BST 601Q [Min Grade: C](Can be taken Concurrently) and HCO 604 [Min Grade: C](Can be taken Concurrently)

HCO 691Q. Policy Analysis Modeling and Simulation Online. 3 Hours.

This course shows how models are built and used for public policy making and decision analysis. Topics include spreadsheet models, discrete event modeling, queuing, random number generation, Markov models, systems dynamics models and agent based models. If time permits, we will also look at Linear Programming.

Prerequisites: HCO 601 [Min Grade: C](Can be taken Concurrently) or HCO 601Q [Min Grade: C](Can be taken Concurrently) and BST 601 [Min Grade: C](Can be taken Concurrently) or BST 601Q [Min Grade: C](Can be taken Concurrently)

HCO 692. Adv Top Hlth Disparities Rsch. 3 Hours.

The primary aim of this course is to engage students in critical thinking about the current paradigms for health care disparities research in the US. As a part of this process, students will be challenged to think about the social, political, and economic determinants of health disparities for diverse health care consumers, to identify substantive trends and gaps in the health disparities literature, and to develop an innovative research or policy-oriented strategy for reducing health disparities. A secondary aim is to provide students with a broad overview of health and health care disparities according to race/ethnicity, gender, and health status. The three specific racial/ethnic groups are: African Americans, Hispanic/Latinos, and Asian/Pacific Islanders. The gender classifications include men and women. The health status groupings include persons with chronic health problems (such as diabetes or mental health condition, e.g. schizophrenia).

HCO 694. Special Problems in Policy Analysis. 3 Hours.

Continuation of HCO 693 - Policy Analysis: Modeling and Simulation.

Prerequisites: HCO 693 [Min Grade: C]

HCO 695. Seminar in Health Care Organization. 1-3 Hour.

Factors currently influencing finance and administration of public and private health programs; availability, accessibility, and utilization by selected population groups.

HCO 696. Selected Topics in Public Health Finance. 3 Hours.

Financing of public health programs; sources of revenue (grants and contracts, tax revenues, and service fees), capital financing, and management of cash flows Techniques of maximizing revenues in public health programs.

Prerequisites: HCO 601 [Min Grade: C]

HCO 697. Internship. 3 Hours.

The internship provides an opportunity for each student to work in a public health setting in a position that carries responsibility and is of particular interest. HCO 697 is a 3-credit hour course requirement of all MPH-seeking students. In order to register for the internship course, students must have completed all public health core coursework. Usually, this means that students must wait until their 3rd semester to complete the internship. Students must complete a minimum of 180 contact hours with the organization during the semester in which they register for the internship.

Prerequisites: (BST 601 [Min Grade: C] or BST 601Q [Min Grade: C] or BST 612 [Min Grade: C] or BST 612Q [Min Grade: C]) and (ENH 600 [Min Grade: C] or ENH 600Q [Min Grade: C]) and (EPI 600 [Min Grade: C] or EPI 600Q [Min Grade: C] or EPI 610 [Min Grade: C] or EPI 610Q [Min Grade: C]) and (HB 600 [Min Grade: C] or HB 600Q [Min Grade: C]) and (HCO 600 [Min Grade: C] or HCO 600Q [Min Grade: C])

HCO 697Q. Internship Online. 3 Hours.

The internship provides an opportunity for each student to work in a public health setting in a position that carries responsibility and is of particular interest. HCO 697 is a 3-credit hour course requirement of all MPH-seeking students. In order to register for the internship course, students must have completed all public health core coursework. Usually, this means that students must wait until their 3rd semester to complete the internship. Students must complete a minimum of 180 contact hours with the organization during the semester in which they register for the internship.

Prerequisites: (BST 601 [Min Grade: C] or BST 601Q [Min Grade: C]) or (BST 611 [Min Grade: C] or BST 611Q [Min Grade: C] and BST 612 [Min Grade: C] or BST 612Q [Min Grade: C]) and (ENH 600 [Min Grade: C] or ENH 600Q [Min Grade: C]) and (EPI 600 [Min Grade: C] or EPI 600Q [Min Grade: C]) and (HB 600 [Min Grade: C] or HB 600Q [Min Grade: C]) and (HCO 630 [Min Grade: C] or HCO 630Q [Min Grade: C])

HCO 698. Master's Level Directed Research Health Care Organization and Policy. 1-9 Hour.

Independent study with guidance of appropriate faculty.

HCO 699. Master's Level Project Research Health Care Organization and Policy. 1-9 Hour.

Research for project under direction of appropriate faculty and/or research project committee.

Prerequisites: GAC M

HCO 701. Health Economics. 3 Hours.

Economics as systematic way of thinking about use of resources. Tools of economics applied to issues of organization, delivery, financing, and outcome of health care. Develops economic principles and describes systems of health care financing and delivery in the United States, providing basis for analyzing health management and policy options. With didactic coursework provided in HCO 601, doctoral students prepare a major paper under instructor's direction.

Prerequisites: BST 611 [Min Grade: C]

HCO 703. Public Health Policy - Doctoral Level. 3 Hours.

Theoretical framework and concepts used to understand evolution of public health policies and processes of policy formulation, implementation, and change. Significance of health policy for public health practical foundation of knowledge and skills useful in analyzing and responding to policy environment. Doctoral students will have an emphasis on independent analysis of health policy issues.

Prerequisites: HCO 601 [Min Grade: C] or HCO 701 [Min Grade: C]

HCO 704. Health Economics and Public Health Policy. 3 Hours.

This course applies basic microeconomic principles to the study of the US health care system and public health policy. The first goal of the course is to provide students with an understanding of the core economic concepts (scarcity, economic welfare and market failures) which shape health care and public health policy. Next, students will be introduced to two competing theories of government – public interest theory and the economic theory of regulation – which will serve as a foundation for thinking about the role of government in health policy. Finally, the remainder the semester will provide students with a comprehensive overview of the US health care system including public and private health insurance, hospitals, physicians, the pharmaceutical industry and current issues in health care reform. Ideally, students will come away from the course with a better understanding of the role of economics in the US health care system, and an improved ability to analyze the motivations and consequences of government intervention in markets.

HCO 706. Strategic Mgmt Theory/Research. 3 Hours.

AH 706: Strategic Management Theory and Research is to provide a forum for the introduction of the concepts and issues of strategic management in order to facilitate their understanding and communications. The mission of the strategic management track is to develop highly qualified strategic management scholars and teachers who are contributing to the field. We accomplish this mission through: Our strategic management courses, Faculty/student interaction, Publishing and presenting our work, and Teaching others.

HCO 708. Reproductive Health. 3 Hours.

This course is intended to provide students with a foundation in reproductive health. It examines reproductive health issues, problems, policies, programs and services, primarily in low-to-middle income countries.

HCO 711. Child Health and Development: Womb to Young to Adulthood. 3 Hours.

The premise of this course is that an understanding of principles of development is critical to developing, implementing, and evaluating effective programs and services for children and women of childbearing age. Through didactic, experiential, and interactive learning activities students will explore the processes that influence children's health and development and the supports and services that are needed to enhance those mechanisms. Issues for children and adolescents with special health care needs and well as typically developing children and youth will be included in lectures, discussions, and class projects.

HCO 713. Health Information Technology and Policy. 3 Hours.

Expands on content of introductory course in health policy. Insights into system's attributes; characteristics dictating its structure and function.

HCO 714. Life Course Seminar. 3 Hours.

The purpose of this course is to expand knowledge and research skills around MCH life course issues. As guided by faculty, students will review and critique the literature in given areas around life course science and specific life span issues. Students will work with the library liaison to conduct extensive literature reviews and move toward writing a manuscript for submission to a peer-reviewed journal. It will serve as a foundation for skills needed in other courses as well as foundational knowledge related to maternal and child health science. The course is required for all HCO-MCH doctoral students. Other doctoral or higher level Masters' students interested in a research path may register with the approval of the instructor. Prerequisites: Ideally, students will have taken all course work prior to taking this course. However, the DrPH director and course instructors may make exceptions.

HCO 715. Finance for Health Professionals. 3 Hours.

Financial management of public health care organizations. Emphasis on time value on money, capital raising methods, cost of capital, capital budgeting methods and working capital policy. Problem-solving orientation with applications to public health issues.

HCO 716. Advanced Leadership and Practice Seminar. 3 Hours.

The goal of the DrPH program in the Department of Health Care Organization and Policy is to prepare students to serve and succeed as leaders in public health practice, in public health research settings, or in both. Therefore, the aims of this seminar are multifaceted. Part I of the course will explore and discuss the nature and processes of doctoral education and academic teaching, scholarship, service, and other duties related to a traditional academic research or scholarly practice setting. Part II of the course allows doctoral students to enhance their leadership skills, through personal development activities as well as through interaction with public health leaders. In Part III, students will gain a deeper understanding of how research is applied in public health practice through the completion an interdisciplinary project that draws upon management and organizational skills. The course will be co-led by faculty members with across the department. Prerequisites: Ideally, students will have taken all course work prior to taking this course. However, the DrPH director and course instructors may make exceptions.

HCO 717. Seminar in Public Health Policy. 3 Hours.

The purpose of this course is to enhance doctoral students' understanding of policy and their ability to integrate policy into research and practice. The course will engage students in discussion and reflection about the intersection between policy and public health practice, with an emphasis on tools and skills needed for policy development. Prerequisites: Ideally, students will have taken all course work prior to taking this course. However, the DrPH director and course instructors may make exceptions.

HCO 718. Mgt Concepts in Pub Hlth Progs. 3 Hours.

Organization structure, management, finance and budgeting, human resources, contracts, negotiation, and operations research in public health settings. Presentation of general principles combined with study of actual cases from practice.

HCO 720. Health Insurance and Managed Care. 3 Hours.

This course provides an overview of health insurance, health insurance regulation, state healthcare reform efforts, and the Affordable Care Act. It begins with a history of the development of health insurance and its theoretical basis. It then turns to the problems of moral hazard and adverse selection. The role of managed care and employer sponsored health insurance are discussed. Regulation of private insurance and the Medicare and Medicaid programs are also reviewed. A significant part of the course will focus on the impact of the Affordable Care Act on private health insurance markets.

Prerequisites: HCO 604 [Min Grade: C](Can be taken Concurrently) or HA 645 [Min Grade: C](Can be taken Concurrently) or AH 701 [Min Grade: C](Can be taken Concurrently)

HCO 721. Clinical Decision Making and Cost Effectiveness Analysis. 3 Hours.

The objectives of this course are to acquaint public health and other professionals with techniques of decision making under conditions of uncertainty and the basics of cost-effectiveness analysis. Topics include decision analysis, Markov processes, Monte Carlo simulation, valuing diagnostic tests, and measuring the costs and outcomes of health service programs. Students who successfully complete the course will be able to understand the strengths and limitations of these types of analysis and determine the relevance of research findings to their own areas of expertise. NOTE: If course work (BST 601 or BST 611 and BST 612) are not met, then permission of instructor is required.

Prerequisites: BST 601 [Min Grade: C] or BST 611 [Min Grade: C] and BST 612 [Min Grade: C]

HCO 722. Cost-Effectiveness Research Methods. 3 Hours.

The objective of this course is to familiarize students with the design and implementation of cost-effectiveness and cost-benefit analysis. Specific topics include cost estimation, effectiveness measurement, time preference, uncertainty, ethical issues, valuing health outcomes, and ethical issues in cost-effectiveness research. At the end of the course students will develop and present analysis plans related to their particular fields of practice. Preq: HCO 721 or permission of instructor.

Prerequisites: HCO 721 [Min Grade: C]

HCO 723. Management of Complex Health Organizations. 3 Hours.

Complexity as related to management of health organizations. Academic health centers as models of complex organization. Incentive systems, organizational politics, and ownership and control within context of high complex health organizations.

HCO 728. Qualitative and Mixed Methods Research in Public Health. 3 Hours.

The class is designed to be interactive with practice sessions in class for the various skills of qualitative research: observation, writing, coding, analysis, individual interviewing, and focus group discussions. There will be three activities that will give the students a taste for being "in the field": non-participant observation, a mock focus group, and in-depth interviews. Students will experience writing field notes, memo writing, coding, and abstracting from data via these three activities. Because many students will be applying qualitative methods in evaluation and needs assessment projects in the field of public health, we will also focus on these aspects in class.

HCO 729. Immigrant Health. 3 Hours.

The purpose of this course is to provide an overview of key public health issues facing immigrant populations in the US, including the interrelationship between migration processes and health behaviors and outcomes, health and disease burdens for immigrant subgroups (e.g., Latinos, children), health care access and use, and health promotion/disease prevention. This course is designed to be taken by doctoral students in either a DrPH program or a health related PhD program at UAB. Knowledge of quantitative or qualitative methods and experience with data analysis will be helpful for completion of the final research project.

HCO 735. Writing Grants and Programming Awards in Public Health. 3 Hours.

Whether your public health career path leads you to a position in a public, non-profit, private, or academic setting, you will very likely be involved in some capacity with either writing or managing a research/evaluation grant. This doctoral-level course on research grant-writing will provide you with in-demand skills necessary to possess when seeking a research or evaluation job in the field of public health. You will learn how to: 1) communicate your ideas effectively and persuasively, 2) write clearly and succinctly, 3) prepare a coherent, logical research plan, and 4) develop an organizational and management plan for carrying out your work. Students will learn how to find the right grant mechanism, plan and write a successful grant proposal, put together a good research team, as well as create budgets and other administrative sections of grants. In addition, students will gain understanding of the grant peer review process, how to handle resubmissions, and post-award management. At the completion of this course, students will have written a research grant proposal (such as an NIH R03 grant) that is suitable for submission to an extramural funding agency.

HCO 740. Disaster and Emergency Management. 3 Hours.

The course will provide a concerted look into the realm of disaster and emergency management. Discussions in this course will concentrate on how disaster and emergency management has changed since 9/11 including new legislation and governmental structures. The course will culminate with a look at the roles and responsibilities of the public health system in preparing for and responding to both natural and man-initiated disasters. This course is intended for advanced MPH or doctoral students with an interest in preparedness policy, emergency management, or public health preparedness.

HCO 741. Health Preparedness and Response Policy. 3 Hours.

Preparedness policy can be defined as the sum of national and subnational governmental activities with the intent to protect the public's health and security. Discussion in this course will focus on policy and policy making in the U.S. and more particularly on preparedness policy and its evolution since 9/11. The purpose of this course will be to develop a skill set that will allow students to frame issues into social, cultural, regional, and ethical norms, consider historical and political influence on policy choices. Course is for advanced MPH or doctoral students with an interest in preparedness policy, emergency management, or public health preparedness.

HCO 742. Preparedness and Agriculture. 3 Hours.

This course presents the potential effects of an animal disease outbreak, whether natural, accidental or deliberate, on the affected communities. Topics covering the prevention and diagnosis of and the response to an animal disease outbreak will be presented. Examples of the interaction of public health with other disciplines will be provided. This course is designed for MPH students with an interest in preparedness policy, emergency management, or public health preparedness. NOTE: It is preferred that this course is completed during the final year of enrollment; however, any MPH candidate who has completed the entire core curriculum is eligible to enroll in the course.

HCO 743. Emergency Preparedness Exercise, Evaluation & Communication. 3 Hours.

This course will provide participants with an understanding of the psychological processes that occur during crises, how those processes impact human functioning, and how communication plays a critical role in the psychological outcomes of crisis situations.

HCO 772. Perinatal Hlth Issues. 3 Hours.

The purpose of this course is to provide students with knowledge related to perinatal health issues and policies. In addition, the course will allow students to gain basic skills in analysis of population-based data sets using SAS. This course at the 600-level is an elective for students seeking the Master of Public Health (MPH) degree and the Doctor of Public Health (DrPH) in the Department of Health Care Organization and Policy's MCH Leadership and Policy Track. It is offered at the 700-level for doctoral students. Other students interested in this area are encouraged to register. An introductory SAS course is recommended but not required.

HCO 773. Applied Health Policy:Global/Child Health Issues. 3 Hours.

The focus of the course will be on four current and complex policy issues (2 domestic; 2 international): refugee health; immigration activities and the link to autism; obesity in children and physical inactivity; and child labor. Pertinent background information related to international federal, state and local policies and systems will be studied. Students should gain both technical capacity for analysis and an understanding of the health policy process. This course is intended for advanced MPH or doctoral students with an interest in health policy, international health, or maternal and child health.

HCO 777. Patient-Based Outcomes Measures. 3 Hours.

This course will provide a detailed examination of patient based outcomes measurement in the context of health care delivery systems and health care policy.

Prerequisites: BST 611 [Min Grade: C] and BST 612 [Min Grade: C]

HCO 781. Research Methods and Study Design. 3 Hours.

This course examines empirical methods utilized in health policy and management research.

HCO 782. Advanced Casual Inference. 3 Hours.

Casual inference involves the methods and thinking one uses to move from associations to cause-and-effect relationships. This course provides an intermediate treatment of econometric and biostatistical methods for the casual inference in public health.

HCO 786. Integrative Health Policy Analysis. 3 Hours.

The aim of this interdisciplinary course is to engage students in critical thinking about the goals, paradigms, effectiveness and implementation of health care policy in the United States. The course will incorporate several concepts from public policy analysis, public policymaking, health politics, public opinion research, media research, and technical-writing communication. NOTE: There are no prerequisite course requirements; however, students are expected to be familiar with the basics of the U.S. health care system and prior experience in health policy will be useful.

HCO 787. Empirical Methods for Health Research. 3 Hours.

The objectives of the course are to provide thorough treatment of simple and multivariate regression models, simple binary dependent variable models, instrumental variables estimators, sample selection and two-part models, and simple panel data models. Course provides students with an opportunity to acquire hands-on software. This course is designed for students who have had limited experience with regression analysis but a working knowledge of simple statistics, probability distributions, and basic calculus. Students must have upper level undergraduate or graduate coursework in statistics and probability; basic calculus.

Prerequisites: BST 601 [Min Grade: C]

HCO 788. Longitudinal Meth Hlth Ser Res. 3 Hours.

This course provides an intermediate treatment of econometric and biostatistical methods for longitudinal analyses of data in public health.

Prerequisites: HCO 787 [Min Grade: B]

HCO 791. Policy Analysis:Modeling & Simulation. 3 Hours.

Training in basic skills necessary to design, test, implement, manage, present, and critique policy analysis in health care sector. Fundamentals of policy research design, and linkage between theory and operation. Various research techniques examined case studies and analyses of secondary data. Emphasis on choosing appropriate analytical strategies for particular policy issues. Data analysis using computers and critical evaluation of technical policy literature. Special topics in econometrics also addressed. Original policy analytic paper required at end of sequence. Preq: BST 600 or higher.

Prerequisites: BST 600 [Min Grade: C]

HCO 792. Advanced Topic in Health Disparities Research. 3 Hours.

This primary aim of this course is to engage students in critical thinking about the current paradigms for health care disparities research in the U.S.

HCO 793. DrPH Practicum. 3-6 Hours.

Doctoral students are required to complete a 6 hour practicum working in a public health agency or organization.

HCO 795. Directed Readings. 1-5 Hour.

The purpose of this course is to assist students in preparing literature reviews, manuscripts, or to complete other activities as deemed appropriate by the faculty member. Final objectives will be based upon the work between the student and advisor.

HCO 796. Doctoral Seminar. 1 Hour.

Doctoral students will be introduced to advanced topics in public health policy and practice, health services research methods and management research. In addition, topics directly related to doctoral studies (article critiques, literature reviews, manuscript preparation, dissertation protocol development, etc.) will be discussed.

HCO 797. Directed Readings. 3-9 Hours.

The primary aims of this seminar are to engage students in critical thinking about current issues in management research, public health policy and public health practice and to expose students to state-of-the-art methodological issues in health services research.

HCO 798. Doctoral Level Directed Research Health Care Organization and Policy. 3 Hours.

The purpose of this course is for students to develop dissertation research protocols that will be presented to their dissertation committee for final approval. Final objectives will be based upon the work between the student and advisor.

HCO 799. Dissertation Research HCOP. 3-9 Hours.

Research for dissertation under direction of dissertation committee. Must be advanced to candidacy.

Prerequisites: GAC Z

HCS-Healthcare Simulation

HCS 575. Introduction to Healthcare Simulation for Quality and Safety. 3 Hours.

Introductory course on origins and current applications for healthcare simulation; overview of simulation methodologies and application in education, training, quality improvement, and patient safety.

HCS 610. Instructional Design in Simulation. 2 Hours.

Instructional Design in Simulation applies the foundational concepts in the field of instructional design to the growing field of healthcare simulation. This course focuses on the processes of analysis, design, development, implementation, and evaluation as they relate to developing quality simulation learning experiences.

HCS 620. Current Trends in Simulation. 2 Hours.

Survey of emerging technologies as well as new applications and best practices in the delivery of simulation.

HCS 625. Simulation Methodology. 3 Hours.

Intensive focus on the development of simulation sequences to meet institutional priorities; emphasis on simulation case development, including debriefing and assessment strategies; teamwork and interprofessional competencies.

HCS 626. Healthcare Simulation Laboratory. 1 Hour.

Participation in simulations; application of research-based strategies for designing and implementing simulation scenarios; debriefing and developing solutions to common issues in simulation.

HCS 630. Research in Simulation. 1 Hour.

Introduction to simulation-focused research and present an overview of the current simulation evidence base.

HCS 635. Advanced Debriefing. 3 Hours.

In-depth review and application of current debriefing models in the field of simulation. Emphasis on choosing effective debriefing models for various modalities of simulation.

Prerequisites: HCS 625 [Min Grade: C]

HCS 640. Project Management: Leading Successful Healthcare Initiatives. 3 Hours.

Techniques for planning, scheduling, controlling, resource allocation, and performance measurement activities required for successfully completing a project.

HCS 645. Simulation Modeling. 3 Hours.

Introduction to basic concepts, approaches, and processes relevant to computer modeling in healthcare simulation environments; use of computer modeling to shorten design cycles, innovate new processes, evaluate designs, and simulate the impacts of alternative approaches relevant to healthcare environments; includes structure system analysis, model construction, data collection, and computer simulation languages.

HCS 660. Financial Management for Healthcare Quality Leaders. 3 Hours.

Basic concepts in financial management; introduction to financial accounting and management accounting; emphasis on evaluating the financial impact of new programs.

HCS 698. Simulation Capstone/Non-thesis Research. 1-4 Hour.

Rigorous culminating project that provides the opportunity for focused investigation of simulation applications in a real-world setting. Investigation and application of theory through a practical project.

HI-Health Informatics

HI 598. Professional Activity. 0 Hours.

Professional Development experiences associated with the MSHI degree program.

HI 599. Professional Development. 0 Hours.

Professional development experiences associated with the MSHI degree program.

HI 600. Analysis and Design of Health Information Systems. 4 Hours.

Requirements, concepts, methods, and tools in analyzing, modeling, and designing health information systems with emphasis on clinical systems.

HI 601. Databases and Data Modeling. 3 Hours.

Concepts of data modeling, data architectures, and data administration. Study of various models with application to current health information projects.

HI 602. Clinical and Administrative Systems. 3 Hours.

Foundations of clinical information use starting with information collection, processing (e.g., decision making) and recording. All aspects of clinical information use in inpatient and outpatient facilities. Special emphasis on the clinician's work to support enterprise-wide health care delivery.

HI 620. Security and Privacy in Health Care. 4 Hours.

Security and privacy issues, legislation, regulations, and accreditation standards unique to health care domain. Technical security of networks, databases, audit mechanisms and control.

HI 630. Strategic Planning and Contracting for Health Information Systems. 4 Hours.

Theory, practice, and processes needed for strategic planning of integrated health information systems. Assessing benefits of enterprise-wide information integration and tactics needed to realize these benefits. Steps needed for developing strategic plans that are aligned with goals of health care institutions using case studies and in team projects. Development of a Request for Proposal (RFP) based on strategic plans. Critique and practice of skills needed to negotiate contracts with vendors.

HI 632. Quantitative Methods for Health Informatics. 3 Hours.

Selected mathematical and statistical techniques and computer applications applied to decision making in hospitals and health care organizations. Introduction to selected analytic and visualization software and techniques used to measure and evaluate healthcare outcomes.

HI 640. Intro to Health Informatics and Health Care Delivery. 3-4 Hours.

History and current status of information systems in health care and health care information systems. Information architectures, administrative and clinical applications, strategic planning, security, and benefits realization.

HI 650. Foundations of Healthcare User-Based Design. 3 Hours.

Exploration of models of cognition and human performance and their application to healthcare information, patient safety, and technology.

HI 651. Foundations of Healthcare User-Based Research. 3 Hours.

Overview of interaction design research theories, implementation models and assessment of end-user mental models. Designing for healthcare teams, workflow considerations, contextual inquiry and distributed cognition models. Emphasis on analysis of modeling users, designing scenarios and requirements, and incorporating qualitative and quantitative research methods into the design of healthcare IT products and services; usability testing, heuristic evaluations, and web analytics.

HI 652. Design Thinking for Healthcare. 3 Hours.

Methodological approaches to principles of human-centered design, including quantifying end-user satisfaction with a healthcare-related device or interface, iterative prototyping, developing integrative thinking and empathy within a multi-disciplinary organization, contextual inquiry, brainstorming techniques and end-to-end walk-throughs.

HI 653. Managing the User-Centered Development Process. 3 Hours.

Methodological approaches to principles of human-centered design, including quantifying end-user satisfaction with a healthcare-related device or interface, iterative prototyping, developing integrative thinking and empathy within a multi-disciplinary organization, contextual inquiry, brainstorming techniques and end-to-end walk-throughs.

HI 654. Healthcare User Experience Capstone Project. 1-5 Hour.

Rigorous project that provides opportunity for focused investigation of User Experience problem in real-world setting and for application of problem solving methodologies for development and execution of solutions. Investigation and application of theory through practical implementation project.

HI 660. Healthcare Requirements Analysis. 3 Hours.

Approach to, identification, documentation and presentation of common health informatics problems. A focus on identifying root problems and unambiguous metrics for post-evaluation to ensure final deliverable meets intended need. Exposure to project management methodologies and six sigma processes to facilitate the logic needed for troubleshooting data problems in healthcare.

HI 661. Advanced Database Design and SQL for Healthcare. 3 Hours.

Study of common healthcare data structures and environments. Creation of database components; in-depth SQL coding; data warehouse designs; tools such as TOAD, SQL Explorer, Management Studio.

HI 662. Healthcare Business Intelligence. 3 Hours.

Exposure to typical business intelligence (BI) tool sets and identification of business objects. Building of the metalayer involved in a business intelligence system and exposure to Business Objects, Crystal Reports, SSRS.

HI 664. Data Analytics Capstone Project. 1-5 Hour.

Rigorous project that provides opportunity for focused investigation of healthcare data problems in real-world settings and for application of problem-solving methodologies for development and execution of solutions. Investigation and application of theory through practical implementation project.

HI 685. Principles in Health Informatics. 3-4 Hours.

Underpinnings in health informatics policies, practices, and principles. Inter- and intra-organizational application of information systems and data to enhance research and practice in healthcare.

HI 686. Leadership Theory. 1 Hour.

Exploration of the theoretical nature of leadership. Emphasis is on the application of theories of leadership in healthcare settings.

HI 687. Leadership Development. 1 Hour.

Completion of a guided leadership inventory, guest lecturers from industry leaders across multiple disciplines in healthcare to provide context-specific insight on leadership topics.

HI 688. Leadership Advocacy. 1 Hour.

Understanding internal and external advocacy relationships, practices and resources in the field of health informatics and information management.

HI 690. Administrative Internship. 4-8 Hours.

Structured field experiences in health care or other enterprises associated with health care industry. Includes a mentoring relationship with a preceptor and an opportunity for application of information resource management theory and strategies. Foundation for professional development and assists in refining skills and behaviors necessary for successful practice in a complex professional, social, political, and technological environment.

HI 694. Special Topics in Health Informatics. 1-4 Hour.

Study of selected topics in health informatics. May be repeated for credit.

HI 695. Independent Study in Health Informatics. 1-4 Hour.

Opportunity to investigate, perform activities and/or conduct a project related to a narrow topic in Health Informatics that corresponds with the current research of HI faculty, including medical informatics, nursing informatics, computer and communication sciences, library science, etc. May be repeated for credit.

HI 698. Simulation Capstone/Non-thesis Research. 1-8 Hour.

Rigorous culminating project that provides the opportunity for focused investigation of simulation applications in a real-world setting. Investigation and application of theory through a practical project.

HI 699. Master's Level Thesis Research. 4-8 Hours.

Original research in health informatics and interpretation of results. Demonstrates student's acquaintance with literature of field and competency in proper selection and execution of research methodology. Recommended for students planning to pursue a doctoral degree. May be repeated for credit (8 hours maximum credit allowed).

Prerequisites: GAC M

HI 725. Information Systems Theory and Practice. 3 Hours.

Investigation of appropriate research methods to assess theoretical models involving interdependencies and relationships between Information technology, human behavior, and organizational and socio-technical contexts; review of qualitative and quantitative research methods using IS journal article exemplars.

HI 777. Mixed Methods Research I. 3 Hours.

Provide introduction to the field of mixed methods research: essence of mixed methods research, rationale for using it, its fundamental principles and key characteristics, major design applications, and means of assessing the quality of mixed methods inferences. Learn how the mixed methods research process is shaped by personal, interpersonal, and social contexts and how mixed methods intersects with other quantitative and qualitative research approaches and designs.

HQS-Healthcare Quality & Safety

HQS 600. Introduction to Clinical Quality Improvement. 4 Hours.

Clinical quality improvement theory; classes of outcomes; process management; management tools and modeling techniques for improvement of clinical processes and decision-making.

HQS 610. Quantitative Methods, Measurement, and Tools for Quality Improvement. 4 Hours.

Statistical process control techniques applied to clinical and patient service processes, including Lean and Six Sigma methodologies; data system design concepts applied to clinical and financial data for managing health care business processes.

HQS 612. Health Data Management and Analytics for Enterprise Performance Improvement. 4 Hours.

Managing health data across the information lifecycle; assuring data quality and integrity; data visualization and analytics techniques; health information governance.

Prerequisites: HQS 600 [Min Grade: C] and HQS 610 [Min Grade: C] and HQS 625 [Min Grade: C] and HQS 630 [Min Grade: C]

HQS 613. Advanced Data Use in Quality Improvement and Patient Safety. 3 Hours.

Applying quantitative techniques to clinical and administrative data to inform and improve healthcare quality and patient safety outcomes.

Prerequisites: HQS 610 [Min Grade: C]

HQS 615. Collaborative Analytics for Quality and Safety Improvement. 3 Hours.

Survey of analytics used by HCO improvement project teams; emphasis on conceptual understanding of analytics approaches to investigate and resolve organizational quality and safety issues.

Prerequisites: HQS 610 [Min Grade: C] and HQS 612 [Min Grade: C]

HQS 625. Fundamentals of Patient Safety. 4 Hours.

Nature and science of medical error; strategies for design of safety-critical systems; hazard analysis and risk assessment in health care organizations; design elements of safety programs and high reliability systems.

HQS 630. Leadership of High Reliability Healthcare Organizations. 3 Hours.

Applying concepts of high reliability organizations to create an organizational culture that supports strong, functional, and safe patient care environments resulting in quality clinical care and patient satisfaction.

HQS 635. Healthcare Policy and Regulation. 3 Hours.

External drivers for quality and safety improvement in healthcare organizations, particularly policies and regulations affecting reimbursement. Discussion and analysis of key federal legislation and regulations promulgated by the Centers for Medicare and Medicaid Services (CMS) and The Joint Commission.

Prerequisites: HQS 600 [Min Grade: C] and HQS 630 [Min Grade: C] and HQS 610 [Min Grade: C] and HQS 625 [Min Grade: C]

HQS 675. Evaluating and Designing Quality Improvement Models. 3 Hours.

Application of analytical and decision tools to determine appropriate enterprise models for quality improvement, including problem identification, selection of metrics, analytical approaches, prioritization criteria, and post-implementation evaluation.

Prerequisites: HQS 612 [Min Grade: C] and HQS 635 [Min Grade: C]

HQS 678. Special Topics in Healthcare Quality and Safety. 1-4 Hour.

Exploration of current issues in Healthcare Quality and Safety.

HQS 698. Integrative Capstone Experience/Non-Thesis Project. 3-6 Hours.

Investigation of a process or safety improvement opportunity in a healthcare organization to propose a solution; application of the concepts and tools presented in the program courses. A written project report is required.

Prerequisites: HQS 615 [Min Grade: C] and HQS 635 [Min Grade: C] and HQS 675 [Min Grade: C] and HA 650 [Min Grade: C]

HRP-Health Professions

HRP 575. Introduction to Healthcare Simulation for Quality and Safety. 1-2 Hour.

Introduction to the use of simulation-based training and systems for improving patient safety and quality, including exploration of immersive, procedural, and in situ modalities. Instructional methodologies include didactics, technology-enhanced simulations, and team-based assignments in the simulation environment.

HY-History

HY 601. Historiography. 3 Hours.

Seminar on various theoretical perspectives and methodologies of professional historians. What historians do, how they do it, and why.

HY 602. Historical Research and Writing. 3 Hours.

Methods of historical research, including research in primary sources, and the distinctive characteristics of historical writing.

HY 612. Seminar in Early America. 3 Hours.

Topics and issues in the history and historiography of Colonial North America, circa 1500-1775.

HY 613. Seminar in the Civil War Period. 3 Hours.

Specialized themes and military, political, social, and economic developments related to the Civil War; particular emphasis on the South, 1860-1865.

HY 614. Seminar in Recent American History. 3 Hours.

Topics in the politics of modern America.

HY 615. Seminar in American Myths American Values. 3 Hours.

Recommended for students teaching at the secondary-education level and for traditional history students alike. Examines the major myths that inform, and that are informed by, traditional American values and how both shape social relationships.

HY 621. Seminar in Old South History. 3 Hours.

Subjects pertaining to the Old South era to Reconstruction.

HY 622. Seminar in New South History. 3 Hours.

Subjects pertaining to the New South era since Reconstruction.

HY 623. Seminar in Alabama History. 3 Hours.

Specific social, political, and economic aspects of Alabama History.

HY 631. Seminar: Topics in American History. 3 Hours.

Historical topics of American History, (e.g. Conservatism, Crime and Punishment).

HY 632. Seminar in U.S. Urban History. 3 Hours.

Topics in Urban History.

HY 633. Seminar in American Constitutional and Legal History. 3 Hours.

Study of major trends and cases in the history of American law, with special emphasis on the interpretation of the American Constitution by the Supreme Court.

HY 634. Seminar in African American History. 3 Hours.

Selected topics related to the African-American experience.

HY 635. Seminar in American Social History. 3 Hours.

A reading and research seminar examining the history of the structure and power of social groups in America.

HY 637. Seminar in U.S. Labor History. 3 Hours.

Development of labor force and movements in U.S. 19th and 20th centuries.

HY 638. Seminar in Civil Rights History. 3 Hours.

An analysis of history and historiography of Civil Rights Movement in America since the 19th century.

HY 639. Seminar in Women's History. 3 Hours.

An analysis of the changing economic, political, and social roles of women from colonial period to the present.

HY 641. Seminar in Latin American History. 3 Hours.

Issues in history of Latin America since the late 18th century; economic development, dependency and popular resistance, role of the Catholic Church, social revolution, and nationalism.

HY 650. Seminar: Topics in European History. 3 Hours.

Seminar in Historical topics in European History.

HY 651. Seminar in Medieval Europe. 3 Hours.

Examine political, economical, and religious interaction in the world prior to 1500.

HY 652. Seminar in the Renaissance. 3 Hours.

Special attention given to the new urban context of society, culture, politics, art, and religion.

HY 653. Seminar in Modern Europe. 3 Hours.

Reformation to the present; major topics such as society and politics, warfare, religious trends, state-building, and industrialization.

HY 654. Seminar in British History. 3 Hours.

Focuses on a particular period or problem in British history. Reading and discussion of current publications on the topic.

HY 655. Seminar in Russian/Soviet History. 3 Hours.

Analysis of primary sources and secondary works dealing with political and social history of Imperial Russia or Soviet Union and their successor states.

HY 656. Seminar in French History. 3 Hours.

Seminar dealing with various periods and issues in the history of France.

HY 670. Seminar in Pre-Modern History. 3 Hours.

Examine political, economical, and religious interaction in the Mediterranean or Middle Eastern world prior to 1500.

HY 671. Seminar in Asian History. 3 Hours.

Topics in Asian History.

HY 672. Seminar: Topics in World History. 3 Hours.

Seminar in historical topics of world history.

HY 673. Seminar in World Environmental History. 3 Hours.

Comparative examination of cultures and their relationship with the natural environment in a modern world context.

HY 674. Seminar in Comparative History. 3 Hours.

Explores through reading and research varied issues in comparative history: revolution, war, slavery, labor cities, industrialization, and social and cultural topics.

HY 675. Seminar-World Economic History. 3 Hours.

This seminar examines the diverse social, political and ecological contexts in which humans have provided for their material needs.

HY 681. Directed Readings in History. 3-6 Hours.

Individually designed course of readings in various fields. May be repeated. Only two directed reading courses will count toward degree requirements for history majors.

HY 682. Internship in Public Hist/SL. 1-3 Hour.

Individually designed program that places students in local historical museums and sites to gain professional experience in public history. Service Learning.

HY 683. Seminar in Public History. 3 Hours.

Explores the diverse approaches and methods of presenting history to public audiences, museums, historic sites, architectural preservation, documentary editing, and archival preservation.

HY 693. Seminar: Special Topics in History. 3 Hours.

Seminar exploring the historiography of a specialized topic in history.

HY 694. Seminar: Special Topics in Hy. 3 Hours.

Seminar exploring the historiography of a specialized topic in history.

HY 698. Non-Thesis Research. 3-6 Hours.

Individual research project.

HY 699. Thesis Research. 1-6 Hour.

Research culminating in master's thesis in history.

Prerequisites: GAC M

HY 771. Special Projects in History. 1-3 Hour.

Open only to those who hold the M.A. degree.

IEM-Information Engineering Management

IEM 601. Introduction to IEM. 1 Hour.

This course is an introduction to Information Engineering and Management with a focus on readiness for graduate study. Program requirements and expectations will be presented. Software and collaboration tools will be introduced. Library access and resources will be reviewed and teams will perform learning exercises to demonstrate proficiency with the available tools.

IEM 602. Leading Collaborative Teams. 1 Hour.

This course will focus on building, leading, and evaluating collaborative teams. Topics will include managing geographically-dispersed teams, team communication, accountability, running effective meetings, facilitation skills, building consensus, and handling common problems.

Prerequisites: IEM 601 [Min Grade: C]

IEM 603. Communication for Technology Executives. 1 Hour.

This course will address communication issues unique to organizational executives. Topics will include functioning as the public face of the organization, working with the media, when to seek professional advice, and effective crisis management.

Prerequisites: IEM 602 [Min Grade: C]

IEM 610. Communication for Technology Professionals. 3 Hours.

This course focuses on recognizing, developing, and putting into practice effective communication skills. Lectures provide insights into presentation structure, style, and content. Self-evaluation exercises combined with personal coaching will help clients improve their professional speaking and presentation skills.

IEM 611. Leading Technical Organizations. 3 Hours.

This course will use case studies, assigned readings, guest lecturers, research projects, and discussion of current issues in technology to develop executive-level behaviors and thought-processes as preparation for starting or leading a technology organization.

IEM 612. Project Leadership. 3 Hours.

This course teaches the fundamental concepts of leading projects. The course will consider all aspects of project leadership including the use of standard methodologies. Best practices will be reviewed along with practical insights based on real-world project leadership experience.

IEM 620. Technical Entrepreneurship. 3 Hours.

This course is an introduction to entrepreneurship that begins with the development of personal insights and work habits that are fundamental to success within any organization.

IEM 625. Technology and Innovation. 3 Hours.

This course examines technological innovation as an element of organizational strategy. Topics include the nature and management of innovation, aligning technical teams with overall organizational strategy, and the role of innovation in launching and sustaining technology ventures.

IEM 630. Systems Engineering. 3 Hours.

This course focuses on the systems engineering lifecycle and its application to the design of complex systems. Topics include systems thinking, managing complexity, problem definition, solution design, solution implementation, quality assurance, and measuring effectiveness.

IEM 631. Operational Decision-Making. 3 Hours.

This course focuses on the critical role of information and analytical methods in optimizing operational decisions. A core set of analytical tools will be presented and discussed. Topics will include decision analysis, optimization, modeling, simulation, and data analysis.

IEM 645. Financial Concepts for Entrepreneurs. 3 Hours.

This course introduces financial concepts including the interpretation of financial statements, managing cash flow, time value of money, capital budgeting, and investment analysis.

IEM 646. Strategic Planning. 3 Hours.

This course will examine the nature of strategic thinking and the challenges of achieving strategic alignment. Topics will include the strategic planning process and methods for assessing strategic success.

IEM 690. Special Topics in Area. 1-3 Hour.

Special Topics in (Area).

IEM 695. IEM Design Project. 3 Hours.

This course is focused upon a final design project that incorporates the technical and entrepreneurial coursework taken previously. Projects will be assessed based on their technical design and financial justification.

IEM 696. IEM Internship. 1-3 Hour.

This course is available for students needing to register for an internship course while enrolled in the IEM program.

INFO-Bioinformatics

INFO 501. Biomed Informatics Research. 3 Hours.

Biomedical Informatics Research. Biomedical informatics is the art and science of collection, representation and analysis of information for the purpose of improving human health. Informatics applications span the spectrum from molecular (bioinformatics) to organism (clinical informatics). This course will examine the scientific field that underlies the development of tools and methods applied to the biomedical domain. The course will include lectures, readings from a textbook and journal papers, a term paper reviewing some area of informatics research, and a final examination. It is intended for students who are studying applied areas of informatics (including Health Informatics and Nursing Informatics) as well as students who would like to explore the possibility of an informatics research career.

INFO 510. Programming with Biological Data. 2 Hours.

This course provides students necessary bioinformatics programming and data skills using Linux, MySQL and R. Linux commands and use of scripting languages will be taught in the context of bioinformatics data processing. Basic and practical database skills will be covered. Basic statistics using R to conduct reproducible research will be taught. Students will learn homology search using BLAST, understand basic next-generation sequencing data processing and analysis pipeline development. The focus will be on practical bioinformatics concepts using scripting/programming applied to data analysis problems.

INFO 601. Introduction to Bioinformatics. 3 Hours.

Introduction to bioinformatics and computational biology, with emphasis on concepts and application of informatics tools to molecular biology. It covers biological sequence analysis, gene prediction, genome annotation, gene expression analysis, protein structure prediction, evolutionary biology and comparative genomics, bioinformatics databases, cloud computing, basic R-based data analysis, simple programming skills using Perl, Linux/Unix environment and command lines, visual analytics, and social/legal aspects of open science. It will have a class research project component.

INFO 602. Algorithms in Bioinformatics. 3 Hours.

This course introduces various fundamental algorithms and computational concepts for solving questions in bioinformatics and functional genomics. These include graph algorithms, dynamic programming, combinatorial algorithms, randomized algorithms, pattern matching, classification and clustering algorithms, hidden Markov models and more. Each concept will be introduced in the context of a concrete biological or genomic application. A broad range of topics will be covered, ranging from gene identification, genome reconstruction, microarray data analysis, phylogeny reconstruction, sequence alignments, to variant detection.

Prerequisites: INFO 601 [Min Grade: C]

INFO 603. Biological Data Management. 3 Hours.

The introduction of biological data management concepts, theories, and applications. Basic concepts such as relational data representation, relational database modeling, and relational database queries will be introduced in the context of SQL and relational algebra. Advanced concepts including ontology representation and database development workflow will be introduced. Emerging big data concepts and tools, including Hadoop and NoSQL, will be introduced in the context of managing semi-structured and unstructured data. Application of biological data management in biology will be covered using case studies of high-impact widely used biological databases. A class project will be required of all participants.

Prerequisites: INFO 601 [Min Grade: C]

INFO 604. Next-generation Sequencing Data Analysis. 3 Hours.

The introduction of next-generation sequencing (NGS) technologies and the various new genomics applications. Basic analysis begins with NGS data representations using FASTQ, BAM, and VCF files. Major NGS applications in the characterization of DNA, RNA, methylation, CHIP, and chromatin structure analysis will be described. Topics will cover alignment, whole genome de novo assembly, variant detection, third generation sequencing technologies, functional genomics, metagenomics, single cell genomics, genetic diseases and cancer genomics. NGS workflows and translational applications in disease biology and genome medicine will also be emphasized.

Prerequisites: INFO 601 [Min Grade: C]

INFO 611. Intermediate Statistical Analysis I. 3 Hours.

Students will gain a thorough understanding of basic analysis methods, elementary concepts, statistical models and applications of probability, commonly used sampling distributions, parametric and non-parametric one and two sample tests, confidence intervals, applications of analysis of two-way contingency table data, simple linear regression, and simple analysis of variance. Students are taught to conduct the relevant analysis using current software such as the Statistical Analysis System (SAS).

INFO 612. Visual Analytics for Biomedical Research. 3 Hours.

In this course, we will explore the use of visualization techniques as a concise and effective way to help understand, interpret and communicate complex biological data. Principles of design, visual rhetoric/communication, and appropriate usage will be introduced. We will cover representation of different data types, concentrating on those generated by data-rich platforms such as next-generation sequencing applications, cytometry, and proteomics, and will discuss the use of visualization techniques applied to assessing data quality and troubleshooting. Various topics including dimension reduction, hierarchical visualizations, unsupervised learning, graph theory, networks/layouts and interactivity will be covered. We will review the algorithmic underpinnings of various methods that lead to their appropriate and effective use. Finally, we will review a variety of genomics/bioinformatics-related visualization tools that are available online, and will explore the use of lower-level approaches (like Matlab or R) to create beautiful and effective visualizations.

Prerequisites: INFO 603 [Min Grade: C]

INFO 651. Systems Biomedicine of Human Microbiota. 3 Hours.

The human microbiota is the collection of microorganisms (bacteria, archaea, fungi and viruses) that reside within human tissues and biofluids. Such resident microorganisms compose the majority of cells in human bodies and are key contributors to human development, health, and disease. However, most studies focus on genomics and microbiome statistical representations alone, while spatial-temporal analysis, multi-source data integration and modeling are necessary to predict and understand interactions between microorganisms, human hosts, and the environment. This course will highlight state-of-the-art microbiome/microbiota research and provide essential training in mathematical, computational and systems biology to derive integrative and predictive models of microbiota-host interactions in the context of human health and disease.

Prerequisites: INFO 601 [Min Grade: C] and (MA 560 [Min Grade: C] or BME 670 [Min Grade: C])

INFO 662. Biomedical Applications of Natural Language Processing. 3 Hours.

Students will be introduced to Natural Language Processing (NLP) including core linguistic tasks such as tokenization, lemmatization/stemming, Part of Speech tagging, parsing and chunking. Applications covered include Named Entity Recognition, semantic role labeling, word sense disambiguation, normalization, information retrieval, question answering and text classification. Applications and data will have a biomedical focus, but no biology or medical background is required.

Prerequisites: INFO 601 [Min Grade: C]

INFO 671. Clinical Informatics Seminar I. 1 Hour.

For master's student only. Students will learn how to prepare, present, and critique research presentations in clinical informatics by attending seminar presentations made by presenters. Seminars are presented by graduate students, faculty, visitors, or online speakers. Students must show evidence of prior preparation, active participation, and documented comprehension of the topics.

Prerequisites: INFO 501 [Min Grade: C]

INFO 672. Clinical Informatics Seminar II. 1 Hour.

For master's student only. Students will learn how to prepare, present, and critique research presentations in clinical informatics by attending seminar presentations made by presenters. Seminars are presented by graduate students, faculty, visitors, or online speakers. Students must show evidence of prior preparation, active participation, and documented comprehension of the topics.

Prerequisites: INFO 671 [Min Grade: C]

INFO 673. Clinical Informatics Journal Club. 1 Hour.

Students will learn how to read, present, and critique primary research publications in clinical informatics. Journal club participants will present high-impact recent journal publications selected by course instructors and learn how to read the paper, write critiques, and organize analysis insights into review papers. Students must show evidence of prior preparation prior to journal clubs and write critiques to show comprehension of the topics throughout the semester.

Prerequisites: INFO 671 [Min Grade: C]

INFO 690. Data Mining & Statistical Learning. 3 Hours.

Students will learn to discover and implement meaningful insights and knowledge from data. This course covers major concepts and algorithms of data mining. The course will be taught using the SAS Enterprise Miner program. The final project will demonstrate all the data mining techniques covered in the course and furthermore expose students working with real data. At the end of the course students will be proficient in utilizing data mining techniques to exploit data patterns and behavior, gain insider understanding of the data, and produce new knowledge that healthcare decision-makers can act upon. Furthermore, SAS Certified Predictive Modeler certification exam will be offered at the end of the course. Instructor permission is required.

INFO 691. Bioinformatics Seminar I. 1 Hour.

For master's student only. Students will learn how to prepare, present, and critique research presentations in bioinformatics by attending seminar presentations made by presenters. Seminars are presented by graduate students, faculty, visitors, or online speakers. Students must show evidence of prior preparation, active participation, and documented comprehension of the topics.

Prerequisites: INFO 601 [Min Grade: C]

INFO 692. Bioinformatics Seminar II. 1 Hour.

For master's student only. Students will learn how to prepare, present, and critique research presentations in bioinformatics by attending seminar presentations made by presenters. Seminars are presented by graduate students, faculty, visitors, or online speakers. Students must show evidence of prior preparation, active participation, and documented comprehension of the topics.

Prerequisites: INFO 691 [Min Grade: C]

INFO 693. Bioinformatics Journal Club. 2 Hours.

Students will learn how to read, present, and critique primary research publications in bioinformatics. Journal club participants will present high-impact recent journal publications selected by course instructors and learn how to read the paper, write critiques, and organize analysis insights into review papers. Students must show evidence of prior preparation prior to journal clubs and write critiques to show comprehension of the topics throughout the semester.

Prerequisites: INFO 691 [Min Grade: C]

INFO 695. Special Topics in Bioinformatics. 3 Hours.

Topics of current research interest, such as metagenomics, microbiome, computational medicine, complex systems, deep learning in biology, artificial intelligence in biomedical, and translational bioinformatics applications. May be repeated as different sections taught by different instructors for credit. Permission of instructor is required.

INFO 696. Biomedical Informatics Methods I. 3 Hours.

Biomedical informatics is the art and science of collecting, representing and analyzing patient and biomedical information and translating insights from the information into better health and new medical discoveries.

The spectrum of informatics applications ranges from molecules (bioinformatics) to individuals and populations (clinical and public health informatics). We will examine the scientific field and research methods that form the foundation for biomedical informatics research. The course will include didactics, readings, hands-on tool explorations, and a summative work product. This foundational course is intended for informatics majors and students in allied fields (e.g., health, biological, or computer sciences) who are interested in exploring the field of informatics.

INFO 697. Biomedical Informatics Methods II. 3 Hours.

Biomedical informatics is the art and science of collecting, representing and analyzing patient and biomedical information and translating insights from the information into better health and new medical discoveries.

The spectrum of informatics applications ranges from molecules (bioinformatics) to individuals and populations (clinical and public health informatics). We will examine the scientific field and research methods that form the foundation for biomedical informatics research. The course will include didactics, readings, and applications in applying research methods, culminating in a research plan in grant proposal format and review by a mock panel. This foundational course is intended for informatics majors and students in allied fields (e.g., health, biological, or computer sciences) who are interested in exploring the field of informatics. It is primarily intended for students who will pursue research careers in biomedical informatics and is the second course in a two-part series.

Prerequisites: INFO 695 [Min Grade: B] or INFO 696 [Min Grade: B]

INFO 698. Bioinformatics Master's Projects. 1-6 Hour.

Admission to bioinformatics master's program (Plan B: "Project Option") is required. Independent study to conduct bioinformatics research projects, guided by the instructor as the mentor. Permission of instructor and graduate program director is required.

INFO 699. Bioinformatics Master's Thesis Research. 1-6 Hour.

Admission to bioinformatics master's program (Plan A: "Thesis Option") is required.

INFO 701. Introduction to Bioinformatics. 3 Hours.

Introduction to bioinformatics and computational biology, with emphasis on concepts and application of informatics tools to molecular biology.

It covers biological sequence analysis, gene prediction, genome annotation, gene expression analysis, protein structure prediction, evolutionary biology and comparative genomics, bioinformatics databases, cloud computing, basic R-based data analysis, simple programming skills using Perl, Linux/Unix environment and command lines, visual analytics, and social/legal aspects of open science. It will have a class research project component.

INFO 702. Algorithms in Bioinformatics. 3 Hours.

This course introduces various fundamental algorithms and computational concepts for solving questions in bioinformatics and functional genomics. These include graph algorithms, dynamic programming, combinatorial algorithms, randomized algorithms, pattern matching, classification and clustering algorithms, hidden Markov models and more. Each concept will be introduced in the context of a concrete biological or genomic application. A broad range of topics will be covered, ranging from gene identification, genome reconstruction, microarray data analysis, phylogeny reconstruction, sequence alignments, to variant detection.

Prerequisites: INFO 701 [Min Grade: C]

INFO 703. Biological Data Management. 3 Hours.

The introduction of biological data management concepts, theories, and applications. Basic concepts such as relational data representation, relational database modeling, and relational database queries will be introduced in the context of SQL and relational algebra. Advanced concepts including ontology representation and database development workflow will be introduced. Emerging big data concepts and tools, including Hadoop and NoSQL, will be introduced in the context of managing semi-structured and unstructured data. Application of biological data management in biology will be covered using case studies of high-impact widely used biological databases. A class project will be required of all participants.

Prerequisites: INFO 701 [Min Grade: C]

INFO 704. Next-generation Sequencing Data Analysis. 3 Hours.

The introduction of next-generation sequencing (NGS) technologies and the various new genomics applications. Basic analysis begins with NGS data representations using FASTQ, BAM, and VCF files. Major NGS applications in the characterization of DNA, RNA, methylation, CHIP, and chromatin structure analysis will be described. Topics will cover alignment, whole genome de novo assembly, variant detection, third generation sequencing technologies, functional genomics, metagenomics, single cell genomics, genetic diseases and cancer genomics. NGS workflows and translational applications in disease biology and genome medicine will also be emphasized.

Prerequisites: INFO 701 [Min Grade: C]

INFO 711. Intermediate Statistical Analysis I. 3 Hours.

Students will gain a thorough understanding of basic analysis methods, elementary concepts, statistical models and applications of probability, commonly used sampling distributions, parametric and non-parametric one and two sample tests, confidence intervals, applications of analysis of two-way contingency table data, simple linear regression, and simple analysis of variance. Students are taught to conduct the relevant analysis using current software such as the Statistical Analysis System (SAS).

INFO 712. Visual Analytics for Biomedical Research. 3 Hours.

In this course, we will explore the use of visualization techniques as a concise and effective way to help understand, interpret and communicate complex biological data. Principles of design, visual rhetoric/communication, and appropriate usage will be introduced. We will cover representation of different data types, concentrating on those generated by data-rich platforms such as next-generation sequencing applications, cytometry, and proteomics, and will discuss the use of visualization techniques applied to assessing data quality and troubleshooting. Various topics including dimension reduction, hierarchical visualizations, unsupervised learning, graph theory, networks/layouts and interactivity will be covered. We will review the algorithmic underpinnings of various methods that lead to their appropriate and effective use. Finally, we will review a variety of genomics/bioinformatics-related visualization tools that are available online, and will explore the use of lower-level approaches (like Matlab or R) to create beautiful and effective visualizations.

Prerequisites: INFO 703 [Min Grade: C]

INFO 751. Systems Biomedicine of Human Microbiota. 3 Hours.

The human microbiota is the collection of microorganisms (bacteria, archaea, fungi and viruses) that reside within human tissues and biofluids. Such resident microorganisms compose the majority of cells in human bodies and are key contributors to human development, health, and disease. However, most studies focus on genomics and microbiome statistical representations alone, while spatial-temporal analysis, multi-source data integration and modeling are necessary to predict and understand interactions between microorganisms, human hosts, and the environment. This course will highlight state-of-the-art microbiome/microbiota research and provide essential training in mathematical, computational and systems biology to derive integrative and predictive models of microbiota-host interactions in the context of human health and disease.

Prerequisites: INFO 701 [Min Grade: C] and (MA 560 [Min Grade: C] or BME 670 [Min Grade: C])

INFO 762. Biomedical Applications of Natural Language Processing. 3 Hours.

Students will be introduced to Natural Language Processing (NLP) including core linguistic tasks such as tokenization, lemmatization/stemming, Part of Speech tagging, parsing and chunking. Applications covered include Named Entity Recognition, semantic role labeling, word sense disambiguation, normalization, information retrieval, question answering and text classification. Applications and data will have a biomedical focus, but no biology or medical background is required.

Prerequisites: INFO 701 [Min Grade: C]

INFO 790. Data Mining & Statistical Learning. 3 Hours.

Students will learn to discover and implement meaningful insights and knowledge from data. This course covers major concepts and algorithms of data mining. The course will be taught using the SAS Enterprise Miner program. The final project will demonstrate all the data mining techniques covered in the course and furthermore expose students working with real data. At the end of the course students will be proficient in utilizing data mining techniques to exploit data patterns and behavior, gain insider understanding of the data, and produce new knowledge that healthcare decision-makers can act upon. Furthermore, SAS Certified Predictive Modeler certification exam will be offered at the end of the course. Instructor permission is required.

INFO 791. Bioinformatics Seminar I. 1 Hour.

For doctoral student only. Students will learn how to prepare, present, and critique research presentations in bioinformatics by attending seminar presentations made by presenters. Seminars are presented by graduate students, faculty, visitors, or online speakers. Students must show evidence of prior preparation, active participation, and documented comprehension of the topics.

Prerequisites: INFO 701 [Min Grade: C]

INFO 792. Bioinformatics Seminar II. 1 Hour.

For doctoral student only. Students will learn how to prepare, present, and critique research presentations in bioinformatics by attending seminar presentations made by presenters. Seminars are presented by graduate students, faculty, visitors, or online speakers. Students must show evidence of prior preparation, active participation, and documented comprehension of the topics.

Prerequisites: INFO 791 [Min Grade: P]

INFO 793. Bioinformatics Journal Club. 2 Hours.

Students will learn how to read, present, and critique primary research publications in bioinformatics. Journal club participants will present high-impact recent journal publications selected by course instructors and learn how to read the paper, write critiques, and organize analysis insights into review papers. Students must show evidence of prior preparation prior to journal clubs and write critiques to show comprehension of the topics throughout the semester.

Prerequisites: INFO 791 [Min Grade: P]

INFO 794. Advanced Bioinformatics Journal Club. 2 Hours.

Students will learn how to read, present, and critique primary research publications in bioinformatics. Journal club participants will present high-impact recent journal publications selected by course instructors and learn how to read the paper, write critiques, and organize analysis insights into review papers. Students must show evidence of prior preparation prior to journal clubs and write critiques to show comprehension of the topics throughout the semester.

Prerequisites: INFO 793 [Min Grade: P]

INFO 795. Special Topics in Bioinformatics. 3 Hours.

Topics of current research interest, such as metagenomics, microbiome, computational medicine, complex systems, deep learning in biology, artificial intelligence in biomedical, and translational bioinformatics applications. May be repeated as different sections taught by different instructors for credit. Permission of instructor is required.

INFO 796. Biomedical Informatics Methods I. 3 Hours.

Biomedical informatics is the art and science of collecting, representing and analyzing patient and biomedical information and translating insights from the information into better health and new medical discoveries. The spectrum of informatics applications ranges from molecules (bioinformatics) to individuals and populations (clinical and public health informatics). We will examine the scientific field and research methods that form the foundation for biomedical informatics research. The course will include didactics, readings, hands-on tool explorations, and a summative work product. This foundational course is intended for informatics majors and students in allied fields (e.g., health, biological, or computer sciences) who are interested in exploring the field of informatics.

INFO 797. Biomedical Informatics Methods II. 3 Hours.

Biomedical informatics is the art and science of collecting, representing and analyzing patient and biomedical information and translating insights from the information into better health and new medical discoveries.

The spectrum of informatics applications ranges from molecules (bioinformatics) to individuals and populations (clinical and public health informatics). We will examine the scientific field and research methods that form the foundation for biomedical informatics research.

The course will include didactics, readings, and applications in applying research methods, culminating in a research plan in grant proposal format and review by a mock panel. This foundational course is intended for informatics majors and students in allied fields (e.g., health, biological, or computer sciences) who are interested in exploring the field of informatics. It is primarily intended for students who will pursue research careers in biomedical informatics and is the second course in a two-part series.

Prerequisites: INFO 795 [Min Grade: B] or INFO 796 [Min Grade: B]

INFO 799. Bioinformatics Research for Dissertation. 1-12 Hour.

Admission to candidacy is required.

IS-Information Systems

IS 599. Directed Readings. 1-3 Hour.

Readings and independent study in selected areas.

IS 607. Introduction to Cyber Security. 3 Hours.

This course serves as an introduction to the field of cyber security where students will develop a basic understanding of the cyber security principles. Students will be able to understand the business value of cyber security and its legal / ethical considerations. Students will also gain an appreciation for security planning and risk management and how risk may be mitigated through technical, physical, and administrative controls.

IS 611. Information Technology and Business Strategy. 3 Hours.

This course is designed to improve your understanding of business strategy and the information technology that supports and shapes it. Information technology spans all business functions. We will study both the challenges and the opportunities that are the result of this pervasiveness.

IS 612. IT Governance and Management. 3 Hours.

This course introduces the concept of IT governance and will expose students to various IT governance frameworks. Particular focus will be given to the IT Governance Institutes COBIT framework, ITIL and ISO standards. Students will have an advanced understanding of the various IT governance frameworks, their application in an organizational setting and the managerial issues associated with different governance structures.

IS 613. Information Security Management. 3 Hours.

Primary objectives of the course are for the student to develop an understanding of key information security concepts, develop an understanding of how people, technology, and organizational policies should be developed and managed to safeguard an organization's information resources, learn how to manage under uncertainty and risk, develop policies and procedures to make information systems secure, and learn how to audit and recover from security breaches.

IS 615. Soc Media/Virtual Communities. 3 Hours.

This course focuses on how social media and virtual communities are changing business in fundamental ways. The course helps students gain practical facility in the use of social media tools and learn meta-skills like how to use new social media tools, how to use filters to make sense of social media, and how to curate news and reports in a manner that contributes to business knowledge and intellect.

IS 616. Web Analytics. 3 Hours.

The Web Analytics course introduces technologies and tools used to realize the full potential of web sites. Focus is on collection and use of web data such as web traffic and visitor information to design web sites that will enable firms to acquire, convert, and retain customers.

IS 617. Data Science for Business. 3 Hours.

This course is an introduction to the emerging field of data science for business. It explains how useful information and knowledge can be extracted from large volume of data and represented as various models to improve business decision making.

IS 618. IT Project Management. 3 Hours.

The course provides the foundation for the management and successful execution of projects of many types applying PMBOK, or the PMI Project Management Body of Knowledge. The objective is to provide students with an understanding of how to manage technology-oriented projects. A combination of skill development in the general area of project management and application of those skills in evaluating case studies involving technology projects will be used.

IS 620. Cyber Attacks and Threat Mitigation. 3 Hours.

Covers the concepts of network vulnerabilities from a hacker's perspective. Addresses the latest cutting edge attacks and common attacks still prevalent. Students will explore legal issues associated with computer network attacks. The course also provides students with the knowledge they need to design, build, and operate network systems to prevent, detect, and respond to attacks.

IS 621. Incident Response and Business Continuity. 3 Hours.

This course provides students with the knowledge necessary to prepare for and respond to computer security incidents. Topics include incident response preparation, detection, reaction, recovery, and maintenance. Computer-related disaster recovery and business continuity planning are also addressed.

IS 622. CISSP I. 3 Hours.

The goal of the CISSP I course is to prepare the professional for the challenging security exam CISSP by covering the syllabus as defined in the Common Body of Knowledge (CBK). The CISSP I course covers the first 5 CISSP domain areas.

IS 623. CISSP II. 3 Hours.

The goal of the CISSP II course is to prepare professionals for the challenging security exam CISSP by covering the syllabus as defined in the Common Body of Knowledge (CBK). The CISSP II course covers the second 5 CISSP domain areas.

IS 630. Web Development. 3 Hours.

In this course, we will discuss concepts, principles, and methods related to the design and implementation of web applications. We will also build basic understanding and technical skills of both client and server technologies.

IS 631. Web Interface Design/Content. 3 Hours.

This course provides an introduction to the study of human-computer interaction, user interface design, and content creation. Course readings focus on developing both a strong theoretical understanding of the field and practical user interface design skills, and creating compelling content. Students will work on several design projects, including paper designs and implemented prototypes. Students will also participate as usability experts in evaluating the designs of others.

IS 633. Mobile Applications. 3 Hours.

In this course, we will discuss concepts, principles, and methods related to the design and implementation of mobile applications. Emphasis is placed on developing web content and creating applications for mobile devices, including internet/business practices and techniques for delivery on mobile platforms.

IS 640. Technology Planning and Capital Budgeting. 3 Hours.

This course will cover financial techniques and metrics that IT managers should be familiar with, including topics such as measuring returns on IT investments, categories of IT investments, defining and quantifying expected benefits, managing the IT investment portfolio, and budgeting for IT expenditures.

IS 641. Leadership in IT. 3 Hours.

The Leadership in IT course will prepare students for leadership roles in IT related careers. The course will provide students with the knowledge, skills, and foundation in Leadership necessary to be effective in organizational settings, and develop an understanding of the components that make leadership successful.

IS 644. Digital Forensics. 3 Hours.

This course focuses on how organizations conduct digital forensics investigations due to intrusion or cyber crime. This course explores how organizations identify, track, and potential aide in the prosecution of cyber criminals. Students will gain an appreciation for how to conduct digital investigations, preserve evidence, understand the role of law enforcement, and intellectual property concerns associated with cyber crime.

IS 690. Current Topics in Information Systems. 3 Hours.

A study of selected current developments in information systems emphasizing development and managerial implications. Permission of instructor required.

KIN-Kinesiology

KIN 500. Organization & Admin of PE. 3 Hours.

This course is designed to provide the student with opportunities to increase their knowledge of problems and issues involved in the organization and administration of physical education programs in elementary and secondary schools.

KIN 509. Assessment in Physical Education. 3 Hours.

This course emphasizes the development, implementation, and analysis of assessments within K-12 physical education programs, including assessment of the cognitive, physical, and psychomotor domains including program assessment.

KIN 511. Elementary School Physical Education. 3 Hours.

This course will include the nature and content of a developmentally appropriate elementary physical education program.

KIN 520. Fitness and Motor Skill Acquisition. 3 Hours.

This course will enable candidates to acquire the knowledge and the skills necessary to analyze and appropriately teach motor skills and design developmentally appropriate fitness activities for middle school students.

KIN 520L. Sport Skill Proficiency. 1 Hour.

This course will enable candidates to acquire the knowledge and the skills necessary to teach the critical elements needed to perform all basic sport skills. Candidates will demonstrate skill proficiency in the sport skills as well as the ability to teach others to perform the skills.

KIN 523. Techniques of Teaching Fitness and Nutrition in Secondary Schools. 3 Hours.

This course will enable candidates to learn techniques and strategies for teaching fitness and nutrition in a high school physical education program.

KIN 585. Advanced Exercise Testing and Prescription. 3 Hours.

This course studies participant screening, risk stratification, and exercise assessment/testing and prescription for apparently healthy, special and diseased populations.

KIN 589. Physical Education Instructional Strategies. 6 Hours.

This course will focus on information to help potential physical educators attain teaching skills and knowledge necessary to design, implement and evaluate developmentally appropriate K-12 physical education programs. Students will gain hands-on teaching experience with students in school settings.

KIN 601. Introduction to Sports Administration. 3 Hours.

This course will explore the field of sport administration. Students will learn about the many skills needed to be an effective administrator.

KIN 607. Principles of Coaching. 3 Hours.

This course will explore the principles of coaching regarding sport psychology, sport pedagogy, sport physiology, and sport management.

KIN 615. Sport Facility Planning. 3 Hours.

Principles of planning and managing sport facilities and events.

KIN 618. The Olympic Games. 3 Hours.

The Olympic Games will be investigated through a brief analysis of the history of the Ancient Olympic Games, an in-depth analysis of the Modern Olympic Games and the development of their global social, economic, political and cultural significance.

KIN 623. Philosophical Perspectives in Sport Administration. 3 Hours.

This course will address conceptual skills of an administrator beyond management skills, including addressing current trends and issues in education, physical education and athletics.

Prerequisites: EPR 692 [Min Grade: C]

KIN 630. Mechanical Analysis of Motor Skills. 3 Hours.

Analysis of motor skills in children, youth, and adults.

KIN 631. Foundations of Physical Education. 3 Hours.

Basic foundations of physical education in the school setting.

KIN 632. Supervision of Physical Education. 3 Hours.

Principles of supervising and maintaining a physical education program.

KIN 635. Principles of Management in Sports. 3 Hours.

This course is designed to give students an overview of the duties, responsibilities and problems facing athletic administrators in today's sports-conscious society.

KIN 636. Current Readings in Physical Education. 3 Hours.

This course is designed to assist the student in locating, analyzing, and synthesizing professional literature relative to current trends, issues and research in physical education.

KIN 637. Physiology of Exercise I. 3 Hours.

Advanced study of energy metabolism and cardiovascular, respiratory and skeletal muscle physiology during exercise.

KIN 638. Physiology of Exercise II. 3 Hours.

Advanced instruction on human physiological responses to exercise and exercise training, altitude and climate, and spaceflight.

KIN 639. Exercise Prescription for High Risk Populations. 3 Hours.

Advanced exercise prescription for special populations including cardiovascular disease, obesity, diabetes, cancer and other chronic disease conditions.

KIN 640. Advanced Techniques in Conditioning the Athlete. 3 Hours.

Advanced endurance, resistance, and flexibility training for conditioning the athlete.

KIN 641. Advanced Planning/Management of Fitness Facilities. 3 Hours.

Advanced knowledge and skills needed for successful management, marketing, operational leadership, evaluation, and planning principles of commercial, corporate, clinical, and community health/fitness facilities.

KIN 642. Practicum in Physiology. 3 Hours.

Pre-thesis research.

Prerequisites: (KIN 637 [Min Grade: C] or PE 637 [Min Grade: C]) and (KIN 638 [Min Grade: C] or PE 638 [Min Grade: C])

KIN 643. Curriculum Development in Physical Education. 3 Hours.

This course focuses on the development of curricula in physical education grades K-12. Principles of curriculum development, existing curriculum models and current trends and contemporary issues related to curriculum development are covered.

KIN 644. Application of Exercise Physiology to Fitness and Performance. 3 Hours.

Students in this course will learn the scientific principles that underlie exercise physiology. In this course you will learn about exercise tests to evaluate fitness, and exercise training to promote performance and health, and disease prevention throughout the lifespan.

KIN 645. Advanced Motor Development. 3 Hours.

The purpose of this course is to provide graduate students the opportunity to develop skill and knowledge related to lifespan motor development. Through online discussion, readings, and laboratory activities, students will be exposed to information regarding physical growth, maturation, and aging; motor skill acquisition from infancy through adulthood; perceptual-motor development; physiological changes and exercise over the lifespan; and sociocultural influences on motor development.

KIN 647. Teaching Strategies and Issues in K-12 PE. 3 Hours.

This course is designed to update graduate students who are currently teaching physical education or seeking initial certification regarding new teaching strategies and methodologies as well as current state and national issues affecting K-12 physical education programs.

KIN 649. Adapted Physical Education. 3 Hours.

This course will prepare students for making wise and informed decisions about curriculum and placement options for students with disabilities in physical education settings.

KIN 650. Social Aspects of Sport. 3 Hours.

This course is designed to study sport from a sociological perspective. The course will explore the importance of sports in people's lives and the sports connection with culture and society.

KIN 651. Issues and Problems in Coaching. 3 Hours.

This course is designed to allow the students to approach issues and problems from a practical perspective, particularly related to legal duties.

KIN 652. Measurement and Evaluation of Athletes. 3 Hours.

This course is primarily designed to help athletic coaches locate, select, and construct quality sport skill tests. Additional attention will be given to body composition, fitness, and psychological assessment of athletes. Students will review reasons why coaches should measure and evaluate athletes, and survey sound testing procedures.

KIN 653. Plan/Conduct Act Prog for Indiv with Disabilities. 3 Hours.

The purpose of this course is to provide students with knowledge and skills needed to meet the unique fitness and physical activity needs of individuals with various disabilities. Through class discussions and course assignments, students will learn to design and implement personal training/fitness programs and disability sports/recreation programs for individuals with disabilities based on assessments of health related strengths and needs.

KIN 655. Motor Learning. 3 Hours.

Principles of teaching and learning motor skills.

KIN 656. Advanced Sport Psychology. 3 Hours.

Psychological principles of sports.

KIN 663. Adventure-Based Counseling. 3 Hours.

Improvement of self-concept and social life skills through physical, spiritual, emotional, and mental development in creative activity outdoors. Natural environment used as a learning laboratory for leadership, teamwork, problem solving, decision-making, conflict resolution, and physical fitness.

KIN 664. Challenge Crse Fund II. 3 Hours.

This course continues introduces students to the background, philosophy, ethical issues, and risk management required to high ropes facilitation. Introduces students to a variety of high challenge course initiatives used for learning and problem solving, trust team building, and self-confidence and communication skills. How to present high challenge courses initiatives to diverse groups will be emphasized. Specific attention will be given to addressing learners of different ages and varying abilities. Additionally, an overview will be given of how counseling and ropes courses experiences can be integrated.

KIN 665. Adventure Processing and Facilitation. 3 Hours.

This course provides the skills necessary for facilitating a variety of client groups educational, recreational, corporate, and therapeutic indoor experience programs. The curriculum includes the Experiential Learning Cycle, stages of group development, leading group discussion, active listening, frontloading, de-briefing, use of metaphors and transfer of learning. Activities are used to facilitate leadership, teamwork, problem solving, decision-making and conflict resolution. This knowledge will enhance students' ability to adapt their program to various groups. How to facilitate and lead group discussion with diverse groups will be emphasized.

KIN 666. Organization and Administration of Adventure Education. 3 Hours.

Students will synthesize their experience in adventure leadership, instruction and programming to explore the details of managing an adventure program. Topics include risk management for the administrator, operations and file management, legal issues, accreditation standards, staff recruitment, hiring and training, marketing, fiscal management. Special attention will be given to managing an universally designed challenge course.

KIN 672. Advanced Treatment of Athletic Injuries. 3 Hours.

Advanced treatment of athletic injuries.

KIN 674. Advanced Sports Nutrition. 3 Hours.

Advanced exploration of nutrient absorption, digestion and metabolism in the athlete prior to, during and following training and athletic competition.

KIN 690. Seminar in Sports Administration. 3 Hours.

Overview of administration of sports programs.

KIN 693. Advanced Field Experience in Physical Education. 3-6 Hours.

Field Experience in Physical Education applying the National Board for Professional Teaching Standards.

KIN 694. Special Projects in Kinesiology. 1-6 Hour.

Special topics course in kinesiology.

KIN 695. Problems in Physical Education. 3-6 Hours.

Development of a project that addresses a current problem in Physical Education with a researched solution.

KIN 696. Elementary/Secondary Physical Education Internship. 9 Hours.

Student teaching provides an opportunity for physical education teacher education candidates to synthesize and apply all knowledge and skills acquired during previous coursework. Interns teach for 15 weeks at two levels, elementary and either middle or high school. The candidates must pass edTPA assessments to receive teacher certification.

KIN 697. Advanced Field Experience in Kinesiology. 1-6 Hour.

Culminating field experience in Kinesiology.

KIN 698. Coaching Internship (Individual Sport). 3 Hours.

Culminating internship in coaching.

Prerequisites: KIN 607 [Min Grade: C] or PE 607 [Min Grade: C] or KIN 407 [Min Grade: C] or PE 407 [Min Grade: C]

KIN 699. Thesis Research. 1-6 Hour.

Kinesiology Thesis Research.

Prerequisites: KIN 642 [Min Grade: C]

KIN 710. Special Topics in Physical Education. 3 Hours.

Special topics course in physical education.

KIN 715. Advanced Field Experience in Physical Education. 3-6 Hours.

Within your current teaching environment, demonstrate your teaching practice of the National Board for Professional Teaching Standards.

KIN 718. Practicum in Exercise Physiology. 3 Hours.

Practicum in Exercise Physiology.

KIN 720. Research Design and Methodology. 3 Hours.

Research and design methods in kinesiology.

Prerequisites: EPR 692 [Min Grade: C]

KIN 726. Supervised Research in Physical Education. 3-6 Hours.

Completion of research project in the field of physical education.

KIN 728. EdS Thesis Research. 3-6 Hours.

Completion of indepth research in the field of kinesiology.

KIN 729. Physical Education Seminar. 3 Hours.

This course involves the development of thesis or research project presentation.

LEAD-Leadership

LEAD 500. Introduction to Leadership Behaviors, Characteristics and Theories. 3 Hours.

This course introduces students to the study of leadership and behaviors associated with core career readiness and advancement. Students will identify personal strengths and areas for growth relative to employer expectations.

LEAD 501. Professional Writing for Leadership. 1 Hour.

This course provides students with opportunities to comprehend professional writing expectations as well as practice writing various documents critical to success within professional settings.

LEAD 502. Professional Presentations for Leaders. 1 Hour.

This course provides students with opportunities to apply skills associated with developing and delivering professional presentations.

LEAD 503. Professional Interview and Interviewing Skills for Leaders. 1 Hour.

This course provides students with opportunities to apply skills associated with engaging in professional interviews as well as developing and conducting interviews.

LEAD 505. Prioritization and Decision Making for Leadership. 1 Hour.

This course provides students with opportunities to apply skills associated with evaluating and prioritization processes in order to efficiently make effective and purpose-informed decisions.

LEAD 506. Emotionally Intelligent Leadership. 1 Hour.

This course provides students with opportunities to explore the relationships among emotional intelligence (EI), leadership, and professional development.

LEAD 520. Ethics in the Workplace. 2 Hours.

This course introduces students to ethical leadership and work ethics. Skills discussed and practiced include but are not limited to decision making, prioritization, reasoning, and values clarification.

LEAD 526. Goal Setting for Leaders. 1 Hour.

This course provides students with opportunities to learn about and practice goal setting strategies associated with personal and professional success.

LEAD 540. Team Development and Dynamics. 2 Hours.

This course introduces students to the benefits of teams and teamwork. Students will practice leadership competencies associated with developing productive teams, and assessing team dynamics.

LEAD 543. Planning and Leading a Meeting for Leaders. 1 Hour.

This course provides students with opportunities to apply skills associated with planning and facilitating a meeting for a team or group of individuals in a professional or leadership setting.

LEAD 544. Conflict Negotiation in Leadership. 1 Hour.

This course provides students with opportunities to apply skills associated with managing conflict and facilitating productive conversations in professional and/or leadership settings.

LEAD 560. Leadership and Professional Development Workshop. 1-2 Hour.

Subject matter in this course will vary to in order to promote workshop specific leadership skill acquisition not addressed in other LEAD courses based upon assessed needs.

LEAD 570. Leadership Development Seminar. 1-2 Hour.

Subject matter in this course will vary to in order to promote seminar specific leadership skill acquisition not addressed in other LEAD courses based upon assessed needs.

LEAD 590. Leadership by Design. 2 Hours.

This course provides students with an opportunity to learn about and apply the Designed Thinking process to propose a solution for an industry specific issue. Students choose the industry for which they design a solution. This is the capstone course for the LEAD graduate certificate program.

Prerequisites: LEAD 500 [Min Grade: C] and LEAD 520 [Min Grade: C] and LEAD 540 [Min Grade: C]

MA-Mathematics

MA 501. History of Mathematics I. 3 Hours.

Development of mathematical principles and ideas from a historical viewpoint, and their cultural, educational and social significance; earliest origins through Newton and Leibnitz.

Prerequisites: MA 125 [Min Grade: C] or MA 225 [Min Grade: C]

MA 502. History of Mathematics II. 3 Hours.

Development of mathematical principles and ideas from a historical viewpoint, and their cultural, educational and social significance; Newton and Leibnitz through early 20th century.

Prerequisites: MA 501 [Min Grade: B] or MA 311 [Min Grade: B]

MA 511. Integrating Mathematical Ideas. 3 Hours.

This course will integrate ideas from algebra, geometry, probability, and statistics. Emphasis will be on using functions as mathematical models, becoming fluent with multiple representations of functions, and choosing the most appropriate representations for solving a specific problem. Students will be expected to communicate mathematics verbally and in writing through small group, whole group, and individual interactions.

MA 513. Mathematics for Elementary and Middle School Teachers. 3 Hours.

Problem solving experiences, inductive and deductive reasoning, patterns and functions, some concepts and applications of geometry for elementary and middle school teachers. Topics include linear and quadratic relations and functions and some cubic and exponential functions. Number sense with the rational number system including fractions, decimals and percents will be developed in problem contexts. An emphasis will be on developing algebraic thinking and reasoning.

MA 514. Mathematics for Elementary and Middle School Teachers. 3 Hours.

Problem solving experiences, inductive reasoning, concepts and applications of geometry and proportional reasoning for elementary and middle school teachers. Topics include analysis of one, two and three dimensional feature of real objects, ratio and proportionality, similarity and congruence, linear, area, and volume measurement, and the development of mathematically convincing arguments. An emphasis will be on developing thinking and reasoning.

Prerequisites: MA 313 [Min Grade: C] or MA 513 [Min Grade: C]

MA 515. Probabilistic & Stat Reasoning. 3 Hours.

Descriptive and inferential statistics, probability, estimation, hypothesis testing. Reasoning with probability and statistics is emphasized.

Prerequisites: MA 313 [Min Grade: C] or MA 513 [Min Grade: C]

MA 516. Numerical Reasoning. 3 Hours.

Develop understanding of number and improve numerical reasoning skills specifically with regard to place value, number relationship that build fluency with basis facts, and computational proficiency; developing a deep understanding of numerous diverse computational algorithms; mathematical models to represent fractions, decimals and percents, equivalencies and operations with fractions, decimals and percents; number theory including order of operations, counting as a big idea, properties of number, primes and composites, perfect, abundant and significant numbers, and figurate numbers; inductive and deductive reasoning with number.

Prerequisites: MA 313 [Min Grade: C] or MA 513 [Min Grade: C]

MA 517. Extending Algebraic Reasoning. 3 Hours.

Extending Algebraic Reasoning. Extending algebraic and functional reasoning to polynomials, rational, exponential, and logarithmic functions; problem-solving involving transfer among representations (equation, graph, table); proof via symbolic reasoning, contradiction, and algorithm; interpretation of key points on graphs (intercepts, slope, extrema); develop facility and efficiency in manipulating symbolic representations with understanding; appropriate use of technology and approximate versus exact solutions; functions as models.

Prerequisites: MA 313 [Min Grade: C] or MA 513 [Min Grade: C]

MA 519. Special Topics for Teachers. 1-4 Hour.

With permission of instructor, may be used as continuation of any of MA 513 through 518. May be repeated for credit when topics vary.

Prerequisites: MA 125 [Min Grade: C] or MA 225 [Min Grade: C]

MA 534. Algebra I: Linear. 3 Hours.

Abstract vector spaces, subspaces, dimension, bases, linear transformation, matrix algebra, matrix representations of linear transformations, determinants.

Prerequisites: MA 124 [Min Grade: C] or MA 126 [Min Grade: C] or MA 226 [Min Grade: C]

MA 535. Algebra II: Modern. 3 Hours.

Rings, including the rings of integers and of polynomials, integral domains, fields and groups. Homomorphism, isomorphism. As time permits, Galois theory, semi-groups, quotient groups, models, or other areas of algebra may be included. Students present proofs from a list of pre-assigned theorems to the class. Logical correctness and proper mathematical proof-writing style are assessed.

Prerequisites: MA 434 [Min Grade: C] or MA 534 [Min Grade: C]

MA 540. Advanced Calculus I. 3 Hours.

Introduction to real numbers, sequences and series of real numbers; functions and continuity; differentiation. This course is taught as a do-it-yourself course and will meet for 4 hours per week.

MA 541. Advanced Calculus II. 3 Hours.

Integration; sequences and series of functions; uniform vs. pointwise convergence; some elementary and special functions. This course is taught as a do-it yourself course and will meet 4 hours per week.

Prerequisites: MA 540 [Min Grade: C]

MA 544. Vector Analysis. 3 Hours.

Review and applications of multiple integrals, Jacobians and change of variables in multiple integrals; line and surface integrals; theorems of Green, Gauss, and Stokes with application to the physical sciences; computation in spherical and cylindrical coordinates.

Prerequisites: MA 227 [Min Grade: C]

MA 545. Complex Analysis. 3 Hours.

Analytic functions, complex integration and Cauchy's theorem, Taylor and Laurent series, calculus of residues and applications, conformal mappings.

Prerequisites: MA 227 [Min Grade: C]

MA 553. Transforms. 3 Hours.

Theory and applications of Laplace and Fourier transforms.

Prerequisites: MA 252 [Min Grade: C]

MA 554. Intermediate Differential Equations. 3 Hours.

Topics from among Frobenius series solutions, Sturm-Liouville systems, nonlinear equations, and stability theory.

Prerequisites: MA 252 [Min Grade: C]

MA 555. Partial Differential Equations I. 3 Hours.

Classification of second order partial differential equations; background on eigenfunction expansions and Fourier series; integrals and transforms; solution of the wave equation, reflection of waves; solution of the heat equation in bounded and unbounded media; Laplace's equations, Dirichlet and Neumann problems.

Prerequisites: MA 252 [Min Grade: C]

MA 556. Partial Differential Equations II. 3 Hours.

Classification of second order partial differential equations; background on eigenfunction expansions and Fourier series; integrals and transforms; solutions of the wave equations, reflection of waves; solution of heat equation in bounded and unbounded media; Laplace's equations, Dirichlet and Neumann problems.

Prerequisites: MA 252 [Min Grade: C]

MA 560. Scientific Programming. 3 Hours.

Programming and mathematical problem solving using Matlab, Python, FORTRAN or C++. Emphasizes the systematic development of algorithms and numerical methods. Topics include computers, floating point arithmetic, iteration, functions, arrays, Matlab graphics, image processing, robotics, GNU/Linux operating system, solving linear systems and differential equation arising from practical situations, use of debuggers and other debugging techniques, and profiling; use of callable subroutine packages like LAPACK and differential equation routines; parallel programming. Assignments and projects are designed to give students a computational sense through complexity, dimension, inexact arithmetic, randomness, simulation and the role of approximation.

Prerequisites: MA 126 [Min Grade: C] or MA 226 [Min Grade: C]

MA 561. Modeling with Partial Differential Equations. 3 Hours.

Practical examples of partial differential equations; derivation of partial differential equations from physical laws; introduction to MATLAB and its PDE Tool-box, and COMSOL using practical examples; an overview of finite difference and finite element solution methods; specialized modeling projects in topics such as groundwater modeling, scattering of waves, medical and industrial imaging, continuum mechanics and deformation of solids, Fluid mechanics including the class boat race, financial derivative modeling, and acoustic and electromagnetic wave applications. Written project reports required for all homework assignments. Quantitative Literacy and Writing are significant components of this course.

Prerequisites: MA 252 [Min Grade: C]

MA 562. Intro to Stochastic Differential Equations. 3 Hours.

Stochastic differential equations arise when random effects are introduced into the modeling of physical systems. Topics include Brownian motion and Wiener processes, stochastic integrals and the Ito calculus, stochastic differential equations, and applications to financial modeling, including option pricing.

Prerequisites: MA 485 [Min Grade: C] or MA 585 [Min Grade: C]

MA 566. Introduction to Optimization. 3 Hours.

Optimization is important in many decision making problems in various areas like engineering, economics and machine learning. Optimization theory deals with finding the best solution(s) or variables of a given objective function. Recently, the area of optimization has received much attention due to the development of highly efficient computational methods for data analysis. The scope of this course covers linear algebra, unconstrained optimization, linear programming, and nonlinear constrained optimization. The topics include linear algebra, linear program, duality, network flows, simplex method, non-simplex method, gradient and conjugate methods, neural network, genetic algorithm and convex optimization. The course will also introduce optimization algorithms and codes via python and matlab.

Prerequisites: MA 126 [Min Grade: C]

MA 567. Gas Dynamics. 3 Hours.

Euler's equations for inviscid flows, rotation and vorticity, Navier-Stok.

Prerequisites: MA 252 [Min Grade: C] and (MA 360 [Min Grade: C] or MA 560 [Min Grade: C])

MA 568. Numerical Analysis I. 3 Hours.

Numerical Analysis I Introduction to Matlab, integration, interpolation, rational approximation, splines, numerical methods for ordinary differential equations, ordinary differential equation and modeling, minimization of functions.

Prerequisites: MA 252 [Min Grade: C]

MA 569. Numerical Analysis II. 3 Hours.

Integrals, interpolation, rational approximation, numerical solution of ordinary differential equations, iterative solution of algebraic equations in single variable, least squares. Gaussian elimination for solution of linear equations.

Prerequisites: MA 568 [Min Grade: B]

MA 570. Differential Geometry. 3 Hours.

Theory of curves and surfaces: Frenet formulas for curves, first and second fundamental forms of surfaces. Global theory; abstract surfaces, manifolds, Riemannian geometry.

Prerequisites: MA 126 [Min Grade: C] or MA 226 [Min Grade: C]

MA 572. Geometry I. 3 Hours.

The axiomatic method; Euclidean geometry including Euclidean constructions, basic analytic geometry, transformational geometry, and Klein's Erlangen Program. Students present proofs from a list of pre-assigned theorems to the class. Logical correctness and proper mathematical proof-writing style are assessed.

Prerequisites: MA 125 [Min Grade: C] or MA 225 [Min Grade: C]

MA 573. Geometry II. 3 Hours.

Analytical geometry, Birkhoff's axioms, and the complex plane; structure and representation of Euclidean isometries; plane symmetries; non-Euclidean (hyperbolic) geometry and non-Euclidean transformations; fractal geometry; algorithmic geometry. Course integrates intuition/exploration and proof/explanation. Project and report or oral presentation required.

Prerequisites: MA 472 [Min Grade: C] or MA 572 [Min Grade: C]

MA 574. Intro to Topology I. 3 Hours.

Separable metric spaces, basis and sub-basis, continuity, compactness, completeness, Baire category theorem, countable products, general topological spaces, Tychonov theorem.

Prerequisites: MA 126 [Min Grade: C] or MA 226 [Min Grade: C]

MA 575. Intro to Topology II. 3 Hours.

Separable metric spaces, basis and sub-basis, continuity, compactness, completeness, Baire category theorem, countable products, general topological spaces, Tychonov theorem.

Prerequisites: MA 574 [Min Grade: C]

MA 584. Mathematical Finance. 3 Hours.

The notion of no arbitrage. Interest, compounding, bonds. Review of mean, variance, and covariance. Portfolio management: risk and return. Forwards and Futures. Put-call parity. Martingales and conditional expectation. The binomial model. Fundamental theorems of asset pricing. Brownian motion (heuristics). Ito's formula and Girsanov's theorem (heuristics). The Black-Scholes-Merton formula. Interest rates. The binomial model for stochastic interest rates.

Prerequisites: (MA 260 [Min Grade: C] or MA 434 [Min Grade: C] or MA 435 [Min Grade: C]) and (MA 485 [Min Grade: C] or MA 585 [Min Grade: C])

MA 585. Intro to Probability. 3 Hours.

Probability spaces, combinatorics, conditional probabilities and independence, Bayes rule, discrete and continuous distributions, mean value and variance, moment generation function, joint distributions, correlation, Central Limit Theorem, Law of Large Numbers, random walks, Poisson process.

Prerequisites: MA 227 [Min Grade: C] and MA 260 [Min Grade: C]

MA 586. Mathematical Statistics. 3 Hours.

Confidence intervals, hypothesis testing, analysis of variance and covariance, maximum likelihood estimates, linear regression, tests of fit, robust estimates and tests.

Prerequisites: MA 485 [Min Grade: C] or MA 585 [Min Grade: C]

MA 587. Advanced Probability. 3 Hours.

Foundation of probability, conditional probabilities, and independence, Bayes theorem, discrete and continuous distributions, joint distributions, conditional and marginal distributions, convolution, moments and moment generation function, multivariable normal distribution and sums of normal random variables, Markov chains.

Prerequisites: MA 485 [Min Grade: B] or MA 585 [Min Grade: B]

MA 588. Advanced Statistics. 3 Hours.

Parameter estimations, maximum likelihood estimation, sufficient statistic, hypothesis testing, Neyman-Pearson Lemma, p-value, Kolmogorov-Smirnov test, Anderson-Darling test, P-P plot, Q-Q plot, testing for distribution type, location and scale parameters, mean squared error.

Prerequisites: MA 485 [Min Grade: B] or MA 585 [Min Grade: B] or MA 587 [Min Grade: B] or MA 687 [Min Grade: B]

MA 590. Mathematics Seminar. 1-3 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 591. Mathematics Seminar. 1-3 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 592. Special Topics in Mathematics. 1-3 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 593. Special Topics in Mathematics. 1-3 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 594. Special Topics in Mathematics. 1-6 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 595. Special Topics in Mathematics. 1-6 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 596. Special Topics in Mathematics. 1-12 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 597. Special Topics in Mathematics. 1-12 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 598. Research in Mathematics. 1-12 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 599. Research in Mathematics. 1-12 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 610. Intro to Set Theory. 3 Hours.

Set theory, products, relations, orders and functions, cardinal and ordinal numbers, transfinite induction, axiom of choice, equivalent statements.

MA 631. Linear Algebra. 3 Hours.

Vector spaces and their bases; linear transformations; eigenvalues and eigenvectors: Jordan canonical form; multilinear algebra and determinants; norms and inner products.

MA 632. Abstract Algebra. 3 Hours.

Propositional and predicate logic; set, relations, and functions; the induction principle; Groups, in particular symmetry groups, permutations groups, and cyclic groups; cosets and quotient groups; group homomorphisms; rings, integral domains, and fields; ideals and rings homomorphisms; factorization; polynomial rings.

Prerequisites: MA 534 [Min Grade: B] or MA 631 [Min Grade: B]

MA 637. Graph Theory and Combinatorics. 3 Hours.

Topics covered include specialized terminology and notation; eulerian and hamiltonian graphs; matrices of graphs and information about graphs obtained from matrices; topological graph theory, including planarity theorems of Kuratowski, Whitney and MacLane and also embeddings of graphs in surfaces of higher genus and in nonorientable surfaces; Menger's theorem and network flows; the graph reconstruction problem; counting techniques, including the Pigeonhole Principle and the use of generating functions; Dilworth's theorem; Sperner's lemma; finite and infinite Ramsey theory; matching theory and the classical theorem of Philip Hall; and, if time permits, the Polya/Redfield theory of enumerations.

MA 642. Calculus of Several Variables. 3 Hours.

Functions of several variables; total and partial derivatives; the Implicit Function Theorem; integration of differential forms; Stokes's Theorem.

Prerequisites: MA 541 [Min Grade: B]

MA 645. Real Analysis I. 3 Hours.

Abstract measures and integration; positive Borel measures; L_p -spaces.

Prerequisites: MA 642 [Min Grade: B] and MA 670 [Min Grade: B]

MA 646. Real Analysis II. 3 Hours.

Complex measures and the Radon-Nikodym theorem; differentiation; integration on product spaces and Fubini's theorem.

Prerequisites: MA 645 [Min Grade: B]

MA 648. Complex Analysis. 3 Hours.

The algebraic and topological structure of the complex plane; analytic functions; Cauchy's integral theorem and integral formula; power series; elementary functions; and their Riemann surfaces; isolated singularities and residues; the Laurent expansion; the Riemann mapping theorem.

Prerequisites: MA 642 [Min Grade: B]

MA 650. Differential Equations. 3 Hours.

Separable, linear, and exact first order equations; existence and uniqueness theorems; continuous dependence of solutions on data and initial conditions; first order systems and higher order equations; stability for two-dimensional linear systems; higher order linear systems; boundary value problems; stability theory.

Prerequisites: MA 642 [Min Grade: B]

MA 655. Partial Differential Equations. 3 Hours.

This course covers first order partial differential equations, elliptic equations, parabolic equations, and hyperbolic equations.

Prerequisites: MA 642 [Min Grade: C] or MA 650 [Min Grade: C]

MA 660. Numerical Linear Algebra. 3 Hours.

Vector and matrix norms; the singular value decomposition; stability, condition numbers, and error analysis; QR factorization; least squares problems; computation of eigenvalues and eigenvectors; iterative methods.

Prerequisites: MA 631 [Min Grade: B]

MA 661. Modeling With PDE. 3 Hours.

Practical examples of partial differential equations; derivation of partial differential equations from physical laws; introduction to MATLAB and its PDE Toolbox, and other PDE packages such as FEMLAB using practical examples; brief discussion of finite difference and finite element solution methods; introduction to continuum mechanics and classical electrodynamics; parallel programming using MPI and the mathematics department Beowulf system; specialized modeling projects in topics such as groundwater modeling, scattering of waves, medical and industrial imaging, fluid mechanics, and acoustic and electromagnetic applications.

MA 665. Partial Differential Equations: Finite Differential Methods. 3 Hours.

Review of difference methods for ordinary differential equations including Runge-Kutta, multi-step, adaptive step-sizing, and stiffness; finite difference versus finite element; elliptic boundary value problems; iterative solution methods, self-adjoint elliptic problems; parabolic equations including consistency, stability, and convergence, Crank-Nicolson method, method of lines; first order hyperbolic systems and characteristics Lax-Wendroff schemes, methods of lines for hyperbolic equations.

Prerequisites: MA 360 [Min Grade: C] or MA 560 [Min Grade: C] or MA 455 [Min Grade: C] or MA 555 [Min Grade: C]

MA 668. Numerical Analysis I. 3 Hours.

Integrals, interpolation, rational approximation, numerical solution of ordinary differential equations, iterative solution of algebraic equations in single variable, least squares. Gaussian elimination for solution of linear equations.

Prerequisites: MA 670 [Min Grade: B]

MA 669. Numerical Analysis II. 3 Hours.

Integrals, interpolation, rational approximation, numerical solution of ordinary differential equations, iterative solution of algebraic equations in single variable, least squares. Gaussian elimination for solution of linear equations.

Prerequisites: MA 668 [Min Grade: B]

MA 670. Topology I. 3 Hours.

Definition of topologies; closure; continuity; product topology; metric spaces; quotient spaces.

Prerequisites: MA 631 [Min Grade: B]

MA 671. Topology II. 3 Hours.

Connectedness, completeness and compactness (in particular in metric spaces); countability and separation axioms; Tychonoff's theorem; homotopy; partitions of unity.

Prerequisites: MA 670 [Min Grade: B]

MA 675. Differential Geometry. 3 Hours.

Local and global theory of curves and surfaces; Fenchel's theorem; the first and second fundamental forms; surface area; Bernstein's theorem; Gauss's theorem egregium; local intrinsic geometry of surfaces; Riemannian surfaces; Lie derivatives; covariant differentiation; geodesics; the Riemann curvature tensor; the second variation of arc length; selected topics in the global theory of surfaces.

Prerequisites: MA 642 [Min Grade: C]

MA 687. Advanced Probability. 3 Hours.

Foundation of probability, conditional probabilities, and independence, Bayes theorem, discrete and continuous distributions, joint distributions, conditional and marginal distributions, convolution, moments and moment generation function, multivariable normal distribution and sums of normal random variables, Markov chains.

Prerequisites: MA 485 [Min Grade: B] or MA 585 [Min Grade: B]

MA 688. Advanced Statistics. 3 Hours.

Parameter estimations, maximum likelihood estimation, sufficient statistic, hypothesis testing, Neyman-Pearson Lemma, p-value, Kolmogorov-Smirnov test, Anderson-Darling test, P-P plot, Q-Q plot, testing for distribution type, location and scale parameters, mean squared error.

Prerequisites: MA 585 [Min Grade: B] or MA 587 [Min Grade: B] or MA 687 [Min Grade: B]

MA 690. Mathematics Seminar. 1-3 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 691. Mathematics Seminar. 1-3 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 692. Special Topics in Mathematics. 1-3 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 693. Special Topics in Mathematics. 1-3 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 694. Special Topics in Mathematics. 1-6 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 695. Special Topics in Mathematics. 1-6 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 696. Special Topics in Mathematics. 1-12 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 697. Special Topics in Mathematics. 1-12 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 698. M Lev Non-Thesis Res. 1-12 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 699. Research for Thesis. 1-12 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

Prerequisites: GAC M

MA 740. Advanced Complex Analysis. 3 Hours.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites: Having passed the Qualifying Exam or permission of instructor.

MA 745. Functional Analysis I. 3 Hours.

Normed and Banach spaces; inner product and Hilbert spaces; linear functionals and dual spaces; operators in Hilbert spaces; theory of unbounded sesquilinear forms; Hahn-Banach, open mapping and closed graph theorems; spectral theory.

Prerequisites: MA 646 [Min Grade: B]

MA 746. Functional Analysis II. 3 Hours.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 747. Linear Operators in Hilbert Space. 3 Hours.

Hilbert space; Bessel's inequality; Parseval's formula; bounded and un-bounded linear operators; representation theorems; the Friedrichs extension; the spectral theorem for self-adjoint operators; spectral theory for Schrodinger operators.

Prerequisites: MA 646 [Min Grade: B]

MA 748. Fourier Transforms. 3 Hours.

Fourier transform and inverse transform to tempered distributions; applications to partial differential equations.

Prerequisites: MA 645 [Min Grade: B] and MA 655 [Min Grade: B]

MA 749. Theory of Distribution. 3 Hours.

The space of test functions. The space of distributions. Main properties of distributions. Completeness of the space of distributions. Support of a distribution. Sochozki formula. Derivatives of distributions and their properties. The structure of a distribution with a point support. Direct products and convolutions of distributions and their properties. Regularization of distributions. The space of test functions of rapid decay. The space of distributions of slow growth and their properties. Fourier transform of test functions of rapid decay and its properties. Parseval's identity. Fourier transform of distributions of slow growth. Fourier transform of direct products and convolutions of distributions of slow growth. Applications of distributions to partial differential equations. Fundamental solutions of partial differential equations.

Prerequisites: MA 645 [Min Grade: B]

MA 750. Advanced Ordinary Differential Equations. 3 Hours.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 753. Nonlinear Analysis. 3 Hours.

Selected topics including degree theory, bifurcation theory, and topological methods.

MA 755. Advanced Partial Differential Equations. 3 Hours.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

Prerequisites: MA 645 [Min Grade: B]

MA 760. Dynamical Systems I. 3 Hours.

Continuous dynamical systems; limit sets; centers of attraction; recurrence; stable and wandering points; flow boxes, and monotone sequences in planar dynamical systems; Poincare-Bendixson theorem.

MA 761. Dynamical Systems II. 3 Hours.

Discrete dynamical systems; hyperbolicity; symbolic dynamics; chaos; homoclinic orbits; bifurcations; attractors(theory and examples).

MA 770. Continuum Theory. 3 Hours.

Pathology of compact connected metric spaces; inverse limits; boundary bumping theorem; Hahn-Muzukiewicz theorem; composants; chainable and circle-like continua; irreducibility; separation; unicoherence; indecomposability.

MA 772. Complex Analytic Dynamics. 3 Hours.

Riemann surfaces; polynomial dynamics, rational functions and entire functions; fixed point theory; Mandelbrot set; Julia sets; prime ends; conformal mappings.

MA 774. Algebraic Topology. 3 Hours.

Covering spaces; introduction to homotopy theory; singular homology, cohomology.

MA 776. Advanced Differential Geometry. 3 Hours.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 781. Differential Topology I. 3 Hours.

A study of differentiable structures on manifolds, primarily from a global viewpoint: smooth mappings including diffeomorphisms, immersions and submersions; submanifolds and transversality.

Prerequisites: MA 645 [Min Grade: B] and MA 675 [Min Grade: B]

MA 782. Differential Topology II. 3 Hours.

A continuation of MA 781, with further applications such as Morse Theory.

MA 790. Mathematics Seminar. 1-3 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 791. Mathematics Seminar. 1-3 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 792. Special Topics in Mathematics. 1-3 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 793. Special Topics in Mathematics. 1-3 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 794. Special Topics in Mathematics. 1-6 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 795. Special Topics in Mathematics. 1-6 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 796. Special Topics in Mathematics. 1-12 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 797. Special Topics in Mathematics. 1-12 Hour.

This course covers special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 798. Non-Dissertation Research and Preparation for Comp. 1-12 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

MA 799. Dissertation Research. 1-12 Hour.

This course covers special topics in mathematics and the applications of the mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics.

Prerequisites: GAC Z

MBA-Master of Business Administration

MBA 601. Accounting and Finance for Managers. 3 Hours.

Decision oriented survey course of the principles of both financial accounting and financial management. Broad study of the basic concepts and tools of financial accounting and finance from both the theoretical and practical perspectives. Topics include financial reporting responsibilities of management, analysis and interpretation of financial statements, and the application of time value concepts to the valuation of stocks, bonds, and capital projects.

MBA 608. Strategic Cost Analysis and Decision Making. 3 Hours.

Determination and use of cost data for decision making, control, and evaluation of performance, and formulation of goals and budgets. The strategic context of managerial decision making is emphasized.

Prerequisites: MBA 601 [Min Grade: C]

MBA 612. Corporate Governance. 3 Hours.

This course examines the process by which individuals inside and outside a publicly-traded or other complex organization seek to govern the organization's activities, including boards of directors, shareholders, management, independent auditors, internal risk managers, and the Securities and Exchange Commission.

MBA 613. Information Security Management. 3 Hours.

Develop an understanding of key information security concepts. Develop an understanding of how people, technology and organizational policies should be developed and managed to safeguard an organization's information resources. Learn how to manage under uncertainty and risk. Develop policies and procedures to make information systems secure. Learn how to audit and recover from security breaches.

MBA 614. Social Media and Virtual Communities in Business. 3 Hours.

This course focuses on how social media and virtual communities are changing business in fundamental ways. Students gain practical facility in the use of social media tools and learn meta-skills like how to use new social media tools, how to use filters to make sense of social media, and how to curate news and reports in a manner that contributes to business knowledge and intellect.

MBA 616. Web Analytics. 3 Hours.

The Web Analytics course introduces technologies and tools used to realize the full potential of web sites. The course focuses on collection and use of web data such as web traffic and visitor information to design web sites that will enable firms to acquire, convert, and retain customers.

MBA 617. Data Science for Business. 3 Hours.

This course is an introduction to the topic of Business Intelligence with the emphasis of providing a descriptive understanding to the following major components: data warehousing, business performance management, data mining, and business intelligence implementation.

MBA 618. Technology Based Project Management. 3 Hours.

Equips students with the fundamental principles of project management required for successfully implementing IT solutions.

MBA 619. Information Technology and Business Strategy. 3 Hours.

Designed to improve students' understanding of business strategies and the technology management practices that support them, this course focuses on understanding the basic concepts and terminology of information technology and developing insight into the role of information technology in the strategy and management of organizations.

MBA 621. Topics in Corporate Finance. 3 Hours.

An advanced course in finance with emphasis on special topics such as financial planning, working capital management, leasing, hybrid financing, real options, and international capital budgeting. Case studies are used.

Prerequisites: MBA 601 [Min Grade: C]

MBA 622. Portfolio Theory and Construction. 3 Hours.

Theoretical and practical aspects of investments and portfolio management. Preq: MBA 621.

MBA 623. Mergers and Acquisitions. 3 Hours.

In-depth examination, study, and analysis of current issues and problems in selected areas of finance. Preq: MBA 621.

MBA 624. Global Financial Management. 3 Hours.

Financial analysis and decision-making in international context. All traditional areas of corporate finance explored. Preq: MBA 621.

MBA 625. Real Estate Decision Analysis. 3 Hours.

Master's level course designed to provide students with the tools and analytical framework for making real estate decisions. Preq: MBA 621.

MBA 626. Credit Markets and Instruments. 3 Hours.

Detailed coverage of the credit markets (Money and Bond markets) of the U.S. and an introduction to the international aspects of those instruments. Preq: MBA 621.

MBA 627. Financial Risk Analysis and Management. 3 Hours.

Exploration of issues in the measurement, analysis, and management of financial risk including interest rate, exchange rate, and commodity price risks. Preq: MBA 621.

MBA 628. Valuation Seminar. 3 Hours.

A blend of theory and practice to gain knowledge and skills in the valuation of businesses and interests therein. Preq: MBA 621.

MBA 629. Treasury Management. 3 Hours.

Multi-disciplinary approach to analysis of financial statements and working capital management. Financial planning, corporate liquidity, and short-term financial policy issues. Preq: MBA 621.

MBA 631. Management and Organizations. 3 Hours.

Course focuses on both the internal organizational environment, specifically organizational behaviors, and externally, the legal, ethical, and social environment both domestically and internationally. Students will be able to identify policy issues externally from the legal, social, and ethical environment. Students will also gain an understanding of internal organizational behavior.

MBA 634. Strategic Management. 3 Hours.

The integration of management, finance, accounting, marketing, economics, production, information technology, and decision making concepts through the study of business policy and strategy. Must be in last term in the MBA program to register. Permission of advisor required.

MBA 635. International Business Policy. 3 Hours.

Problems and strategic considerations of firms engaged in international business.

MBA 636. Human Resource Administration. 3 Hours.

Critical management theory as applied to human resource problems such as employment, employee education and training, labor management, health and safety, compensation, and human resources research.

MBA 637. Operations and Supply Chain Management. 3 Hours.

Concepts and principles necessary to manage the operations and supply chain function in both service and manufacturing organizations. Topics include planning, controlling, directing, and organizing of people, facilities, and materials involved in operations and supply chain management. Global considerations also presented.

MBA 638. Managerial Communication Skills. 3 Hours.

An advanced business communications course for MBA students focusing on the verbal and nonverbal communication skills required of managers in today's business environment.

MBA 641. Macroeconomics Analysis and Decision Making. 3 Hours.

Macroeconomic analysis; modern theory of aggregate demand and supply; forecasting and link between business firm and micro environment. Preq: MBA 662.

Prerequisites: MBA 662 [Min Grade: C]

MBA 642. Economics for Managers. 3 Hours.

Enables students to understand core microeconomic and macroeconomic concepts and how economics theory can be used to direct managers in understanding economic forces and making rational global and domestic economic decisions.

MBA 643. Healthcare Leadership Development. 3 Hours.

Assesses and develops current and emerging leaders in healthcare. Increases awareness of topics and essential skills relevant to effective leadership and management. Participation in a team-based course project is required.

MBA 644. Transformational Leadership and Change. 3 Hours.

This course examines and applies team-based leadership principles; assesses and hones leadership skills in negotiation and conflict management; and challenges team-based leaders to address current and emerging issues via strategic thinking and organizational change. Participation in a team-based course project is required.

Prerequisites: MBA 643 [Min Grade: B]

MBA 645. Game Theory in Industrial Organization. 3 Hours.

Introduces students to the logic of game theory, in the context of selected topics in the theory of industrial organization. Emphasis will be on applying game-theoretic logic to generic business issues, studied as cases. Preq: MBA 642.

MBA 646. Advanced Leadership. 3 Hours.

This course assesses and develops leadership knowledge, skills, and abilities. Current and emerging theories of leadership are examined in terms of their scientific evidence and practical strengths and weaknesses. Participants develop a leadership value and mission statement, as well as an individual leadership development plan.

MBA 651. Marketing Strategy. 3 Hours.

This course focuses on planning, implementing, and controlling strategic marketing activities. The objective is for students to understand the concepts and processes that guide marketing strategy decision making and to be able to apply these concepts and processes to organizations. Marketing strategy is examined in the context of uncertain competitive environments and from a global perspective.

MBA 652. Sales Management. 3 Hours.

This course focuses on the strategic role of an effective sales force in the organization's total marketing effort and business strategy. Students learn to formulate, implement, and evaluate a sales program. Topics include developing sales goals, creating a sales organizational structure, building a sales program, leading and motivating the sales force.

MBA 653. Marketing Analysis and Decision Making. 3 Hours.

Fundamentals of market-based management and the impact of marketing decisions on profitability. Core themes include customer value, customer satisfaction and marketing performance metrics. Students acquire an understanding of important marketing tools by applying them to key marketing mix decisions.

MBA 654. International Marketing. 3 Hours.

Examination of international marketing activities, including environmental issues, marketing strategy, and tactical considerations in entering foreign markets.

MBA 658. Applied Marketing Research. 3 Hours.

This course covers the fundamentals of the marketing research process, including problem definition, research design, research performance, collecting, inputting and analyzing data using IBM SPSS software, interpretation of statistical results into managerial insights, and the presentation of those results to business managers.

MBA 659. Green and Gold Fund Investment Portfolio Management. 3 Hours.

The Green and Gold Fund is UAB's student-managed investment portfolio. Fund members perform actual investment portfolio management with real money. For three credit hours in MBA 659, a student must hold the position of CIO, chief economist, or portfolio manager.

MBA 662. Quantitative Analysis for Business Managers. 3 Hours.

Covers a wide range of topics in quantitative analysis for managerial decision making. The goal is to provide students with essential analytical skills needed to make better business decisions with an emphasis on proficiency using Microsoft Excel.

MBA 671. Health Care Marketing. 3 Hours.

This class is designed for master level students seeking employment in the healthcare industry. The primary objective of this course is to provide students with a comprehensive overview of the marketing fundamentals in the health care environment. This course also examines health care organizations as customers in a B2B environment.

MBA 673. Planning and Pitching a New Business Concept. 3 Hours.

The business plan is the DNA or genetic map of a technology venture. It is the foundation for the capital raise, as well as the roadmap for operational milestones. Unfortunately, most business plans focus on internal strategy rather than a comprehensive assessment of the competitive landscape. Therefore, particular attention will be paid to market research, competitive analysis, and product/market fit.

MBA 676. MBA Internship. 3 Hours.

Offers qualified graduate students the chance to gain first-hand experience in a local business while receiving academic credit.

MBA 681. From Idea to IPO. 3 Hours.

This course is specifically designed to give graduate students in business, medicine, and engineering a deeper understanding of the issues involved in determining how to take the right idea from the laboratory to the marketplace.

MBA 683. Leading Innovation. 3 Hours.

This course exposes students to the nature of innovation, how innovation occurs, barriers to innovation and how to create and sustain an environment that encourages and rewards innovation. Students will also learn how to build, manage and grow a start-up company. Areas such as lean start-up techniques will be covered along with defining mission, vision and values, hiring and staffing and building effective business processes.

MBA 690. Directed Study. 3 Hours.

Selected topics in business:graduate level.

MBA 691. MBA Independent Study. 3 Hours.

Individualized study directed by a faculty member. Requires instructor permission.

MBS-Multidisciplinary Biomedical Science

MBS 601. Molecular and Cell Biology. 3 Hours.

This course will provide a broad but rigorous overview of molecular biology. Cell Structure and between prokaryotes and eukaryotes will be compared and contrasted. DNA structure/organization will be discussed with respect to replication and repair mechanisms. Mendelian, non-Mendelian and chromosomal bases of genetics will also be discussed. Transcription and translation will be discussed in detail, along with their respective regulatory mechanisms. Throughout this course there will be a focus on intracellular organelles that contribute to the generation and regulation of DNA, RNA and protein.

MBS 602. Biochemistry and Cell Biology. 3 Hours.

This course will cover the structure, function and metabolism of biological macromolecules including proteins, carbohydrates, lipids and nucleotides. A rigorous overview of pathways will be discussed that are important for the effective metabolism of macromolecules (e.g. glycolysis, citric acid cycle) and generation of energy for cells. The last part of this course will discuss membrane structure and function, and will provide an overview of eukaryotic cell signaling.

MBS 603. General Human Physiology. 3 Hours.

This course begins with the study of basic cell function, then proceeds to a rigorous overview of specific human organ systems.

MBS 611. Foundations of Pharmacology & Toxicology. 3 Hours.

This course will provide students with an overview of the discipline of Pharmacology or the science of the mechanism and regulation of drug action. Processes will be discussed that affect most drugs and xenobiotics including absorption, distribution, metabolism and elimination. The course will provide students with concepts that will be applicable to understanding the activity and regulation of drugs discussed in the Systems Pharmacology courses. Concepts presented in the course will be advantageous to all students in understanding therapeutic drug use or in appreciating drug use and action in many different research settings.

MBS 612. Systems Pharmacology I. 3 Hours.

This course will introduce the student to the use, mechanism of action and physiological properties of major families of drugs that affect the cardiovascular system, autonomic nervous system (ANS) and central nervous system (CNS). Lectures will provide an overview of nervous/cardiovascular system physiology as well as pathophysiology that results from various diseases, disorders and injuries. Drugs used to treat these conditions and their mechanisms of action will be described in detail. Both classical drugs and newer classes of drugs will be discussed for both their therapeutic value and also their use in different research settings. This course will be taught using a combination of traditional didactic lectures and student participation through discussion of seminal research papers and presentations. This course is a companion course to BMS 613 (Systems Pharmacology II).

MBS 613. Systems Pharmacology II. 3 Hours.

This course will introduce drug use, mechanism of action and physiological properties of major drug families, with a focus on specific organ systems (endocrine, gastrointestinal and renal systems). In addition, this course will also cover specific classes of drugs for cancer treatment specifically related to the organ systems covered in the course. This course is divided into three "modules". Each module has its own exam. In addition, there are graded student presentations at the end of the semester, topics of discussion to be determined. This course is a companion course to MBS 612 (Systems Pharmacology I).

MBS 614. Toxicology and Drug Development. 3 Hours.

This course is designed to provide students with an introduction to the field of toxicology and its association with pharmacology. This course will also provide an overview of the thought processes associated with defining drug targets and developing drug candidates. The course is separated into two modules: 1) introduction to toxicological issues associated with the drug and xenobiotic exposure; 2) introduction to the process of identifying a drug target, and developing and validating a drug that pharmacologically interacts with the target.

MBS 696. Special Topics. 3 Hours.

To be determined by the Program Director and prospective Course Directors.

MBS 698. Non-Thesis Research. 1-3 Hour.

Students may perform independent study in a research laboratory setting. This work may contribute toward concentration credits subject to Program Director approval.

MBS 699. Thesis Research. 3-6 Hours.

Supervised independent research.

ME-Mechanical Engineering

ME 511. Intermediate Fluid Mechanics. 3 Hours.

Applications of fluid dynamic principles to engineering flow problems such as turbo-machinery flow and one-dimensional compressible flow. Vorticity, potential flow, viscous flow, Navier-Stokes solutions, and boundary layers. Introduction to Fluid Mechanics or equivalent is a recommended prerequisite for this course.

ME 521. Introduction to Computational Fluid Dynamics Basics. 3 Hours.

Governing equations for fluid flows, classifications of flow regimes, and approaches to analyze fluid flow problems. Introduction to Computational Fluid Dynamics (CFD), mesh generation, boundary conditions, numerical solution of equations governing fluid flows, and visualization. Hands-on exercises using a commercial CFD solver.

ME 530. Vehicular Dynamics. 3 Hours.

Introduction to the fundamentals of mechanics and analytical methods for modeling vehicle dynamics and performance. Topics include tire-road interaction modeling, vehicle longitudinal dynamics and traction performance, lateral dynamics, handling, stability of motion and rollover, as well as, contribution of the drivetrain system, steering system and suspension configurations to the dynamics of a vehicle. Software applications, projects, and exposure to hardware and systems are used to reinforce concepts. Dynamics or equivalent is a recommended prerequisite for this course.

ME 531. Introduction to Vehicle Drive Systems Engineering. 3 Hours.

Engineering fundamentals of mechanical and mechatronic, hybrid-electric, and electric drive systems. Applications to passenger cars and commercial vehicles. Drive system and component design, including main clutches and torque converters, transmissions, transfer cases, and drive axles. Introduction to plug-in hybrid-electric vehicles.

Prerequisites: ME 215 [Min Grade: C] and ME 370 [Min Grade: C](Can be taken Concurrently)

ME 545. Combustion. 3 Hours.

Evaluation of the impact of fuel characteristics and operating conditions on the performance of coal-fired electric utility steam-raising plant and the prospects for continued reliance on coal as fuel for electric power generation. The phenomena emphasized are the behavior of turbulent jets; ignition, devolatilization and combustion of coal particles; radiative heat transfer and the effect of ash deposits on heat transfer; formation of air pollutants and their removal from combustion products; integrated gasification combined cycle; and capture and sequestration of carbon dioxide. Thermodynamics II, Introduction to Fluid Mechanics, and Introduction to Heat Transfer or equivalents are recommended prerequisites for this course.

ME 547. Internal Combustion Engines. 3 Hours.

Fundamentals of reciprocating internal combustion engines: engine types, engine components, engine design and operating parameters, thermochemistry of fuel-air mixtures, properties of working fluids, ideal models of engine cycles, engine operating characteristics, gas-exchange processes, fuel metering, charge motion within the cylinder, combustion in spark-ignition and compression ignition engines.

ME 549. Power Generation. 3 Hours.

Application of thermodynamics, fluid mechanics, and heat transfer to conversion of useful energy. Includes terrestrial and thermodynamic limitations, fossil fuel power plants, renewable energy sources, and direct energy direct energy conversion. Thermodynamics II or equivalent is a recommended prerequisite for this course.

ME 554. Heating, Ventilating & AC. 3 Hours.

Fundamentals and practice associated with heating, ventilating, and air conditioning; study of heat and moisture flow in structures, energy consumption, and design of practical systems. Introduction to Heat Transfer or equivalent is a recommended prerequisite for this course.

ME 555. Thermal-Fluid Systems Design. 3 Hours.

Comprehensive design problems requiring engineering decisions and code/Standard compliance. Emphasis on energy system components: piping networks, pumps, heat exchangers. Includes fluid transients and system modeling. Introduction to Heat Transfer is a recommended prerequisite for this course.

ME 556. Building Energy Modeling and Analysis. 3 Hours.

Computer modeling of energy use and thermal comfort in buildings using several software tools. Interpretation and analysis of the results. Implementing energy efficiency measures in the model and studying the effects on energy use.

Prerequisites: ME 242 [Min Grade: C] and ME 322 [Min Grade: C]

ME 564. Introduction to Finite Element Method. 3 Hours.

Concepts and applications of finite element method. Development and applications of basic elements used in engineering mechanics. Use of finite element analysis software. Application of finite element concept to several areas of mechanics. Mechanics of Solids or equivalent is a recommended prerequisite for this course.

ME 575. Mechanical Vibrations. 3 Hours.

Development of equations of motion for free and forced single-degree-of-freedom (SDOF) systems. Multi-degree-of-freedom systems. Transient response, support motion and vibration isolation for SDOFs. Vibration absorbers, generalized mass and stiffness, orthogonality of normal modes, and root solving and Gauss elimination procedures. Chelosky decomposition and Jacobi diagonalization methods.

ME 577. Systems Engineering. 3 Hours.

Exposure to the field of systems engineering, mission design, requirements development, trade studies, project life cycle, system hierarchy, risk analysis, cost analysis, team organization, design fundamentals, work ethics, compare and evaluate engineering alternatives, systems thinking.

ME 578. Automated Manufacturing. 3 Hours.

Introduction to automated manufacturing technology. Components of automated systems (controllers, sensors and actuators) and automated manufacturing sub-systems (3D printer, CNC, robot and computer vision) will be studied in a lecture/lab environment with hands on activities. A basic understanding of engineering graphics and computer methods at the undergraduate level is required for this course.

ME 580. Instrumentation and Measurements. 3 Hours.

Thorough exploration of fundamental measurement concepts and techniques for data acquisition and validation. Explanation of important selection criteria for the identification and configuration of commercially available data acquisition devices. Students will get hands on experience following best practices for data acquisition (high speed vs low speed) relevant to their field of study or career. Many types of sensors, their underlying technology, and measurement techniques and will be discussed (i.e. accelerometers, load cells, Digital Image Correlation, etc.) to demonstrate best practices for sensor selection for a wide range of specialized applications.

ME 590. Special Topics in (Area). 1-4 Hour.

Special Topics.

ME 591. Individual Study in (Area). 1-6 Hour.

Independent study allows the student to explore a topic of interest under the close supervision of a faculty member. The course may include directed readings, applied work, assisting a faculty member with a research project, carrying out an independent research project, or other activities deemed appropriate.

ME 611. Advanced Fluid Mechanics. 3 Hours.

Fundamental laws of motion for viscous fluid, classical solutions of the Navier-Stokes equations, inviscid flow solutions, laminar boundary layers, and stability criteria.

ME 613. Introduction to Computational Fluid Dynamics. 3 Hours.

Review of governing equations of fluid dynamics, mathematical behavior of partial differential equations, basic aspects of discretization, basic CFD techniques, basic grid generation, coordinate transformations, advanced numerical schemes, future CFD methodology. A knowledge of a computer language is required.

ME 614. Advanced Computational Fluid Dynamics. 3 Hours.

Finite Volume Scheme, Eigenvalues and Eigenvectors, Method of Characteristics, Upwind Schemes, Flux Vector Splitting, Flux Difference Splitting, Explicit and Implicit Schemes, Flux Jacobians, Newton Method, Boundary Conditions, Weak Solutions, TVD, PISO Methods.

ME 615. Introduction to Turbulent Flows. 3 Hours.

Characteristics of turbulence, length and time scales, energy cascade, vorticity stretching, Reynolds averaging technique, Closure problem, Boussinesq hypothesis, Eddy viscosity concepts, introduction to zero-, one-, and two-equation models, Reynolds stress model.

ME 631. Dynamics and Mobility of Vehicles: Modeling and Simulation. 3 Hours.

The main goal of the course is to present advanced research and engineering knowledge in recent vehicle dynamics of road and off-road wheeled and track vehicles with an emphasis on vehicle longitudinal/lateral mobility and energy efficiency. Applications include vehicles for personal transportation, military vehicles, construction equipment and farm tractors. A unique feature of this course is its inverse vehicle dynamics approach. Another distinctive feature of the course is a mechatronics-based approach to modeling and simulation of multi-domain systems that include mechanical, electrical and electronics components such as sensors and actuators. Coupled and interactive dynamics of vehicle systems is presented, and a modeling process of vehicle operational properties is based on various equations of analytical and adaptive dynamics. Students will gain knowledge and analytical hands-on skills through innovative homework and a research project. Skills in one of programming software/languages are required (e.g., MATLAB/Simulink, ADAMS/Car, LabVIEW, etc.).

ME 632. Autonomous Wheel Power Management Systems: Theory and Design. 3 Hours.

The main goal of this course is to give detailed understanding, analytical knowledge and engineering experience in research, design and experimental study of autonomous wheel power management systems (AWPMS). The AWPMS are autonomous mechatronic and autonomously operated mechanical systems that distribute power among the drive wheels of vehicles. AWPMS include various configurations of torque vectoring systems, limited slip differentials and hydraulically controlled differentials, electronically-locking differentials, and positive engagement of the wheels. AWPMS that are operationally integrated with steering and suspension systems are also presented in the course. Characteristics of wheel power management systems for a specific vehicle application are proved in the course by using inverse vehicle dynamics formulation and requirements to vehicle energy efficiency, mobility, stability of motion, and turnability. Students will learn mechanical design principles for mechatronic systems and methods for developing control algorithms. Methods for experimental study of wheel power management systems and vehicles are also presented in the course; including 4x4 vehicle chassis dynamometer with individual wheel control and test setups. Students will exercise analytical skills and gain hands-on experience through innovative homework and a research project.

ME 640. Heat Conduction. 3 Hours.

Introduction to methods of solution for heat conduction problems. Topics include separation of variables in rectangular, cylindrical and spherical coordinates, solution to the heat equation on semi-infinite and infinite domains, Duhamel's Theorem, use of Green's Function, and use of the Laplace Transform. A basic understanding of heat transfer at the undergraduate level is required for this course.

ME 641. Radiation Heat Transfer. 3 Hours.

Introduction to radiation heat transfer. Topics include radiation from black bodies and nonblack opaque surfaces, configuration factors for diffuse surfaces, radiation exchange in enclosures of diffuse-grey and specularly reflecting surfaces, radiation combined with conduction and convection, and energy transfer for absorbing, emitting and scattering media. A basic understanding of heat transfer at the undergraduate level is required for this course.

ME 642. Statistical Mechanics. 3 Hours.

Explanation of macroscopic thermodynamic and transport properties, based upon classical and quantum mechanical descriptions of elementary particles, atoms, and molecules. Analysis of the distributions of these objects over their allowed energy states and the relationships between those distributions and macroscopic properties. Thermodynamics II or equivalent is a recommended prerequisite for this course.

ME 650. Transport Phenomena. 3 Hours.

Laminar flow transports: momentum transfer (Couette/Poiseuille flows), energy transfer (free/forced convections and conductions), and mass transfer; equation of state, turbulence, chemical reactions, and numerical methods solving transport equations. Introduction to Fluid Mechanics and Introduction to Heat Transfer or equivalents are recommended prerequisites for this course.

ME 661. Math Methods in EGR I. 3 Hours.

Mathematical theory and solutions methods to problems in engineering including advanced ordinary differential equations; eigenvalue problems; multi-variable calculus and implicit functions; curve, surface and volume representation and integration; Fourier integrals and transforms; separation of variables and transform techniques for solution of partial differential equations. Differential Equations or equivalent is recommended as a prerequisite for this course.

ME 662. Math Methods in EGR II. 3 Hours.

Mathematical theory and solution methods to problems in engineering including Scalar and vector field theory advanced partial differential equations, analysis using complex variables, conformal mapping, complex integral calculus, Green's functions, perturbation methods, and variational calculus. Math Methods in EGR I or equivalent is recommended as a prerequisite for this course.

ME 663. Engineering Statistics. 2 Hours.

Introduction to applied statistics and probability for engineering and the physical sciences. Topics include introduction to probability, discrete and random variables and their distributions, joint probability distributions, hypothesis testing, statistical inference, linear regression and correlation, design of experiments, and statistical quality control. A basic understanding of calculus and matrix algebra at the undergraduate level is required for this course.

ME 665. Computational Methods in EGR. 3 Hours.

Applications of computers to solution of problems in engineering, including matrices, roots of equations, solution of simultaneous equations, curve fitting by least squares, differentiation and integration, differential and partial differential equations. Differential Equations and Computational Engineering or equivalents are recommended prerequisites for this course.

ME 670. Intro to Continuum Mechanics. 3 Hours.

Fundamentals and application of mechanics principles to problems in continuous media. Matrix and tensor mathematics, fundamentals of stress, kinematics and deformation of motion, conservation equations, constitutive equations and invariance, linear and nonlinear elasticity, classical fluids, linear viscoelasticity. Mechanics of Solids and Differential Equations or equivalents are recommended prerequisites for this course.

ME 672. Advanced Dynamics. 3 Hours.

Advanced topics in dynamics including complex motion analysis, generalized kinematic parameters, quasivelocities, and virtual displacements, direct and inverse dynamics approach, and fundamentals of systems with variable masses. Introduction to the modeling of mechatronic systems is presented through a consideration of mechanical, electrical and electronics components. Analytical and adaptive dynamics principles are taught as a basis for control algorithm development and mechatronic system design.

ME 677. Systems Engineering. 3 Hours.

This course will give students an initial exposure to the field of systems engineering as it applies to space missions. Students will learn key topics related to spacecraft and mission design, including requirements development, trade studies, the project life cycle, system hierarchy, risk analysis, and cost analysis. The concepts presented in this course will be demonstrated with examples from current NASA missions. The students will also be exposed to concepts regarding team organization, design fundamentals, and work ethics. They will learn that systems engineering is iterative and will develop judgment that will allow them to compare and evaluate engineering alternatives. They will learn to discuss systems engineering methods and processes as well as engage in systems thinking.

ME 679. Advanced Finite Element Analysis. 3 Hours.

Concepts and applications of finite element method. Development and applications of various elements used in engineering mechanics. Use of finite element analysis software. Application of finite element concept and model development to fluid, heat transfer, and solid mechanics problems. Introduction to Fluid Mechanics, Introduction to Heat Transfer, and Mechanics of Solids or equivalents are recommended prerequisites for this course.

ME 688. Fluid-Structure Interactions. 3 Hours.

Modeling and simulation of fluid-structure interaction (FSI) phenomena using computational methods. The Arbitrary Lagrangian Eulerian (ALE) formulation, a variety of interpolation methods, mesh movement and time mapping algorithms. Solution of FSI problems using interface codes.

ME 689. Enabling Technology Tools. 3 Hours.

Computational methods and tools for simulations and modeling of mechanical and biomedical applications. Numerical geometry, numerical mesh generation, and scientific visualization tools will be introduced and applied.

ME 690. Special Topics in (Area). 1-6 Hour.

Special Topics in (Area).

ME 691. Individual Study in (Area). 1-6 Hour.

Individual Study In (Area).

ME 693. Journal Club in Mechanical Engineering. 1 Hour.

JC.

ME 694. Seminars in Mechanical Engineering. 1 Hour.

Seminar.

ME 698. Non-Thesis Research. 1-12 Hour.

Research.

ME 699. Thesis Research. 1-12 Hour.

Research.

Prerequisites: GAC M

ME 711. Advanced Fluid Mechanics. 3 Hours.

Fundamental laws of motion for viscous fluid, classical solutions of the Navier-Stokes equations, inviscid flow solutions, laminar boundary layers, and stability criteria.

ME 713. Introduction to Computational Fluid Dynamics. 3 Hours.

Review of governing equations of fluid dynamics, mathematical behavior of partial differential equations, basic aspects of discretization, basic CFD techniques, basic grid generation, coordinate transformation, advanced numerical schemes, future CFD methodology. A knowledge of a computer language is required.

ME 714. Advanced Computational Fluid Dynamics. 3 Hours.

Finite Volume Scheme, Eigenvalues and Eigenvectors, Method of Characteristics, Upwind Schemes, Flux Vector Splitting, Flux Difference Splitting, Explicit and Implicit Schemes, Flux Jacobians. Newton Method, Boundary Conditions, Weak Solutions, TVD, PISD Methods.

ME 715. Introduction to Turbulent Flows. 3 Hours.

Characteristics of turbulence, length and time scales, energy cascade, vorticity stretching, Reynolds averaging techniques. Closure problem, Boussinesq hypothesis, Eddy viscosity concepts, introduction to zero-, one- and two-equation models, Reynolds stress model.

ME 731. Dynamics and Mobility in Vehicles: Modeling and Simulation. 3 Hours.

The main goal of the course is to present advanced research and engineering knowledge in recent vehicle dynamics of road and off-road wheeled and track vehicles with an emphasis on vehicle longitudinal/lateral mobility and energy efficiency. Applications include vehicles for personal transportation, military vehicles, construction equipment and farm tractors. A unique feature of this course is its inverse vehicle dynamics approach. Another distinctive feature of the course is a mechatronics-based approach to modeling and simulation of multi-domain systems that include mechanical, electrical and electronics components such as sensors and actuators. Coupled and interactive dynamics of vehicle systems is presented, and a modeling process of vehicle operational properties is based on various equations of analytical and adaptive dynamics. Students will gain knowledge and analytical hands-on skills through innovative homework and a research project. Skills in one of programming software/languages are required (e.g., MATLAB/Simulink, ADAMS/Car, LabVIEW, etc.).

ME 732. Autonomous Wheel Power Management Systems: Theory and Design. 3 Hours.

The main goal of this course is to give detailed understanding, analytical knowledge and engineering experience in research, design and experimental study of autonomous wheel power management systems (AWPMS). The AWPMS are autonomous mechatronic and autonomously operated mechanical systems that distribute power among the drive wheels of vehicles. AWPMS include various configurations of torque vectoring systems, limited slip differentials and hydraulically controlled differentials, electronically-locking differentials, and positive engagement of the wheels. AWPMS that are operationally integrated with steering and suspension systems are also presented in the course. Characteristics of wheel power management systems for a specific vehicle application are proved in the course by using inverse vehicle dynamics formulation and requirements to vehicle energy efficiency, mobility, stability of motion, and turnability. Students will learn mechanical design principles for mechatronic systems and methods for developing control algorithms. Methods for experimental study of wheel power management systems and vehicles are also presented in the course; including 4x4 vehicle chassis dynamometer with individual wheel control and test setups. Students will exercise analytical skills and gain hands-on experience through innovative homework and a research project.

ME 740. Heat Conduction. 3 Hours.

Introduction to methods of solution for heat conduction problems. Topics include separation of variables in rectangular, cylindrical and spherical coordinates, solution to the heat equation on semi-infinite and infinite domains, Duhamel's Theorem, use of Green's Function, and use of the Laplace Transform. A basic understanding of heat transfer at the undergraduate level is required for this course.

ME 741. Radiation Heat Transfer. 3 Hours.

Introduction to radiation heat transfer. Topics include radiation from black bodies and nonblack opaque surfaces, configuration factors for diffuse surfaces, radiation exchange in enclosures of diffuse-grey and specularly reflecting surfaces, radiation combined with conduction and convection, and energy transfer for absorbing, emitting and scattering media. A basic understanding of heat transfer at the undergraduate level is required for this course.

ME 742. Statistical Mechanics. 3 Hours.

Explanation of macroscopic thermodynamic and transport properties, based upon classical and quantum mechanical descriptions of elementary particles, atoms, and molecules. Analysis of the distributions of these objects over their allowed energy states and the relationships between those distributions and macroscopic properties.

ME 750. Transport Phenomena. 3 Hours.

Laminar flow transports: momentum transfer (Couette/Poiseuille flows), energy transfer (free/forced convections and conductions), and mass transfer; equation of state, turbulence, chemical reactions, and numerical methods solving transport equations.

ME 761. Math Methods in EGR I. 3 Hours.

Mathematical theory and solutions methods to problems in engineering including advanced ordinary differential equations; eigenvalue problems; multi-variable calculus and implicit functions; curve, surface and volume representation and integration; Fourier integrals and transforms; separation of variables and transform techniques for solution of partial differential equations. Differential Equations or equivalent is recommended as a prerequisite for this course.

ME 762. Math Methods in EGR II. 3 Hours.

Mathematical theory and solution methods to problems in engineering including Scalar and vector field theory advanced partial differential equations, analysis using complex variables, conformal mapping, complex integral calculus, Green's functions, perturbation methods, and variational calculus. Math Methods in EGR I or equivalent is a recommended prerequisite for this course.

ME 763. Engineering Statistics. 3 Hours.

Introduction to applied statistics and probability for engineering and the physical sciences. Topics include introduction to probability, discrete and random variables and their distributions, joint probability distributions, hypothesis testing, statistical inference, linear regression and correlation, design of experiments, and statistical quality control. A basic understanding of calculus and matrix algebra at the undergraduate level is required for this course.

ME 765. Computational Methods in EGR. 3 Hours.

Applications of computers to solution of problems in engineering, including matrices, roots of equations, solution of simultaneous equations, curve fitting by least squares, differentiation and integration, differential and partial differential equations. Differential Equations and Computational Engineering or equivalents are recommended prerequisites for this course.

ME 770. Intro to Continuum Mechanics. 3 Hours.

Fundamentals and application of mechanics principles to problems in continuous media. Matrix and tensor mathematics, fundamentals of stress, kinematics and deformation of motion, conservation equations, constitutive equations and invariance, linear and nonlinear elasticity, classical fluids, linear viscoelasticity. Mechanics of Solids and Differential Equations or equivalents are recommended prerequisites for this course.

ME 772. Advanced Dynamics. 3 Hours.

Advanced topics in dynamics including complex motion analysis, generalized kinematic parameters, quasivelocities and virtual displacements, direct and inverse dynamics approaches, and fundamentals of systems with variable masses. Introduction to the modeling of mechatronic systems is presented through a consideration of mechanical, electrical and electronics components. Analytical and adaptive dynamics principles are taught as a basis for control algorithm development and mechatronic system design.

ME 777. Systems Engineering. 3 Hours.

This course will give students an initial exposure to the field of systems engineering as it applies to space missions. Students will learn key topics related to spacecraft and mission design, including requirements development, trade studies, the project life cycle, system hierarchy, risk analysis, and cost analysis. The concepts presented in this course will be demonstrated with examples from current NASA missions. The students will also be exposed to concepts regarding team organization, design fundamentals, and work ethics. They will learn that systems engineering is iterative and will develop judgment that will allow them to compare and evaluate engineering alternatives. They will learn to discuss systems engineering methods and processes as well as engage in systems thinking.

ME 779. Advanced Finite Element Analysis. 3 Hours.

Concepts and applications of finite element method. Development and applications of various elements used in engineering mechanics. Use of finite element analysis software. Application of finite element concept and model development to fluid, heat transfer, and solid mechanics problems. Introduction to Fluid Mechanics, Introduction to Heat Transfer, and Mechanics of Solids or equivalents are recommended prerequisites for this course.

ME 788. Fluid-Structure Interactions. 3 Hours.

Modeling and simulation of fluid-structure interaction (FSI) phenomena using computational methods. The Arbitrary Lagrangian Eulerian (ALE) formulation, a variety of interpolation methods, mesh movement and time mapping algorithms. Solution of FSI problems using interface codes.

ME 789. Enabling Technology Tools for Scientists and Engineers. 3 Hours.

Computational methods and tools for simulations and modeling of mechanical and biomedical applications. Numerical geometry, numerical mesh generation, and scientific visualization tools will be introduced and applied.

ME 790. Special Topics in ME. 1-6 Hour.

Special Topics in (Area).

ME 791. Individual Study in (Area). 1-6 Hour.

Individual Study in (Area).

ME 794. Seminars in Mechanical EGR. 1 Hour.

Seminars in areas of mechanical engineering.

ME 796. IEGR Journal Club. 1 Hour.

Journal club to discuss current research and investigations in areas of interdisciplinary engineering.

ME 798. Non-Dissertation Research. 1-12 Hour.

Research.

ME 799. Dissertation Research. 1-12 Hour.

Research.

Prerequisites: GAC Z

MHP-Health Physics

MHP 601. Principles of Health Physics. 3 Hours.

Introduction to the practice of health physics. Topics include accelerator and cyclotron health physics, environmental radiation, emergency response, decommissioning and decontamination, and nuclear reactors.

MHP 611. Physics of Diagnostic Imaging. 3 Hours.

Overview of the various imaging modalities used in a clinical setting. Topics include the basics of X-rays, ultrasound, CT, MRI, SPECT & PET imaging.

Prerequisites: NMT 610 [Min Grade: C]

MHP 620. Principles of Dosimetry. 3 Hours.

Fundamental principles of radiation dosimetry. Topics include the mathematical treatment of internal and external doses from radiation sources, dosimetry models, routes of intake, industrial and medical sources.

Prerequisites: MHP 601 [Min Grade: C]

MHP 621. Nonionizing Radiation. 3 Hours.

Recognition, assessment, and control of nonionizing radiation hazards. Topics include sound, electricity, magnetism, microwaves, visible light, ultraviolet radiation, and lasers.

Prerequisites: MHP 611 [Min Grade: C] and NMT 610 [Min Grade: C]

MHP 651. Advanced Radiation Biology. 3 Hours.

Effects of radiation at the molecular, cellular and whole-tissue level. Topics include cell survival curves, repair of radiation damage, radiation carcinogenesis, risk assessment models, cancer biology, model tumor systems, and dose fractionation in radiotherapy.

Prerequisites: NMT 641 [Min Grade: C]

MHP 652. Radiochemistry. 3 Hours.

Overview of fundamentals of radiochemistry and experiments including counting statistics, radionuclide generator design, elution and operation, labeling and quality control, liquid scintillation counting, radiotracer techniques and applications, and dating techniques.

Prerequisites: MHP 611 [Min Grade: C] and NMT 610 [Min Grade: C]

MHP 675. Special Topics in Health Physics. 1-4 Hour.

Exploration of current issues in Health Physics.

MHP 691. Supervised Practice. 6 Hours.

Supervised practical experiences in applied health physics.

Prerequisites: MHP 620 [Min Grade: C]

MHP 698. Non-Thesis Research. 1-4 Hour.

Directed research with a faculty mentor to complete an applied master's degree project.

MHP 699. Thesis Research for MHP. 1-6 Hour.

Original research in health physics and interpretation of results. Demonstrates student's acquaintance with literature of field and competency in proper selection and execution of research methodology.

MIC-Microbiology

MIC 600. The Microbiome in Health and Immunity. 3 Hours.

This course will introduce the basic concepts of the immune system, including an understanding of the innate and adaptive arms of the immune response and the cells and organs involved. The course will also introduce the role of the microbiome and nutrition in health and disease. This course is designed to facilitate learning through the reading of primary literature sources, use of appropriate educational and medical databases, writing assignments, and discussion-based activities.

MIC 601. Foundations in Immunology: The Innate Immune System. 3 Hours.

This course will introduce the cells, receptors, signaling pathways and soluble mediators associated with the innate immune response. The basic components of the innate immune system will then be discussed in the context of their role in the physical, physiological, phagocytic and inflammatory barriers that comprise the innate immune system. Importantly, emphasis will be placed on the molecular and cellular mechanisms that are used by the innate immune system to detect and respond to microbial pathogens to provide the first line of defense.

MIC 602. Foundations in Immunology: The Adaptive Immune System. 3 Hours.

This course will provide an in-depth analysis of the cells (T, B and antigen presenting cells), tissues (primary and secondary) and soluble factors (cytokines and chemokines) that comprise the adaptive humoral immune response. The course will examine how cells of the adaptive immune system discriminate self from non-self, including the nature of antigen receptors, the types of antigens recognized and the signals involved in the generation of effector cells that mediate the response.

MIC 603. Foundations in Immunology: Microbial Pathogen-Immune System Interaction. 3 Hours.

This course will provide an overview of major concepts related to virulence mechanisms utilized by microbial pathogens and their effect on the host immune response. Emphasis will be placed on important virulence factors/mechanisms associated with bacterial, viral and fungal pathogens and how these alter various components of the innate and adaptive immune responses to allow escape of the pathogen and its survival. This course will introduce the concept of emerging infectious diseases and how their spread is related to their ability to escape detection by the immune system.

MIC 604. Foundations in Immunology: Immunologically-Mediated Diseases. 3 Hours.

This course will focus on the role of the immune system, including the molecular and cellular processes, that contribute to morbidity and mortality associated with immunodeficiency (congenital and acquired), asthma/allergy, autoimmunity (systemic and organ-specific), transplantation and inflammatory syndromes associated with heart disease, cancer, chronic neurological disease and diabetes.

MPA-Master of Public Administration

MPA 600. Administrative Ethics. 3 Hours.

Theories and principles of ethics. Understanding ethical issues and use of ethical principles in resolving ethical dilemma in public organizations.

MPA 601. The Public Policymaking Process. 3 Hours.

Public Policy as a decision-making process. Examines environmental and organizational factors, the choice of alternatives, and the implementation and evaluation of public policy, with applied references to specific functional areas e.g. housing, pollution, energy and transportation.

MPA 602. Scope of Public Administration. 3 Hours.

Explores differences between public and private sector organizations. Examines both institutional and behavioral elements as they apply to public agencies. Covers topics such as budgeting, personnel, ethics, federalism and other fundamentals of public administration.

MPA 603. Public & Nonprofit Budgeting. 3 Hours.

Examines the institutions, principles and techniques of governmental budgeting, including the practices and fundamental concepts of public budgeting, the budgeting process and financial management.

MPA 604. Human Resources Management. 3 Hours.

Examines the major concepts, theories, procedures and themes needed for effective management of human resources in the public and nonprofit sectors. Topics include merit and civil service systems, organized public labor, recruitment, classification, performance appraisal, disciplinary and grievance procedures, training and staff development, diversity and anti-discrimination policy and strategies, ethics/morality and personnel law.

MPA 605. Information Management for Government. 3 Hours.

The course is designed to introduce information and related technologies and how it affects people and government in a democracy. Students are exposed to information theory and modern day information technology tools to understand, interpret and manage governmental operations.

MPA 606. Foundations of PA Research. 3 Hours.

An introduction to research methodology presenting quasi-experimental and experimental research designs, exposition of qualitative and basic survey methods, and basic data analysis.

MPA 607. Quantitative Methods for PA. 3 Hours.

Using a pragmatic and applied approach, this course introduces statistical techniques used to analyze data in the social sciences including simple and multiple regression. Pre-requisite MPA 606.

Prerequisites: MPA 606 [Min Grade: C]

MPA 621. Open Government. 3 Hours.

The course will explore transparency and how governments operate in the context of transparency as well as how they, as consumers, can utilize their right to a transparent government.

MPA 662. State and Local Government Administration. 3 Hours.

This course is designed to introduce students to the study of state and local government administration. Introduces key concepts related to state and local government political structures and institutions; regional, state and county economic performance and state/local government finance.

MPA 664. Women in Public Administration. 3 Hours.

Studies in the leadership of women in public service. Focus on theoretical and professional development of women in government and nonprofit administration.

MPA 665. Crisis Management. 3 Hours.

Management and coordination of institutions to respond, plan, and mitigate crises. Focus on the role of managers in managing short and long term crises.

MPA 666. City County Management. 3 Hours.

Study of the typical nature of local government and the importance of local-state-federal relations, regional cooperation, and the nonprofit and public-private partnership in providing local government services.

MPA 667. Administrative Law. 3 Hours.

Explanation of law in society and the legal setting of public administration. Examination of substantive areas of the study of law including regulatory process, administrative adjudication, the administrative procedures acts, administrative due process, judicial review, liability and citizen's rights.

MPA 668. Intergovernmental Relations. 3 Hours.

The various relations among governments in the U.S. system. Focus on understanding the interactions, attitudes, and behavior of elected officials and bureaucrats of two or more units of government functioning in their public capacities.

MPA 671. Marketing and Fundraising. 3 Hours.

The use of marketing and fundraising strategies for nonprofits. Incorporates both theory and practice as students learn the fundamentals of marketing and resource development and apply them to hands-on projects in local nonprofit agencies.

MPA 672. Nonprofit Management. 3 Hours.

The day-to-day challenges faced by managers of nonprofit agencies, including the challenge of fund raising, balancing competing values as related to efficiency, effectiveness and equity.

MPA 673. Nonprofit Health. 3 Hours.

This course provides a comprehensive overview of role of the Nonprofit Sector and its important contribution to mission and success of our health system and social enterprise in the United States. The course examines various aspects of nonprofit health organizations including history of these agencies, sources of revenue, fund raising and marketing practices, accomplishments and achievements, criticisms and controversies, and the role of volunteer leadership and best management practices.

MPA 674. GIS for Managers. 3 Hours.

Examines the use of Geographic Information Systems (GIS) using GIS software. It integrates theory and socioeconomic applications of GIS in the public and nonprofit sector.

MPA 675. Equity and Diversity in Public Policy. 3 Hours.

Examines equity and diversity as concepts that affect both the internal dynamics of the public workplace as well the external effect on citizens as public administrators create policies and programs. The course addresses issues of cultural competency and teaches public administrators to recognize and understand equity issues that may arise based on diversity of race, gender, ethnicity, age, physical ability, religion, and sexual preference in the creation of public policies and programs in order to ensure that illegal forms of discrimination are minimized.

MPA 678. Strategic Planning. 3 Hours.

Presents the strategic planning process as it is utilized in contemporary settings. Focuses on how the strategic planning process is applied in the public and nonprofit sectors.

MPA 681. Local Government Planning. 3 Hours.

This course examines the historical roots of modern land use planning and explores contemporary issues in planning such as sprawl and smart growth.

MPA 682. Economic Development. 3 Hours.

The course is devoted to understanding economic development practices in the United States. It focuses on how market forces combine with non-economic variables to influence the economic development process. Theories and case studies drawn from various disciplines, particularly economics and public finance, will be used to understand the economic development process.

MPA 683. Public Managerial Economics. 3 Hours.

Application of microeconomic theory to real life problems faced by managers. Emphasis on understanding the complex real life social and economic challenges using economic principles and applying economic decision criteria in solving problems.

MPA 684. Grants Management. 3 Hours.

Covers the essentials of grant-writing and the management of grants.

MPA 685. Special Topics in Public Administration. 3 Hours.

Special topics seminar based on the research and substantive interests of the MPA faculty and students.

MPA 686. Data Management. 3 Hours.

Data Management provides a unique opportunity for students to explore the data management process. The past decade has seen a dramatic increase in the collection of data, and policy analysts, practitioners, and academic researchers must be equipped with the tools to use this data in an efficient manner. Throughout the semester, we will explore the importance of data and then move to working with primary and secondary data sources. Using Excel and Stata, students will learn how to collect, clean, and present data in ways consistent with best practices in the data management field.

MPA 687. Resource Management. 3 Hours.

Focus on concepts and skills essential to managing public organization resources.

MPA 688. Global Public Administration. 3 Hours.

Focus on concepts and skills essential to administering national and global organizations.

MPA 689. Program Evaluation. 3 Hours.

Analytic tools for evaluating public and nonprofit programs and services.

MPA 690. Seminar in Public Services Issues. 3 Hours.

Examines starting and maintaining a faith-based service organization (FBSO). Topics include role of faith/spirituality, mission, governance, setting, staffing, funding, church/FBSO issues, state/federal involvement, cooperative ventures with other FBSOs, networking.

MPA 695. Special Topics in Public Administration. 3 Hours.

Explores special topics in public administration.

MPA 696. Independent Study in Public Administration. 1-3 Hour.

One-on-one learning experience between student and an instructor. Permission of Program Director required.

MPA 697. Graduate Learning Portfolio. 3 Hours.

Graduation Research Paper - Capstone project. Permission of MPA Director required.

MPA 698. Internship in Public Administration. 3 Hours.

Supervised field placement in government or a nonprofit agency for directed work experience arranged by the internship coordinator and as per the guidelines in the internship manual. Permission of MPA director required.

MPA 699. Thesis Research. 3-6 Hours.

Research and writing of thesis. Permission of MPA Director required.

Prerequisites: GAC M

MSE-Materials Science & Engineering

MSE 501. Materials Processing. 3 Hours.

Processing of metals, glasses, ceramics, and composites. Powder, casting, welding, rapid solidification, and other advanced approaches.

MSE 505. Frontiers of Automotive Materials. 3 Hours.

Advanced lightweight automotive materials, manufacturing and modeling techniques. Technology advancements in cost-effective carbon, glass and related reinforcements; "green" and sustainable materials, crashworthiness and injury protection of occupants and pedestrians, metal castings, heavy truck, mass transit, fuel cell and hybrid vehicles. Students taking this class will receive a GATE certificate of training in automotive materials technologies upon successful completion.

MSE 508. Nanobiomaterials. 3 Hours.

Basic tools of nanotechnology, building blocks of nanostructured materials. Behavior of materials with nanoscale structures and their technological applications, including automotive, medical, and electronic applications. Introduction to biomaterials and nanobiomaterials, Concepts in tissue engineering with special focus on nanoscaffolds and nanoparticles in drug delivery.

MSE 509. Principles of Metal Casting. 3 Hours.

Production and evaluation of cast ferrous metals (gray iron, ductile iron, steel) and non-ferrous metals (brass, bronze, aluminum). Design of castings and molds. Laboratory on the gating, risering and molten metal treatment, analysis and handling techniques required to produce high quality castings. MSE 280 is recommended.

Prerequisites: MSE 280 [Min Grade: D]

MSE 509L. Principles of Metal Casting. 0 Hours.

Laboratory component of MSE 509 and must be taken concurrently.

MSE 513. Composite Materials. 3 Hours.

Processing, structure, and properties of metal-, ceramic-, and polymer-matrix composite materials. Roles of interfacial bond strength, reinforcement type and orientation and matrix selection in physical and mechanical properties of composite materials.

MSE 530. Polymeric Materials. 3 Hours.

Processing methods, structure/engineering/property relationships, and applications of polymeric materials.

MSE 530L. Polymeric Materials Lab. 0 Hours.

Laboratory component of MSE 530 and must be taken concurrently.

MSE 533. Nondestructive Evaluation of Materials. 3 Hours.

Principles, applications, and limitations of ultrasonic vibrations, acoustic emission, radiographic, magnetic particle, eddy current, and other nondestructive testing methods. Intelligent sensors and health monitoring of real structures.

MSE 545. The Evolution of Engineering Materials. 3 Hours.

Past, present and future of engineering materials; how new materials and processing methods have impacted human society, from the Stone Age until today. Taught as a 3-week study abroad course in Germany, with visits to universities, industrial facilities, research labs, museums and selected cultural sites.

MSE 562. Composites Manufacturing. 3 Hours.

Principles of manufacturing and processing of polymeric matrix composites. Production techniques including filament winding, pultrusion, and liquid infusion techniques combined with design, environmental and manufacturing issues of polymer matrix composites.

MSE 564. Metals and Alloys. 4 Hours.

Microstructures, properties, heat treatment, and processing of ferrous and nonferrous materials.

MSE 564L. Metals and Alloys Lab. 0 Hours.

Laboratory component of MSE 564 and must be taken concurrently.

MSE 565. Characterization of Materials. 4 Hours.

Theory and practice of materials characterization, with emphasis on optical metallography, quantitative metallography, scanning electron microscopy, crystallography, and x-ray diffraction. Specific application in metals and ceramics considered.

MSE 565L. Characterization of Materials Laboratory. 0 Hours.

Laboratory component of MSE 565 and must be taken concurrently with MSE 565.

MSE 570. Ceramic Materials. 4 Hours.

Structure, processing, properties, and uses of ceramic compounds and glasses. Mechanical, thermal, and electrical behavior of ceramic materials in terms of microstructure and processing variables.

MSE 570L. Ceramic Materials Laboratory. 0 Hours.

Laboratory component of MSE 570 and must be taken concurrently.

MSE 574. Metals and Alloys II. 3 Hours.

Production and physical metallurgy of ferrous and non-ferrous alloys including: steel alloys, inoculation and production of ductile, gray, compacted and malleable iron; advanced heat treatments of steel and iron; conventional and ultra-high strength aluminum alloys; wrought and cast copper alloys; wrought and cast magnesium alloys.

MSE 590. Special Topics in (Area). 1-6 Hour.

Special Topics in Area.

MSE 591. Individual Study in (Area). 1-6 Hour.

Independent study allows the student to explore a topic of interest under the close supervision of a faculty member. The course may include directed readings, applied work, assisting a faculty member with a research project, carrying out an independent research project, or other activities deemed appropriate.

MSE 601. Materials Science and Engineering Seminar. 1 Hour.

Required of all full-time masters students.

MSE 602. Intro to Thermodynamics and Mechanics of Materials. 2 Hours.

This course is a survey of undergraduate level theory and application of the fundamental principles of mechanics of materials and thermodynamics. Understanding is based on the explanation of the physical behavior of materials under load and then modeling this behavior to develop the theory. Intended to provide the students with both the theory and application of the fundamental principles of thermodynamics of materials. Students must be graduate student in engineering, chemistry or physics.

MSE 603. Thermodynamics of Materials. 3 Hours.

Atomistic and classical approaches to the understanding of the thermodynamics of solids, phase transformations, chemical reactions, and alloy systems.

MSE 605. Introduction to Physical Materials. 2 Hours.

Overview of fundamental concepts of materials science and engineering, focusing on chemical and physical properties such as bonding, crystal structure and defects, diffusion, and phase diagrams.

MSE 606. Introduction to Manufacturing Engineering. 3 Hours.

Manufacturing is the process of transforming raw materials into products. Even the most optimized and controlled industrial processes are fraught with variability and inefficiencies, both of which can have a negative impact on profitability. This course will introduce students to the proven tools to characterize and optimize industrial processes. In addition, students will learn the statistical techniques to quantitatively assess and detect changes to a process and make data-driven decisions to improve that process.

MSE 607. Measurement Systems Analysis. 3 Hours.

Whether in a manufacturing process, research & development lab or quality control, assessment and analysis of data used for decision making has roots in the equipment and procedures that make up a measurement system. Students will learn to critically assess the capability of measurements systems, gauges and analytical equipment used to collect data. Students will learn metrology, best practices, and statistical tools to quantitatively assess, as well as procedures to implement a Gage R&R study to improve a measurement system. In addition, students will learn effective communication strategies for presenting the results of statistical analysis.

MSE 608. Process Characterization and Advanced Statistical Analysis. 3 Hours.

This course centers on manufacturing processes and the inherent variability of all products. Product variability has origins at all input points in a process; raw materials, energy, time, human, etc. This course will expose engineers to the statistics to quantify and assess variability. In addition to statistical tools, we will delve deep into all phases of the DMAIC (Define, Measure, Analysis, Improve, and Control) methodology and the Lean/Six Sigma tools to identify, implement and document process improvements. An emphasis will be placed on the communication of these often-complicated statistics in an industrial setting. We will put these concepts into practice through completion of a final term paper. Students will be required to choose an industrial process and apply and communicate the concepts learned in this course.

MSE 610. Advanced Materials, Manufacturing and Applications Development. 3 Hours.

Introduction to advanced materials by design, near net-shape cost-effective manufacturing, synergistic knowledge of material properties, durability and function. Hands on activities related to extrusion-compression, fiber spinning, thermoset/thermoplastic materials, medical grade materials, intermediate forms and hybrid manufacturing. Integrated process and product development methodology. Student projects will involve manufacturing processes associated with mass production.

MSE 613. Mechanical Behavior of Materials. 3 Hours.

Microstructural effects on the deformation mechanisms responsible for mechanical behavior of engineering materials.

MSE 614. Process Quality Engineering. 3 Hours.

Application of the concepts and tools of total quality to develop, implement, and maintain an effective quality assurance system in a materials processing and manufacturing environment. Students will be exposed to probability models, statistical tools, linear and multiple regression, DOE, TQM and six sigma.

MSE 624. Physical Metallurgy. 3 Hours.

Course will consider the fundamental thermodynamic and kinetic principles governing the behavior of metals and alloys, particularly with respect to their influence the formation and evolution of microstructure. Topics will include liquid-solid and solid-state phase transformations, nucleation, growth, solidification and diffusion.

MSE 628. Thermal Characterization. 3 Hours.

This lab-oriented course will be focused to give graduate students the theory and hands-on experience in operation, data acquisition and interpretation of widely used thermal characterization techniques such as differential scanning calorimeter (DSC), thermo gravimetric analyzer (TGA) , Simultaneous TGA-DTA, Thermo mechanical analyzer (TMA), Dynamic mechanic analyzer (DMA) and rheological and viscosity analyses of polymeric resins and composite materials. Exposure to the surface characterizations techniques such as contact angle goniometer for wettability, Fourier Transform infrared spectrometer (FT-IR) and X-ray-photoelectron spectroscopy (XPS) for surface chemical analyses and atomic force microscopy for roughness and morphology.

MSE 628L. Thermal Characterization Lab. 0 Hours.

Laboratory component of MSE 628 and must be taken concurrently.

MSE 629. Polymer Structure and Morphology. 3 Hours.

Polymer structures and morphology and it's relationships with applications, multicomponent polymer systems (polymer blends, copolymers, micro and nanocomposites), liquid crystalline polymers, polymer crystals, oriented polymers, morphological aspects of deformation and advances in polymers (biomimetic and bioinspired polymer systems).

MSE 633. Advanced Mechanics of Deformation. 3 Hours.

Basics and intermediate mechanics of deflection of beams and columns, mechanics of impact, failure theories, plastic deformation of materials, fracture mechanics, fatigue, creep and vibration. The topics will be supported by industry relevant case studies. Suggested prerequisites included Mechanics of Solids (CE 220) and Mechanical Behavior (MSE 382).

MSE 635. Advanced Mechanics of Composites. 3 Hours.

Classical lamination theory, analysis and failure of reinforced composite material systems, anisotropic elasticity, stress analysis and design of laminated composites including 3D effects, stress concentrations, free-edge effects, hygrothermal behavior, adhesive and mechanical connections.

MSE 636. Engineering Fibers. 3 Hours.

Processing-microstructure-properties of different fibrous materials: natural polymeric fibers (jute, sisal, silk, etc.), synthetic polymeric fibers (aramid and polyethylene, etc.), metallic fibers, and high performance ceramic fibers (alumina and silicon carbide). Application of Weibull statistics to strength of fibrous materials, techniques of mechanical testing of fibers and applications of fibers in various fields.

MSE 638. Degradation of Materials. 3 Hours.

Basics of materials degradation- thermodynamics and kinetics - Pourbaix diagram, chemical and electrochemical reactions; Degradation types and mechanisms; Degradation of different material systems: Metals, alloys, ceramics and glasses, polymers and composites for versatile applications- structural, functional, energy and biomedical; Impact on materials properties; Investigation for materials degradation; Protection from degradation and materials design; Environmental and biological aspects; Societal impact.

MSE 667. Process Modeling/Simulation. 3 Hours.

Theory and practice of analytical methods and computational modeling for manufacturing processes of metals, ceramics, polymers and composites. Applications on processes such as metal cutting, welding, casting, massive forming, solidification, rapid prototyping, injection molding and resin transfer molding.

MSE 668. Applied Finite Element Analysis. 3 Hours.

Finite Element Analysis (FEA) is used widely for design optimization and failure prediction in automobile, energy, aerospace, and other industries. This course primarily looks at how practically to set up static structural models and get meaningful results. The focus will be on applying loading and boundary conditions, good meshes, convergence of results, and correct interpretation of results. Students will learn how to set up models using programs such as Pro/Engineer and ANSYS.

MSE 669. Degradation of materials. 3 Hours.

The course will introduce the thermodynamics and kinetics of materials degradation; degradation mechanisms and types; degradation of different material systems (metals, alloys, ceramics and glasses, polymers and composites) for multifaceted applications; protection from degradation and materials design; Environmental and biological aspects; societal impact.

MSE 670. Physical Characterization. 3 Hours.

Theory and practice of materials characterization, with emphasis on optical metallography, quantitative metallography, scanning electron microscopy, crystallography, and x-ray diffraction. Specific application in metals and ceramics considered.

MSE 690. Special Topics In (Area). 1-6 Hour.

Special Topics in (Area).

MSE 690L. Special Topics in (Area) Laboratory. 0 Hours.

Special Topics in (Area) laboratory.

MSE 691. Individual Study in (Area). 1-6 Hour.

Individual Study in (Area).

MSE 698. Non-Thesis Research. 1-12 Hour.

Non-Thesis Research.

MSE 699. Thesis Research. 1-12 Hour.

Prerequisites: GAC M

MSE 701. Materials Science and Engineering Seminar. 1 Hour.

Materials Science and Engineering Seminar. Required of all full-time doctoral students.

MSE 702. Intro to Thermodynamics and Mechanics of Materials. 2 Hours.

This course is a survey of undergraduate level theory and application of the fundamental principles of mechanics of materials and thermodynamics. Understanding is based on the explanation of the physical behavior of materials under load and then modeling this behavior to develop the theory. Intended to provide the students with both the theory and application of the fundamental principles of thermodynamics of materials. Students must be graduate student in engineering, chemistry or physics.

MSE 703. Thermodynamics of Materials. 3 Hours.

Atomistic and classical approaches to the understanding of the thermodynamics of solids, phase transformations, chemical reactions, and alloy systems.

MSE 705. Introduction to Physical Materials. 2 Hours.

Overview of fundamental concepts of materials science and engineering, focusing on chemical and physical properties such as bonding, crystal structure and defects, diffusion, and phase diagrams.

MSE 710. Advanced Materials, Manufacturing and Applications Development. 3 Hours.

Introduction to advanced materials by design, near net-shape cost-effective manufacturing, synergistic knowledge of material properties, durability and function. Hands on activities related to extrusion-compression, fiber spinning, thermoset/thermoplastic materials, medical grade materials, intermediate forms and hybrid manufacturing. Integrated process and product development methodology. Student projects will involve manufacturing processes associated with mass production.

MSE 714. Process Quality Engineering. 3 Hours.

Application of the concepts and tools of total quality to develop, implement, and maintain an effective quality assurance system in a materials processing and manufacturing environment. Students will be exposed to probability models, statistical tools, linear and multiple regression, DOE, TQM and six sigma.

MSE 724. Physical Metallurgy. 3 Hours.

Course will consider the fundamental thermodynamic and kinetic principles governing the behavior of metals and alloys, particularly with respect to their influence the formation and evolution of microstructure. Topics will include liquid-solid and solid-state phase transformations, nucleation, growth, solidification and diffusion.

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This lab-oriented course will be focused to give graduate students the theory and hands-on experience in operation, data acquisition and interpretation of widely used thermal characterization techniques such as differential scanning calorimeter (DSC), thermo gravimetric analyzer (TGA), Simultaneous TGA-DTA, Thermo mechanical analyzer (TMA), Dynamic mechanic analyzer (DMA) and rheological and viscosity analyses of polymeric resins and composite materials. Exposure to the surface characterizations techniques such as contact angle goniometer for wettability, Fourier Transform infrared spectrometer (FT-IR) and X-ray-photoelectron spectroscopy (XPS) for surface chemical analyses and atomic force microscopy for roughness and morphology.

MSE 728L. Thermal Characterization Lab. 0 Hours.

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Polymer structures and morphology and it's relationships with applications, multicomponent polymer systems (polymer blends, copolymers, micro and nanocomposites), liquid crystalline polymers, polymer crystals, oriented polymers, morphological aspects of deformation and advances in polymers (biomimetic and bioinspired polymer systems).

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MSE 736. Engineering Fibers. 3 Hours.

Processing-microstructure-properties of different fibrous materials: natural polymeric fibers (jute, sisal, silk, etc.) synthetic polymeric fibers (aramid and polyethylene, etc.), metallic fibers, and high performance ceramic fibers (alumina and silicon carbide). Application of Weibull statistics to strength of fibrous materials, techniques of mechanical testing of fibers and applications of fibers in various fields.

MSE 738. Degradation of Materials. 3 Hours.

Basics of materials degradation- thermodynamics and kinetics - Pourbaix diagram, chemical and electrochemical reactions; Degradation types and mechanisms; Degradation of different material systems: Metals, alloys, ceramics and glasses, polymers and composites for versatile applications- structural, functional, energy and biomedical; Impact on materials properties; Investigation for materials degradation; Protection from degradation and materials design; Environmental and biological aspects; Societal impact.

MSE 767. Process Modeling/Simulation. 3 Hours.

Theory and practice of analytical methods and computation modeling for manufacturing processes of metals, ceramics, polymers and composites. Applications on processes such as metal cutting, welding, casting, massive forming, solidification, rapid prototyping, injection molding, and resin transfer molding.

MSE 768. Applied Finite Element Analysis. 3 Hours.

Finite Element Analysis (FEA) is used widely for design optimization and failure prediction in automobile, energy, aerospace, and other industries. This course primarily looks at how practically to set up static structural models and get meaningful results. The focus will be on applying loading and boundary conditions, good meshes, convergence of results, and correct interpretation of results. Students will learn how to set up models using programs such as Pro/Engineer and ANSYS.

MSE 769. Degradation of Materials. 3 Hours.

The course will introduce the thermodynamics and kinetics of materials degradation; degradation mechanisms and types; degradation of different material systems (metals, alloys, ceramics and glasses, polymers and composites) for multifaceted applications; protection from degradation and materials design; Environmental and biological aspects; societal impact.

MSE 770. Physical Characterization. 3 Hours.

Theory and practice of materials characterization, with emphasis on optical metallography, quantitative metallography, scanning electron microscopy, crystallography, and x-ray diffraction. Specific application in metals and ceramics considered.

MSE 790. Special Topics in (Area). 1-6 Hour.

Special Topics In (Area).

MSE 790L. Special Topics in (Area) Laboratory. 0 Hours.

Special Topics in (Area) Laboratory.

MSE 791. Individual Study in (Area). 1-6 Hour.

Individual Study in (Area).

MSE 798. Non-Dissertation Research. 1-12 Hour.**MSE 799. Dissertation Research. 1-12 Hour.**

Prerequisites: GAC Z

MSEM-Engineering Management

MSEM 640. Systems Engineering. 3 Hours.

This course will explore systems engineering and systems thinking. Students will learn key topics related to engineering products and design, including requirements development, the project life cycle, system hierarchy, risk analysis, and cost analysis. They will learn that systems engineering is iterative and will develop judgment that will allow them to compare and evaluate engineering alternatives. They will learn to discuss systems engineering methods and processes as well as engage in systems thinking.

MSEM 650. Technical Project Management. 3 Hours.

Students will learn the common methodologies used to manage complex projects in technology organizations. They will learn how to successfully plan, schedule, budget, and complete projects. Topics will include the PMP, Six Sigma, Lean, and other methodologies. Students will take part in several class exercises that will allow them to use different project management skills. The format of the class will consist of lecture and general discussion. There will also be significant portions of class time dedicated to project based activities.

MSEM 660. Professional Development for Engineers. 3 Hours.

This course prepares students to make the transition from student to working engineer. Students will develop skills in personal branding, career planning, strategic career search, networking, teamwork, leadership, professional communications, time management, measuring value, and professional etiquette. In addition, students will learn how to find and develop opportunities and how to use social media to enhance and protect their personal brand.

MSEM 695. Engineering Management Design Project. 3 Hours.

This course is for students who already have a relevant job or internship and are part of the Master of Engineering Management program. The purpose of this course is to be a capstone program where the skills and concepts learned in the MSEM are applied to a real industry issue. This project will be performed in partnership with your current employer by defining a project on the job and working with MSEM faculty to meet core deliverables.

MSEM 696. Engineering Management Internship. 3 Hours.

This course is an internship and will be conducted in cooperation with an employer and the School of Engineering's Director of Career Services. Students will work with an industry partner and then provide a final report.

MSTP-Medical Science Training Program

MSTP 794. Translational Research Seminar. 1 Hour.

The CAMS Translational Research Seminar series, required fall, spring and summer semesters, invites UAB faculty (PhD, MD, MD-PhD or MPH) who are conducting translational research to present their work to students in the MSTP. The goal of the presentation is three fold: (a) to inform students about the career path of the investigator, (b) to provide them with information regarding the initiation and conduct of translational research, and (c) to expose students to current developments in basic and clinical research. There are two to three sessions each year in which panels or round tables discuss topics, including mentor selection, preparation for residency, residency selection, and the overall UAB MSTP experience. Lecturers give a 45-minute presentation followed by a 15-minute question and answer session. This course is open only to MD-PhD students.

MSTP 795. Continuing Clinical Education. 1 Hour.

This course is designed to maintain clinical skills and knowledge during students' dissertation research years. MSTP students will take the course every fall semester and spring semester during their PhD dissertation phase. Each semester, students will be required to complete seven course components. Some components serve to maintain clinical skills and includes students conducting a resident-supervised clinical encounter as well as completing one half day of shadowing. Other components serve to maintain or bolster clinical knowledge and include students attending case conferences and/or participating in simulation sessions. This course is open only to MD-PhD students.

MSTP 796. Anatomy Lab TA Opportunity. 1 Hour.

From 23 TOTAL dissections between the MS1 and MS2 years, students choose any 6 dissections to teach depending on their availability. Overview: MS4 students will serve as Anatomy Teaching Associates for MS1 and MS2 students during scheduled lab times to make preclinical training more robust and clinically relevant. Course benefits for MS4 students: - Small-group anatomy training aimed to improve knowledge of anatomy & dissection skills. - Teaching & mentoring experience of students with less clinical experience. - Flexible schedule: Preferred dissections may be changed up to 1 week before the preclinical scheduled lab time. Format: - Students will attend a 1-hour orientation session addressing effective teaching techniques in August of the entering year (accommodation for absence can be made on a case-by-case basis). - The week prior to their chosen dissections, students will receive 2 hours of small group training in SOM lab under the directions of trained UAB Anatomist and Course Director Dr. Resuehr. During this training, students will perform the relevant cadaveric dissection which will be saved for demonstration during the preclinical lab. -TAs will be assigned to a group of preclinical students during their scheduled lab time to help answer questions. Particular emphasis will be placed on providing preclinical students with clinical correlates. Learning Objectives: - Dissect and identify all associated structures of their chosen dissections emphasizing the relation of structures to each other and common pathologies. - Understand common anatomical variations (if applicable). - Understand anatomically relevant information pertaining to clinical procedures. - Understand geriatric changes. - Mentor and teach students with less experience.

MSTP 798. MSTP Non-Dissertation Hours. 1-8 Hour.

Laboratory research pre-qualification. Only open to MSTP students.

MSTP 799. MSTP Dissertation Hours. 1-8 Hour.

Dissertation research. Only open to MSTP students.

Prerequisites: GAC Z

NA-Nursing-Nurse Anesthesia

NA 697. Special Topics. 3 Hours.

Review of specialty concepts as presented in Anesthesia Pathophysiology I, Anesthesia Pathophysiology II, and Anesthesia for Surgical Specialties.

NA 698. Graduate Project. 2 Hours.

Critical review of literature for an anesthesia topic with preparation of a scholarly product for dissemination.

NA 702. Anatomy & Physiology for Nurse Anesthetists. 6 Hours.

This course is a study of histology, genetics, human anatomy and physiology, with an emphasis in neuroanatomy and neurophysiology. NA 702 integrates the structure, function, and organization of nervous tissue from the cellular through gross anatomic aspects including central, peripheral, and autonomic portions of the system. The course includes a series of clinical correlation laboratory experiences, team-based learning projects, and lectures designed to support and augment basic science content.

Prerequisites: NA 720 [Min Grade: B]

NA 708L. Anesthesia Practicum I. 2 Hours.

This course is designed to provide a foundation in the basic principles and practice of nurse anesthesia. During this semester, clinical experiences are designed to provide the students with development of anesthesia practice, and to apply knowledge of basic and advanced principles of anesthetic management in surgical specialty areas.

Prerequisites: NA 721 [Min Grade: B] and NA 740 [Min Grade: B] and NA 770 [Min Grade: B] and NA 718L [Min Grade: P]

NA 709L. Anesthesia Practicum II. 3 Hours.

This course is designed to provide a foundation in the basic principles and practice of nurse anesthesia. During this semester, clinical experiences are designed to provide the students with continued development of anesthesia practice, and to apply knowledge of basic and advanced principles of anesthetic management in surgical specialty areas.

Prerequisites: NA 708L [Min Grade: P] and NA 741 [Min Grade: B] and NA 750 [Min Grade: B] and NA 771 [Min Grade: B] and NUR 743 [Min Grade: B]

NA 710L. Anesthesia Practicum III. 5 Hours.

This course is designed to provide a foundation in the basic principles and practice of nurse anesthesia. During this semester, clinical experiences are designed to provide the students with continued development of anesthesia practice, and the apply knowledge of basic and advanced principles of anesthetic management in surgical specialty areas.

Prerequisites: NA 709L [Min Grade: P] and NA 745 [Min Grade: B] and NUR 733 [Min Grade: B]

NA 711L. Anesthesia Specialty Immersion I. 5 Hours.

This course is designed to provide advanced clinical experiences requisite for preparation consistent with a doctoral evidence-based practice of nurse anesthesia. During this semester, clinical experiences are designed to provide the advanced student with clinical experiences to further their knowledge base towards a doctoral level.

Prerequisites: NA 710L [Min Grade: P] and NA 740 [Min Grade: B] and NA 742 [Min Grade: B]

NA 712L. Anesthesia Specialty Immersion II. 5 Hours.

This course is designed to provide advanced clinical experiences requisite for preparation consistent with a doctoral evidence-based practice of nurse anesthesia. During this semester, clinical experiences are designed to provide the advanced students with clinical experiences to further their knowledge base towards a doctoral level.

Prerequisites: NA 711L [Min Grade: P] and NA 795 [Min Grade: P] and NUR 738L [Min Grade: P]

NA 713L. Anesthesia Specialty Immersion III. 5 Hours.

This course is designed to provide advanced clinical experiences requisite for preparation consistent with a doctoral evidence-based practice of nurse anesthesia. During this semester, clinical experiences are designed to provide the advanced student with clinical experiences to further their knowledge base towards a doctoral level.

Prerequisites: NA 712L [Min Grade: P] and NA 796 [Min Grade: P] and NUR 739L [Min Grade: P]

NA 718L. Focus on Advanced Nursing Practice Specialization. 2 Hours.

The purpose of this course will be the study of specialty track specific topics. The focus of the course will be on providing foundational materials for specialized areas of advanced nursing practice. Emphasis is on exploring specific advanced nursing practice competencies.

Prerequisites: NA 702 [Min Grade: B] and NA 731 [Min Grade: B]

NA 720. Anesthesia Pharmacology I. 3 Hours.

This course is designed to provide the nurse anesthesia student with knowledge of various non-anesthetic pharmacological agents and their anesthetic implications. During this course, students will learn pharmacological principles related to advanced practice nursing at the doctoral level.

NA 721. Anesthesia Pharmacology II. 3 Hours.

This course is designed to provide the nurse anesthesia student with knowledge of various anesthetic pharmacological agents and their anesthetic implications. During this course, students will build upon knowledge gained from NA 720, and further master advanced pharmacological principles related to advanced practice nursing at the doctoral level.

Prerequisites: NA 702 [Min Grade: B] and NA 731 [Min Grade: B]

NA 731. Biochemistry & Physics for Nurse Anesthetists. 4 Hours.

This course provides a solid chemistry, biochemistry, and physics foundation that is necessary for the safe practice of nurse anesthesia. Students will gain an understanding of these sciences, their clinical relevance, and how they apply to human beings and anesthesia equipment. This course is foundational in nature and success will help the student prepare for upcoming clinical anesthesia management courses.

Prerequisites: NA 720 [Min Grade: B]

NA 733. Informatics for Nurse Anesthetists. 3 Hours.

The purpose of this course is to provide an introduction to the field of nursing informatics for nurse anesthetists. This course focuses on the collection, organization, analysis, and dissemination of information in nurse anesthesia and health care. Students are introduced to the information system life-cycle and the use of technology to enhance nursing care delivery and patient safety in perioperative settings.

NA 740. Anesthesia Principles I. 4 Hours.

The purpose of this course is to provide a beginning foundation for students to plan and implement safe anesthesia care in healthy patients. The focus of this course is the study of scientific foundations of nurse anesthesia practice. The emphasis on designing and implementing individualized anesthesia care plans, principles of anesthesia induction, maintenance, emergence, anesthesia complications on the health patient, routine and difficult airway management, and the principles of nurse anesthesia role transition and practice standards.

Prerequisites: NA 702 [Min Grade: B] and NA 731 [Min Grade: B]

NA 741. Anesthesia Principles II. 3 Hours.

This course is for the student who has a foundation in the basic principles and practice of nurse anesthesia. During this course, students will learn anesthetic management principles for surgical specialty areas. Upon course completion the student will demonstrate mastery of related anatomic, physiologic, pathophysiologic, and pharmacologic principles for each of the surgical specialty areas in the context of advanced nursing practice at the doctorate level.

Prerequisites: NA 721 [Min Grade: B] and NA 740 [Min Grade: B] and NA 718L [Min Grade: B]

NA 742. Anesthesia Principles III. 3 Hours.

Students will learn anesthetics management principles for parturients, neonates, infants and children. During this course, students will learn anesthetic management principles for surgical specialty areas. Upon course completion the students will demonstrate mastery of related anatomic, physiologic, pathophysiologic, and pharmacologic principles across special populations in the context of advanced nursing practice at the doctorate level.

Prerequisites: NA 708L [Min Grade: P] and NA 741 [Min Grade: B] and NA 750 [Min Grade: B] and NA 771 [Min Grade: B]

NA 745. Professional Aspects. 4 Hours.

This course is designed to provide the foundation of the professional aspects of becoming a CRNA. The students will demonstrate understanding of the principles associated with the business of anesthesia including finance, practice management, as well as intra and inter-professional healthcare collaboration.

Prerequisites: NA 708L [Min Grade: P] and NA 741 [Min Grade: B] and NA 750 [Min Grade: B] and NA 771 [Min Grade: B]

NA 750. Regional Anesthesia. 2 Hours.

The purpose of this course is the study of the theoretical and practical considerations involved in the administration and management of regional anesthesia and pain management. Related anatomy, physiology, and pharmacology will be reviewed as applied to the administration and management of regional anesthesia and pain management, using ultrasound and radiological techniques. Various regional anesthesia, both central and peripheral, are discussed as a component of a safe and effective anesthetic.

Prerequisites: NA 721 [Min Grade: B] and NA 740 [Min Grade: B] and NA 770 [Min Grade: B] and NA 718L [Min Grade: P]

NA 770. Anesthesia Pathophysiology I. 3 Hours.

This Pathophysiology course is designed to promote the understanding and application of fundamental disease processes in clinical settings. General concepts of disease, including etiology, pathogenesis, and clinical significance are presented. These concepts are applied in systems-orientate approach to disease processes affecting cardiovascular and pulmonary systems. Application of this knowledge to anesthetic plan development and implication of anesthesia on the disease process will be expected.

Prerequisites: NA 702 [Min Grade: B] and NA 731 [Min Grade: B]

NA 771. Anesthesia Pathophysiology II. 3 Hours.

This pathophysiology course is designed to promote the understanding and application of fundamental disease processes in clinical settings. General concepts of disease, including etiology, pathogenesis, and clinical significance are presented. These concepts are applied in a systems-oriented approach to disease processes affecting musculoskeletal, renal, nervous, gastrointestinal, immune, hematological and endocrine systems. Application of the knowledge to anesthetic plan development and implications of anesthesia on the disease process, and vice versa, will be expected.

Prerequisites: NA 721 [Min Grade: B] and NA 740 [Min Grade: B] and NA 770 [Min Grade: B] and NA 718L [Min Grade: P]

NA 795. Critical Concepts I. 3 Hours.

The purpose of this course is to foster academic development and integration of theoretical knowledge into clinical practice. The focus is on clinically relevant reviews and examinations of critical anesthesia concepts.

Prerequisites: NA 710L [Min Grade: P] and NA 740 [Min Grade: B] and NA 742 [Min Grade: B]

NA 796. Critical Concepts II. 3 Hours.

The purpose of this course is to foster continued academic development and integration of theoretical knowledge into clinical practice. The focus is on increasingly advanced clinically relevant reviews and examinations of critical anesthesia concepts. The emphasis is on advanced critical thinking ability and the synthesis of anesthesia concepts.

Prerequisites: NA 711L [Min Grade: P] and NA 795 [Min Grade: P] and NUR 738L [Min Grade: P]

NA 797. Critical Concepts III. 3 Hours.

The purpose of this course is to foster integration of advanced theoretical knowledge into complex scenarios in clinical practice. The focus is on the culmination of clinical review and examination of critical anesthesia concepts necessary for the beginning nurse anesthesia practitioner to demonstrate critical thinking and application of knowledge in the clinical practice setting. The emphasis is on development of complex critical thinking ability and the synthesis of anesthesia concepts.

Prerequisites: NA 712L [Min Grade: P] and NA 796 [Min Grade: P] and NUR 739L [Min Grade: P]

NAH-Nursing-Adult Health

NAH 618L. Focus on Advanced Nursing Practice Specialization. 3 Hours.

The purpose of this course will be the study of specialty track specific topics. The focus of the course will be on providing foundational materials for specialized areas of advanced nursing practice. Emphasis is on exploring specific advanced nursing practice competencies.

Prerequisites: (NUR 606 [Min Grade: B] or NUR 606 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B])

NAH 621. Advanced Adult Gerontology Nursing I. 4-5 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of this course is to prepare the student to implement the role of the Advanced Practice Nurse. The emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to adult/gerontology patients.

Prerequisites: NUR 610 [Min Grade: B] and (NUR 614L [Min Grade: B] or NUR 614 [Min Grade: B])

NAH 622. Advanced Adult Gerontology Nursing II. 3-5 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness of adult/gerontology patients. The focus of this course is on health promotion and disease prevention and management strategies from inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care to adult/gerontology patients.

Prerequisites: (NAH 621 [Min Grade: B] or NAH 621 [Min Grade: B]) and (NAH 685L [Min Grade: P] or NAH 685L [Min Grade: P])

NAH 623. Advanced Adult Gerontology Nursing III. 5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care to adults/gerontology patients. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: (NAH 622 [Min Grade: B] or NAH 622 [Min Grade: B]) and (NAH 686L [Min Grade: P] or NAH 686L [Min Grade: P])

NAH 685L. Practicum I: Adult/Gerontology Nurse Practitioner. 2-3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to adult/gerontology patients. The focus of this course is on the delivery of health care services to adult/gerontology patients. The emphasis of this course is on promoting the progression of competence within the Advanced Practice Nursing role.

Prerequisites: (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B]) or NUR 614 [Min Grade: B] or NUR 614 [Min Grade: B]) and NUR 610 [Min Grade: B]

NAH 686L. Practicum II: Adult/Gerontology Nurse Practitioner. 2-3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to adult/gerontology patients. The focus of this course is to provide the student with opportunities to integrate in depth diagnostic and management skills to provide care for adult/gerontology patients. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: (NAH 621 [Min Grade: B] or NAH 621 [Min Grade: B]) and (NAH 685L [Min Grade: P] or NAH 685L [Min Grade: P])

NAH 692L. Residency: Adult/Gerontology Nurse Practitioner. 2-4 Hours.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to adult/gerontology patients. The focus of this course is to evaluate progress toward achievement of professional competencies. The emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of adult/gerontology patients.

Prerequisites: (NAH 622 [Min Grade: B] or NAH 622 [Min Grade: B]) and (NAH 686L [Min Grade: P] or NAH 686L [Min Grade: P])

NAH 721. Advanced Adult-Gerontology Nursing I. 5 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of the course is to prepare the student to implement the role Doctor of Nursing Practice prepared Advanced Practice Nurse. The emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to pediatric adult and elderly populations.

Prerequisites: (NUR 614 [Min Grade: B] or NUR 614L [Min Grade: B]) and NAH 618L [Min Grade: P]

NAH 722. Advanced Family Nursing II. 4 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness for adult/gerontology population in the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse. The focus of this course is on the health promotion and disease prevention and the management of strategies from inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care of the adult/gerontology population.

Prerequisites: NAH 721 [Min Grade: B] and NAH 618L [Min Grade: P]

NAH 723. Advanced Adult-Gerontology Nursing III. 5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care as a Doctor of Nursing Practice prepared Advanced Practice Nurse to the adult/gerontology population. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: NAH 722 [Min Grade: B] and NSH 785L [Min Grade: P]

NAH 785L. Practicum I: Adult-Gerontology Nurse Practitioner. 3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to the adult/gerontology population. The focus of this course is on the delivery of health care services to the adult/gerontology population. The emphasis of this course is on promoting the progression of competence within the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse.

Prerequisites: NAH 721 [Min Grade: B]

NAH 786L. Practicum II: Adult-Gerontology Nurse Practitioner. 3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to the adult/gerontology population. The focus of this course is to provide the student with opportunities to integrate in-depth diagnostic, management, and leadership skills in the role of the Doctor of Nursing Practice prepared Advanced practice Nurse to provide care for the adult/gerontology population. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: NAH 722 [Min Grade: B] and NAH 685L [Min Grade: P]

NAH 792L. Residency: Adult-Gerontology Nurse Practitioner. 4 Hours.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to the adult/gerontology population. The focus of this course is to evaluate progress toward achievement of competencies of the Doctor of Nursing Practice prepared Advanced Practice Nurse. The Emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of the adult/gerontology population.

Prerequisites: NAH 723 [Min Grade: B] and NAH 786L [Min Grade: P]

NBB-Nursing-Biobehavioral

NBB 760. Biobehavioral Foundations in Nursing Research. 3 Hours.

Focuses on biobehavioral interactions among psychological and cognitive domain, social and environmental domain and biology as they affect health outcomes. The emphasis will be placed on the theories and concepts of each domain of biobehavioral interactions.

NBB 761. Biobehavioral Research: State of the Sciences. 3 Hours.

Focuses on in-depth exploration and critical analysis of current biobehavioral interaction research including conceptual and methodological issues. Examines the effectiveness of interventions on biobehavioral domains and health outcomes and identifies future directions for research.

NBB 762. Biobehavioral Research Seminar. 1-3 Hour.

Focuses on in-depth understanding of a selective area of biobehavioral research. Biological interactions with psychological, cognitive, social and environmental domains will be included in relation to actual and potential health outcomes. Current understanding in a selective area of biobehavioral research will be critically analyzed for conceptual and methodological issues.

NBL-Neurobiology

NBL 601. College of Basic Cognition & Clinical Neuroscience. 3 Hours.

The Colloquium in Basic, Cognitive and Clinical Neuroscience is a faculty seminar. The Colloquium will expose students to cutting edge research programs and technologies from approximately 25 faculty each year who serve as mentors for the Undergraduate Neuroscience Major and Graduate Neuroscience Program. Faculty will also discuss strategies for development of careers in medicine and research. Students will prepare by reading an assigned research article authored by the speaker and be prepared for a group discussion. Class meets for one and a half hours a week.

NBL 610. Molecular Biology of the Neuron. 3 Hours.

Molecular Neuroscience will provide students an advanced understanding of how the brain works with a focus on protein function. Everything the brain does is built upon the actions of proteins, many of which are completely unique to the brain. Together we will work to thoroughly understand the exact molecular mechanisms utilized by the brain to support the complex function of our most fascinating organ. Topics covered will include brain morphogenesis, axonal outgrowth, synapse formation, neurotransmitter biosynthesis, intracellular signaling, and the blood brain barrier. This lecture course is designed to fulfill a neuroscience major's requirement for an advanced course. Non-neuroscience majors should seek course master approval before enrolling and must have a significant background in biology and/or chemistry. Students will be required to purchase a text. Grades will be assigned based on points accumulated through weekly quizzes, cumulative exams, and written reports.

NBL 625. Methods in Human Neuroimaging. 3 Hours.

Cognitive neuroscience research has provided valuable insights into the workings of the human brain. The ability to perform neuroimaging studies on awake human individuals engaged in cognitive, social, sensory, and motor tasks has produced a conceptual revolution in the study of human cognition. This course will comprehensively examine the methods and techniques in neuroimaging with the primary goal of building basic knowledge in the concepts and techniques of neuroimaging. The course will explore techniques, such as single and multi cell recordings, deep brain stimulation, electroencephalography, magnetoencephalography, and diffusion tensor imaging, and focuses on functional magnetic resonance imaging. Course goals: By the end of the course, students will have gained basic knowledge in the field and will be able to read and critically assess scientific journal articles that make use of a variety of neuroimaging methods. The secondary and implicit goal of this course is to create and nurture, in students, a genuine interest in neuroscience and neuroimaging.

NBL 630. How to Build a Brain. 3 Hours.

It starts with a dividing glob of cells. Not a single cell is any different, but with the right application of magic and a few short days, not only is your stomach a stomach, and your brain a brain, but all of the different kinds of cells of your brain needs to function are in the perfect spot and at the perfect number. Every neuron finds its exact target even when that means having to read a complex set of signals that change every few micrometers. Add to this exquisite complexity, all the things that can go wrong from genetics to environmental exposures and it is truly amazing that neurodevelopment happens successfully as often as it does. This course will explore the "magic" that is the development of the nervous system. Students will understand the complex cellular and molecular mechanisms at play to form a functional brain and explore where problems can occur to cause the most common neurodevelopmental disorders.

NBL 633. Diseases of the Nervous System. 3 Hours.

Molecular mechanisms and treatments for neurological, psychiatric, and injury based disorders and diseases of the nervous system. Topics include neurodevelopmental disorders (including intellectual disability and autism spectrum disorders), neurological disorders (including neurodegenerative and demyelinating disease), neuropsychiatric disorders (including depression disorders and schizophrenia), and injury to the nervous system (including stroke and traumatic brain and spinal cord injury).

NBL 634. Mechanisms of Memory. 3 Hours.

Molecular, cellular, systems and medical components of neuroscience, with an emphasis on cognition and cognitive disorders. Covers topics ranging from genes and molecules to human behavior, using cognitive function and clinical cognitive disorders as the unifying theme, with a focus on learning and memory and disorders of these processes.

NBL 655. Cellular & Molecular Neuroscience. 3 Hours.

Introduction to the cellular and molecular biology, biochemistry, biophysics, genetics and function of the mammalian nervous system. This course will emphasize the development, anatomy, cellular and molecular biology and biochemistry of neurons and glial cells, and introduce electrical, biophysical and chemical signaling within and across neurons.

NBL 656. From Systems to Cog Neuro. 3 Hours.

Introduction to the cellular and molecular biology, biochemistry, biophysics, genetics and function of the mammalian nervous system. This course will emphasize mechanisms of synaptic transmission, sensory systems, neuropharmacology, and synaptic plasticity; and introduce the molecular basis of diseases and disorders of the central and peripheral nervous systems.

NBL 698. Research Practice in Neurobiology. 1-6 Hour.

Project or research activity supervised by faculty.

NBL 700. Introduction to Cellular and Molecular Neurobiology. 3 Hours.

Topics in Neurobiology.

NBL 703. Neurobiology Seminar Series. 1 Hour.

Current research topics in neurobiology presented by visiting scholars and campus faculty.

NBL 707. Cognition & Cognitive Disorder. 1 Hour.**NBL 711. Medical Neuroscience. 5 Hours.****NBL 720. Membrane Excitability Biophysics. 3 Hours.**

The course will consist of 7 topics covered over 8 weeks (including course orientation): Properties of lipid bilayers, Ions in solution, Ion channel permeability and selectivity, Ligand-dependent channel gating, G-protein-coupled receptor kinetics, Transporters and Pumps, and Voltage-dependent channel gating. For each topic a faculty member will present an overview lecture and students will present a single mini-lecture on a more focused concept within the topic. The mini-lecture will be based on published literature and should be discussed before presentation with the topic leader. It should be a formal PowerPoint lecture lasting a maximum of 20 min.

NBL 723. Experimental Design. 1 Hour.

In depth and specialized training for our Roadmap Scholars in hypothesis development, experimental design and scientific writing. During this course, Roadmap Scholars will develop an NRSA, or similar, grant proposal.

NBL 725. Seminar Practice in Cellular and Molecular Neuroscience. 1 Hour.

The course will provide guidance and practice in the presentation of research seminars. It will also provide a forum for students to become actively involved in listening to seminar presentations and participating in speaker questioning. Once during the course each student will present a 50 minute seminar describing his/her current research, during which the other students and participating faculty will ask questions and provide comments and suggestions. Following the presentation the student will receive a constructive critique from the faculty.

NBL 729. Mechanisms of Signal Transduction. 1-3 Hour.**NBL 730. Neurobiology of Disease. 3 Hours.**

Major advances have been made in understanding diseases of the nervous system at a cellular and molecular level. Several new findings have had therapeutic implications and have resulted in the development of novel drugs or new disease management strategies. This course intends to review the most common brain and CNS disorders. It will offer a brief clinical introduction to the disease, but will emphasize reviewing current knowledge of the disease at a cellular and molecular level. The course will be taught by several UAB professors who have active research programs directed at studying nervous system diseases. The course is designed for advanced graduate and medical students who have a good neurobiology background with NEUR702/NBL750/NBL7.

NBL 735. Statistics for Biomedical Science. 3 Hours.**NBL 740. Mechanisms of Memory. 4 Hours.**

This course integrates the molecular, cellular, systems, and medical components of the core curriculum with an emphasis on cognition and cognitive disorders. Thus, the course covers topics ranging from genes and molecules to human behavior, using cognitive function and clinical cognitive disorders as the unifying theme, with a focus on learning and memory and disorders of these processes.

NBL 741. Writing and Presenting. 1 Hour.

Roadmap Scholars will be expected to attend and present posters or talks describing their research at international meetings, such as the Society for Neuroscience annual meeting. We will develop a course to assist the students in writing their abstracts, as well as designing their presentation for the meeting. This course will assist the Neuroscience Roadmap Scholars in developing their presentation skills as neuroscientists.

NBL 743. Methods in Neuroimaging. 3 Hours.

Cognitive neuroscience research has provided valuable insights into the workings of the human brain. The techniques used in cognitive neuroscience span from postmortem brain studies to neuroimaging studies. The ability to perform neuroimaging studies on awake human individuals engaged in cognitive, social, sensory, and motor tasks has produced a conceptual revolution in the study of human cognition. This course will comprehensively examine the methods and techniques in neuroimaging with the primary goal of building fundamental knowledge in the concepts and techniques of neuroimaging. By the end of the course, students will have gained basic knowledge in the field and will be able to read and critically assess scientific journal articles that make use of a variety of neuroimaging methods. The secondary and implicit goal of this course is to create and nurture, in students, a genuine interest in neuroscience and neuroimaging. The course will explore techniques, such as single and multi cell recordings, deep brain stimulation, electroencephalography, functional magnetic resonance imaging, and diffusion tensor imaging. This course will be an apt venue for graduate students interested in neuroscience research to build a platform for continuing studies.

NBL 745. Professional Development Course. 1 Hour.

Today's researchers, scientists, and academics face an increasingly competitive world. We will create a professional development course for our UAB Neuroscience Roadmap Scholars to provide support for their aspiration to become independent and successful neuroscientists.

NBL 752. Developmental Neuroscience. 3 Hours.

The course will utilize the scientific literature and faculty lectures to cover a broad range of topics related to the mechanisms of building a brain. The topics covered range from neural induction in early development, to axonal guidance and synapse formation, to neuro-gial interactions in the adult nervous system. Grades will be based on two exams and student participation in class discussions.

NBL 755. Mind/Brain. 3 Hours.**NBL 758. Synaptic Dynamics. 3 Hours.**

A student-driven discussion of the molecular and physiological properties of synapses, this course explores the molecular physiology underlying the control of neurotransmitter release and the postsynaptic response. Quantal theories of synaptic transmission will be discussed with respect to anatomical and physiological differences between central synapses and the neuromuscular junction. Synaptic plasticity mechanisms will also be discussed.

NBL 770. Glial Biology in Medicine. 3 Hours.

This course will cover the role of astrocytes, oligodendrocytes and microglia in both the normal development and function of the nervous system, and also their role in injury and disease. Presentations will be student led, with the assistance of the faculty.

Prerequisites: NBL 700 [Min Grade: C] or CMB 754 [Min Grade: C] or NBL 712 [Min Grade: C]

NBL 771. Innovative Techniques, Methods and Models in Neuroscience. 1 Hour.

This is a Journal Club style course that will consist of topics related to innovative methods in neuroscience. Students will read and discuss papers on groundbreaking techniques, such as CRISPR/Cas9 systems, optogenetics, CLARITY, flow cytometry and DREADDs. Each week one student will be responsible for presenting the seminal paper discussing the novel technique, providing advantages, disadvantages and limitations of the technique. The class as a whole will then discuss a paper in which the novel technique was applied. The goal of this course is to equip the next generation of neuroscientists to understand the next generation of neuroscience techniques. **Class Assignments and Preparation:** All students are required to read the assigned manuscript and be prepared to discuss the method and data presented in the manuscript, as well as potential limitations/pitfalls of the approach considered.

NBL 772. Special Topics in Neurobiology II. 3 Hours.

This course will draw on the cutting edge knowledge, expertise and information provided by the spring Neurobiology Seminar program. There will be two one-hour meetings per week. Prior to each seminar, students will discuss a review article pertinent to the seminar topic, and a recent research paper from the speaker's lab. Following the seminar, new findings presented will be discussed. Students will also have the opportunity (optional) of meeting the speaker at lunch prior to the seminar or at a post-presentation reception.

NBL 773. Molecular Brain Aging JC. 1 Hour.

Across the body, age-related protein expression changes underlie the aging process. This journal club focuses on understanding normal brain aging at the cell and molecular level. We will discuss papers that show how both central and peripheral protein expression differences effect cellular function of brain to promote age-related change.

NBL 775. Special Topics in Neurobiology III. 1 Hour.

The aging process is amazing. One person could choose to not exercise, eat fatty foods with abandon, and engage in other risky behaviors but still live to 100 relatively disease free. Meanwhile another develops dementia in their 70s after living a life doing all the “right” things for their body. Often in our desire to prevent and treat disease, we do not spend time studying normal aging process, and thus we don’t understand the system we are working within. To effectively target disease requires a thorough understanding not only of disease mechanism but also of how the brain changes during aging. Even when the cognitive aging process does not directly result in development of disease, the changes that occur effect quality of life and could be targeted for intervention. This journal club will focus on exploring papers investigating how the aging process impacts the brain.

NBL 779. Journal Club Topics. 1 Hour.

Journal Club Topics.

NBL 780. Selected Topics in Neurobiology I. 3 Hours.

This course covers different topics that have to do with Neurobiology.

NBL 781. Selected Topics in Neurobiology II. 1 Hour.

This course covers different topics that have to do with Neurobiology.

NBL 782. Neuroimaging Journal Club. 1-2 Hour.

The Neuroimaging Journal Club was created to encourage the discussion of papers and research related to brain imaging. Modalities discussed including but not limited to magnetic resonance imaging (MRI), functional magnetic resonance imaging (fMRI), diffusion tensor imaging (DTI), magnetic resonance spectroscopy (MRS), and electroencephalography (EEG).

NBL 784. Synaptic Transmission and Ion Channel Journal Club. 1 Hour.

The Synaptic Transmission & Ion Channels Journal Club provides a forum for discussion and analysis of papers related to electrophysiology of neurons and astrocytes at the level of synapses and circuits. It is focused primarily on electrophysiological methods.

NBL 785. Neurobiology Journal Club-Synaptic Plasticity. 1 Hour.**NBL 786. Cell Death Mech Journal Club. 1 Hour.**

Discussion and critical evaluation of seminal or current papers on a broad topic of cell death mechanisms in health and diseases, with special emphasis on autophagic mechanisms impact on cell death.

NBL 788. Biology of Glial Cells Journal Club. 1 Hour.

This journal club covers contemporary primary articles on the biology of glial support cells, their role in normal brain function and Neurological disease.

NBL 789. Neurobiology Journal Club. 1 Hour.**NBL 791. Developing Critical Thinking and Analytical Skills. 1 Hour.**

One of the key skills that every graduate student needs is the ability to think critically and to analyze data. Many graduate students have not been instructed in how to read the scientific literature, so NBL791 will include sessions for the Neuroscience Roadmap Scholars on how to read and critique a scientific paper. We will select examples of well-constructed journal articles and help the students to learn how to understand, interpret, and evaluate the findings.

NBL 792. Neuro Lab Bench. 3 Hours.

This course is about preparing students in work pertaining to the preparation of PhD candidates in the neurosciences for collecting data from the nervous system: 3 credits. No prerequisites required. It is expected that the student has access to and familiarity with computers. Books: Lab Math, A handbook of Measurements, Calculations, and other Quantification Skills for Use at the Bench by Dany Spencer Adams.

NBL 798. Non-Dissertation Research in Neurobiology. 1-12 Hour.

Research hours in the lab.

NBL 799. Dissertation Research in Neurobiology. 1-12 Hour.

Research hours in the lab.

Prerequisites: GAC Z

NCA-Nursing-Critical Care

NCA 616. Diagnostic and Therapeutic Procedures for Advanced Acute Care Nursing Practice. 2 Hours.

This course is designed to provide the student with opportunities to obtain advanced knowledge of and to learn advanced clinical skills in diagnostic or therapeutic procedures related to the role of the advanced practice nurse in acute and critical care. Specific content and skills in this course will focus on procedures associated with diagnostic and evaluative monitoring of acutely or critically ill patient. COREQ: NCA 621.

NCA 617. Diagnostic and Therapeutic Procedures II for Advanced Nursing Practice. 1 Hour.

This course is designed to provide the student with opportunities to obtain advanced knowledge of and to learn advanced clinical skills in diagnostic or therapeutic procedures related to the role of the advanced practice nurse in acute and critical care. Specific content and skills in this course will focus on therapeutic procedures commonly used in the acute and critical care setting. COREQ: NCA 622.

Prerequisites: NCA 616 [Min Grade: B]

NCA 618L. Focus on Advanced Nursing Practice Specialization. 3 Hours.

The purpose of this course will be the study of specialty track specific topics. The focus of the course will be on providing foundational materials for specialized areas of advanced nursing practice. Emphasis is on exploring specific advanced nursing practice competencies.

Prerequisites: (NUR 606 [Min Grade: B] or NUR 606 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B])

NCA 621. Adult Gerontology Acute Care Nursing Practice I. 4-5 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of this course is to prepare the student to implement the role of the Advanced Practice Nurse. The emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to the emancipated minor (age 13 and older), adult, and geriatric populations.

Prerequisites: (NUR 610 [Min Grade: B] or NUR 610 [Min Grade: B]) and (NUR 614 [Min Grade: B] or NUR 614L [Min Grade: B])

NCA 622. Adult Gerontology Acute Care Nursing Practice II. 3-4 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness of the emancipated minor (age 13 and older), adult, and geriatric populations. The focus of this course is on health promotion and disease prevention and management strategies from inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care of the emancipated minor (age 13 and older), adult, and geriatric populations.

Prerequisites: (NCA 621 [Min Grade: B] or NCA 621 [Min Grade: B]) and (NCA 685L [Min Grade: P] or NCA 685L [Min Grade: P])

NCA 623. Adult Gerontology Acute Care Nursing Practice III. 3-5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care to the emancipated minor (age 13 and older), adult, and geriatric populations. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: (NCA 622 [Min Grade: B] or NCA 622 [Min Grade: B]) and (NCA 686L [Min Grade: P] or NCS 686L [Min Grade: P])

NCA 685L. Adult Gerontology Acute Care Nursing: Practicum I. 1-3 Hour.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to the emancipated minor (age 13 and older), adult, and geriatric populations. The focus of this course is on the delivery of health care services to the emancipated minor (age 13 and older), adult, and geriatric populations. The emphasis of this course is on promoting the progression of competence within the Advanced Practice Nursing role.

Prerequisites: (NUR 610 [Min Grade: B] or NUR 610 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B] or NUR 614 [Min Grade: B] or NUR 614 [Min Grade: B])

NCA 686L. Adult Gero Acute Care Nursing: Practicum II. 3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to the emancipated minor (age 13 and older), adult, and geriatric populations. The focus of this course is to provide the student with opportunities to integrate in depth diagnostic and management skills to provide care for the emancipated minor (age 13 or older), adult, and geriatric populations. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: (NCA 621 [Min Grade: B] or NCA 621 [Min Grade: B]) and (NCA 685L [Min Grade: P] or NCA 685L [Min Grade: P])

NCA 692L. Residency: Adult Gerontology Acute Care Nursing. 3-6 Hours.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to the emancipated minor (age 13 or older), adult, and geriatric population. The focus of this course is to evaluate progress toward achievement of professional competencies. The emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of the emancipated minor (age 13 or older), adult, and geriatric population.

Prerequisites: (NCA 622 [Min Grade: B] or NCA 622 [Min Grade: B]) and (NCA 686L [Min Grade: P] or NCA 686L [Min Grade: P])

NCA 721. Advanced Acute Adult-Gerontology Nursing I. 5 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of this course is to prepare the student to implement the role Doctor of Nursing Practice prepared Advanced Practice Nurse. The Emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to the emancipated minor (age 13 and older), adult, and geriatric populations.

Prerequisites: (NUR 614 [Min Grade: B] and NUR 614L [Min Grade: B]) and NCA 618L [Min Grade: P]

NCA 722. Advanced Acute Adult-Gerontology Nursing II. 4 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness for the emancipated minor (age 13 and older), adult, and geriatric populations in the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse. The focus of this course is on the health promotion and disease prevention and the management of strategies from inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care of the emancipated minor (age 13 and older), adult, and geriatric populations.

Prerequisites: NCA 721 [Min Grade: B]

NCA 723. Advanced Acute Adult-Gerontology Nursing III. 5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care as a Doctor of Nursing Practice prepared Advanced Practice Nurse to emancipated minor (age 13 and older), adult, and geriatric populations. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: NCA 722 [Min Grade: B] and NCA 786L [Min Grade: P]

NCA 785L. Practicum I: Acute Adult-Gerontology Nurse Practitioner. 3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to the emancipated minor (age 13 and older), adult, and geriatric populations. The focus of this course is on the delivery of health care services to the emancipated minor (age 13 and older), adult, and geriatric populations. The emphasis of this course is on promoting the progression of competence within the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse.

NCA 786L. Practicum II: Acute Adult-Gerontology Nurse Practitioner. 3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to the emancipated minor (age 13 and older), adult, and geriatric populations. The focus of this course is to provide the student with opportunities to integrate in-depth diagnostic, management, and leadership skills in the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse to provide care for the emancipated minor (age 13 and older), adult, and geriatric populations. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: NCA 721 [Min Grade: B] and NCA 785L [Min Grade: P]

NCA 792L. Residency: Acute Adult-Gerontology Nurse Practitioner. 4 Hours.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to the emancipated minor (age 13 and older), adult, and geriatric populations. The focus of this course is to evaluate progress toward achievement of competencies of the Doctor of Nursing Practice prepared Advanced Practice Nurse. The Emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of the emancipated minor (age 13 and older), adult, and geriatric populations.

Prerequisites: NCA 722 [Min Grade: B] and NCA 786L [Min Grade: P]

NCC-Nursing-Child/Adolescent

NCC 613. Acute & Continuing Care Pediatric Pharmacology. 1 Hour.

This course is a supplementary course for Acute and Continuing Care Nurse Practitioner students to provide them with information necessary to safely and competently prescribe medications for infants, children and adolescents. It complements the information provided in NUR 613 Pharmacology and Therapeutics but focuses on the unique physiologic and metabolic characteristics of this population.

NCC 618L. Focus on Advanced Nursing Practice Specialization. 3 Hours.

The purpose of this course will be the study of specialty track specific topics. The focus of the course will be on providing foundational materials for specialized areas of advanced nursing practice. Emphasis is on exploring specific advanced nursing practice competencies.

Prerequisites: (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B])

NCC 621. Advanced Pediatric Nursing I - Acute Care. 4 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of this course is to prepare the student to implement the role of the Advanced Practice Nurse. The emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to children, adolescents and their families.

NCC 622. Advanced Pediatric Nursing II - Acute Care. 2-4 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness of children, adolescents and their families. The focus of this course is on health promotion and disease prevention and management strategies from inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care to children, adolescents and their families.

Prerequisites: (NCC 621 [Min Grade: B] or NCC 621 [Min Grade: B]) and (NCC 685L [Min Grade: P] or NCC 685L [Min Grade: P])

NCC 623. Advanced Pediatric Nursing III - Acute Care. 5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care to pediatric patients and their families. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: (NCC 622 [Min Grade: B] or NCC 622 [Min Grade: B]) and (NCC 686L [Min Grade: P] or NCC 686L [Min Grade: P])

NCC 685L. Clinical Practicum I: Advanced Pediatric Nursing - Acute Care. 3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to children, adolescents and their families. The focus of this course is on the delivery of health care services to children, adolescents and their families. The emphasis of this course is on promoting the progression of competence within the Advanced Practice Nursing role.

NCC 686L. Clinical Practicum II: Advanced Pediatric Nursing - Acute Care. 3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to children, adolescents and their families. The focus of this course is to provide the student with opportunities to integrate in depth diagnostic and management skills to provide care for children, adolescents and their families. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: (NCC 621 [Min Grade: B] or NCC 621 [Min Grade: B]) and (NCC 685L [Min Grade: P] or NCC 685L [Min Grade: P])

NCC 688L. Child/Adolescent Acute and Continuing Care Nurse Practitioner Practicum III. 2 Hours.

This course prepares the student in the Pediatric Nurse Practitioner role. The student develops the Pediatric NP role with patients/clients by providing pediatric health care services to clients (i.e. individuals, families, groups) emphasizing the promotion of health and the prevention of disease throughout the course of clinical experiences over two or three academic terms. Further, the student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include common diseases and human responses to disease. It is anticipated that the student will be increasingly independent and skilled as each clinical experience progresses, allowing him/her to become more proficient and to contribute to the management of more complex health problems. The following elements are integrated into the course: critical thinking, professional presentations, research utilization, scientific integrity and ethics, human diversity and social issues. The advanced practice role emphasis in this course encompasses a trajectory of the nurse practitioner experience from novice to beginning expert, including interdisciplinary collaboration, coach, educator, consultant roles. Prerequisite: NCC 622 and NCC 686L. Corequisite: NCC 623.

Prerequisites: (NCC 622 [Min Grade: B] and NCC 686L [Min Grade: P]) or (NCC 622 [Min Grade: B] and NCC 686L [Min Grade: P])

NCC 692L. Clinical Practicum III: Advanced Pediatric Nursing - Acute Care - Residency. 4 Hours.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to pediatric patients and their families. The focus of this course is to evaluate progress toward achievement of professional competencies. The emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of pediatric patients and their families.

Prerequisites: (NCC 622 [Min Grade: B] or NCC 622 [Min Grade: B]) and (NCC 686L [Min Grade: P] or NCC 686L [Min Grade: P])

NCH-Nursing-Child Health

NCH 760. Child Health Theories and Concepts. 3 Hours.

This course will focus on selected theories and concepts related to child health, child health nursing and child health nursing education. Emphasis will be on the theoretical underpinnings of the theories and concepts, major theorists associated with the theories and concepts, measurement strategies and instruments, and implications for research, education, and practice.

NCH 761. Emerging Issues in Child-Health Nursing. 3 Hours.

This course will focus on emerging issues in child health, child health nursing and child health nursing education. Emphasis is on current thought, state of the science and research related to topics which affect the health and lives of infants, children, and adolescents. Pivotal MCH, public health resources and the latest research and information will be used to guide discussion.

NCL-Nursing-Clinical Nurse Leader

NCL 618L. Focus on Advanced Nursing Practice Specialization. 2 Hours.

The purpose of this course will be the study of specialty track specific topics. The focus of the course will be on providing foundational materials for specialized areas of advanced nursing practice. Emphasis is on exploring specific advanced nursing practice competencies.

Prerequisites: (NUR 606 [Min Grade: B] or NUR 606 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B])

NCL 620. Systems in Population-based Care I. 4 Hours.

This course is designed to provide the student with opportunities to integrate in-depth knowledge of theoretical and practical concepts required to measure and improve healthcare quality, outcomes and safety. The student will focus on 5 roles required for the beginning Clinical Nurse Leader: Clinician, Member of Profession, Interdisciplinary Healthcare Team Manager, Outcomes Manager and Lifelong Learner. The course explores theories of change, complexity, horizontal and lateral leadership, microsystems and decision-making and their relationship to nursing and the health care system. The following elements are integrated into this course: critical thinking, research, scholarly writing, scientific integrity, ethics, cultural diversity, and social issues.

NCL 621. Systems in Population-based Care II. 3 Hours.

This course is designed to provide the student with opportunities to develop additional knowledge of theoretical and practical concepts required to measure and improve healthcare quality, outcomes and safety. The student will focus on the four additional roles required for the beginning Clinical Nurse Leader: Information Manager, Systems Analyst/Risk Manager, Advocate, and Educator. The student will be expected to expand proficiency of previously learned Clinical Nurse Leader roles: Clinician, Member of a Profession, Team Manager, Outcomes Manager and Lifelong Learner. At the completion of this course the student will have explored all of the nine CNL roles as defined by the American Association of Colleges of Nursing's White Paper. The following elements are integrated into this course: critical thinking, research, scholarly writing, professional presentation, scientific integrity and ethics, cultural diversity, and social issues. Prerequisite: NCL 620 and NCL 685L. Corequisite: NCL 686L.

Prerequisites: NCL 620 [Min Grade: B] and NCL 685L [Min Grade: P] and (NUR 512 [Min Grade: B] or NUR 612 [Min Grade: B])

NCL 685L. CNL Practicum I. 2-3 Hours.

This course provides the student, at an introductory level, the opportunity to observe and apply in a clinical setting five of the nine CNL role functions: Clinician, Member of a Profession, Team Manager, Outcomes Manager and Lifelong Learner. The student will use these skills to focus on improving quality of care and patient safety. The student will be expected to utilize principals of critical thinking, evidence based research, scientific integrity and ethics, cultural diversity, and social issues to achieve above objectives. Prerequisite: NUR 600 and NUR 643. Corequisite: NCL 620.

Prerequisites: NUR 600 [Min Grade: C] and NUR 643 [Min Grade: C]

NCL 686L. CNL Practicum II. 2 Hours.

Building on the preceding practicum, this course provides the student the opportunity to observe and apply in a clinical setting the remaining four of the CNL role functions. This course will focus on the student developing the CNL roles of information manager, systems analyst/risk manager, advocate, and educator. The student will be expected to expand proficiency of the previous CNL roles of clinician, professional, interdisciplinary team manager, outcomes manager and lifelong learner. The student will use this knowledge and skill to evaluate, design and implement interventions to improve quality of care and patient safety. At the completion of this course the student will have explored all of the nine CNL roles as defined by the American Association of Colleges of Nursing's White Paper. Prerequisite: NCL 620 and NCL 685L. Corequisite: NCL 621.

Prerequisites: NCL 620 [Min Grade: B] and NCL 685L [Min Grade: B]

NCL 692L. CNL Capstone Practicum. 5 Hours.

This course provides the student the opportunity to integrate and apply in an intensive clinical rotation the nine CNL roles. The student will be expected to expand their proficiency in the roles of advocate, professional, team manager, information manager, systems analyst/risk manager, clinician, outcomes manager, educator and lifelong learner. The student will use these skills to design, implement, evaluate, and disseminate plans of care to improve quality and patient safety. At the completion of this course the student will demonstrate, at novice level, the nine CNL roles as defined by the American Association of Colleges of Nursing's White Paper.

Prerequisites: NCL 620 [Min Grade: B] and NCL 685L [Min Grade: P]

NCS-Nursing-Clinical Specialty

NCS 616. Foundations of Clinical Nurse Specialist Practice. 1 Hour.

This graduate speciality course is designed to give the Clinical Nurse Specialist student the theoretical underpinnings of the role of the CNS. Parameters of Clinical Nurse practice will be explored through discussion and in-class simulations of practice dilemmas. Course work will include information on the background of the Clinical Nurse Specialist, information on the logistics of advanced practice as it relates to the CNS role, and information on devising assessment strategies for practice problems. This course includes integration of critical thinking, scholarly writing, human diversity, ethics, health care economics and social issues.

NCS 617. Phenomenon of Concern to Advanced Practice Nurses. 1 Hour.

This graduate specialty course focuses on phenomena of concern to advanced practice nurses and is designed to give the Clinical Nurse Specialist student the theoretical underpinnings of selected non-disease based causes of illness. Clinical/didactic information regarding symptoms, functional problems, and risk behaviors will be included to assist the student operationalize the role of the CNS in the patient/client sphere of influence, the nurse/nursing service sphere of influence, and the organization sphere of influence.

NCS 685L. Prac I: Clinical Specialization in Adult Health Nursing. 1,2 Hour.

This course is the first clinical practicum in the Clinical Nurse Specialist option. The student is provided the opportunity to develop the CNS role with a focus on the care of non-disease based etiologies of symptoms, functional problems, and risk behaviors among patients/ clients within a defined specialty. This practicum may include experiences in outpatient or inpatient settings. The student is expected to design evidence-based interventions for acute and/or chronic health problems commonly occurring within a defined specialty area. The following elements are integrated into this course: critical thinking, health promotion and disease prevention, research, ethics, cultural diversity, and social issues. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NUR 614L. Corequisite: NCA 621.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B] or NUR 614 [Min Grade: B] or NUR 614 [Min Grade: B])

NCS 686L. Practicum II: Clinical Specialization in Adult Health Nursing. 1-2 Hour.

This course further prepares the student in the Clinical Nurse Specialist role. The student continues to apply knowledge and current research findings to the management of selected acute and chronic health problems commonly occurring in the target population. While focusing on the care of acutely ill clients, the student develops the CNS role with nursing personnel through identifying and defining problems and opportunities; identifying and articulating factors contributing to resource management needs and outcomes; developing innovative solutions; and evaluating the effect of solutions. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NCA 621 and NCS 685L. Corequisite: NCA 622.

Prerequisites: (NCS 685L [Min Grade: P] or NCS 685L [Min Grade: P]) and (NCA 621 [Min Grade: B] or NCA 621 [Min Grade: B])

NCS 687L. Practicum III: Clinical Specialization in Adult Health Nursing. 1-2 Hour.

This course further prepares the student in the Clinical Nurse Specialist role. The student continues to apply knowledge and current research findings to the management of selected acute and chronic health problems commonly occurring in the target population. While focusing on the care of acutely ill clients, the student develops the CNS role with nursing personnel through identifying and defining problems and opportunities; identifying and articulating factors contributing to resource management needs and outcomes; developing innovative solutions; and evaluating the effect of solutions. An Objective Structured Patient Experience held during this course will determine if the student can progress into 6 hours of the final residency course, NCA 692L. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NCS 686L. Corequisite: NCA 623.

Prerequisites: (NCA 622 [Min Grade: B] or NCA 622 [Min Grade: B]) and (NCS 686L [Min Grade: P] or NCS 686L [Min Grade: P])

NCS 692L. Residency in Clinical Specialization. 2-4 Hours.

This course is the culminating experience for the student to practice in the role of the CNS. This course emphasizes the application of previously learned theories and knowledge from nursing and other disciplines. The student will implement the role of the CNS to manage the health care of adult clients, teaching, nurses and clients, discussing employment issues and evaluating products for use in clinical practice. Students arrange their own clinical sites with assistance/approval from clinical faculty. A comprehensive examination is given during this residency course. Failure to pass the comprehensive examination will delay graduation. Prerequisite: NCA 623 and NCA 687L.

Prerequisites: (NCA 623 [Min Grade: B] and NCS 687L [Min Grade: P]) or (NCA 623 [Min Grade: B] and NCS 687L [Min Grade: P])

NCV-Nursing-Cardiovascular

NCV 630. Advanced Cardiovascular Nursing. 3 Hours.

This course is designed to provide a conceptual base for student to diagnose and treat human responses to actual and/or potential cardiovascular health problems with concomitant biophysical, psychological, sociocultural and spiritual environmental variables. Emphasis is placed on patients with cardiovascular health problems and the selection and utilization of concepts and theories relevant to advanced cardiovascular nursing. Political influences on cardiovascular health are explored. May be taken as an elective.

NCV 631. Electrocardiography for Advanced Nursing Practice. 3 Hours.

Concepts presented in the course include the biophysical, psychological, developmental, and adaptive nature of the human being as it relates to the formation, function, and regulation of the cardiac electrical system. Concepts of cardiovascular adaptation to biophysical and psychosocial variables are emphasized. Explanations for electrophysiologic and electrocardiographic phenomena are offered, as are nursing and medical interventions for cardiac electrical abnormalities. Content focuses on the concepts of electrophysiology and electrocardiography, interpreting cardiac electrical abnormalities, and analyzing the various medical and nursing therapies for the electrical abnormalities and their applications to the practice of advanced nursing. May be taken as an elective.

NDP-Nursing-Dual Pediatric

NDP 613. Dual Option Pediatric Pharmacology. 2 Hours.

This course is a supplement to the current pharmacology course, NUR 613, required of all MSN Advanced Practice students. The content is specific to infants, children and adolescents with their unique physiologic and metabolic characteristics. Pre or corequisite: NUR 613,.

Prerequisites: NUR 613 [Min Grade: B](Can be taken Concurrently) or NUR 613 [Min Grade: B](Can be taken Concurrently)

NDP 618L. Focus on Advanced Nursing Practice Specialization. 3 Hours.

The purpose of this course will be the study of specialty track specific topics. The focus of the course will be on providing foundational materials for specialized areas of advanced nursing practice. Emphasis is on exploring specific advanced nursing practice competencies.

Prerequisites: (NUR 606 [Min Grade: B] or NUR 606 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B])

NDP 621. Dual Option Pediatric I. 4-5 Hours.

This course provides a theoretical and practical base for students to diagnose and manage primary, acute, and continuing health problems of children and adolescents. Content includes management strategies from the domains of nursing, medicine, and pharmacological therapeutics, and emphasizes direct care to children, adolescents and their families. This course utilizes an on-line lecture/discussion and case study format to assist the student in the clinical assessment and decision-making to provide direct patient care to children, adolescents and their families within the scope of practice of primary and acute care child/adolescent nurse practitioners. The student is expected to apply the concepts and theories discussed in class to the care of children and adolescents during the clinical course taken in conjunction with this course. The following elements are integrated into this course: critical thinking, crisis management, health promotion and disease prevention, research, ethics, cultural diversity, cultural competence, and social issues.

Prerequisites: NUR 613 [Min Grade: B](Can be taken Concurrently) or NUR 613 [Min Grade: B](Can be taken Concurrently) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B])

NDP 622. Dual Option Pediatric II. 3-5 Hours.

This course is designed to provide the students with opportunities to integrate in-depth knowledge of management of acute and continuing health care problems, family crises, case management, education and consultation roles and skills and procedures required by children, adolescents and their families who experience chronic, complex and life-threatening health problems. Students will have the opportunity to develop strategies to present information about acute and continuing health care problems to peers and colleagues. The following elements are incorporated into the course: critical thinking, crisis management, health promotion and disease prevention, scientific integrity and ethics, human diversity, cultural competence, social issues and professional role development.

Prerequisites: (NDP 621 [Min Grade: B] or NDP 621 [Min Grade: B]) and (NDP 685L [Min Grade: P] or NDP 685L [Min Grade: P])

NDP 623. Dual Option Pediatric III. 4-5 Hours.

This course provides a theoretical and practical base for students to diagnose and manage chronic health problems of children and adolescents. Additionally, students will be provided with opportunities to integrate in-depth knowledge of management of chronic health care problems, family crises, case management, education and consultation roles and skills and procedures required by children, adolescents and their families who experience chronic, complex health problems. Content includes management strategies from the domains of nursing, medicine, and pharmacological therapeutics, and emphasizes direct care to children, adolescents and their families. This course utilizes an on-line lecture/discussion and case study format to assist the student in the clinical assessment and decision-making to provide direct patient care to children, adolescents and their families within the scope of practice of primary and acute care pediatric nurse practitioners. Students will have the opportunity to develop strategies to present information about chronic health care problems to peers and colleagues. The student is expected to apply the concepts and theories discussed in class to the care of children and adolescents during the clinical course taken in conjunction with this course. The following elements are integrated into this course: critical thinking, crisis management, health promotion and disease prevention, research, ethics, cultural diversity, cultural competence, and social issues.

Prerequisites: (NDP 622 [Min Grade: B] or NDP 622 [Min Grade: B]) and (NDP 686L [Min Grade: P] or NDP 686L [Min Grade: P])

NDP 624. Dual Option Pediatric IV. 3-5 Hours.

This course provides a theoretical and practical base for students to diagnose and manage critical illnesses in children and adolescents. Additionally, students will be provided with opportunities to integrate in-depth knowledge of management of critical health care problems, family crises, case management, education and consultation roles and skills and procedures required by children, adolescents and their families who experience critical and complex health problems. Content includes management strategies from the domains of nursing, medicine, and pharmacological therapeutics, and emphasizes direct care to children, adolescents and their families. This course utilizes an on-line lecture/discussion and case study format to assist the student in the clinical assessment and decision-making to provide direct patient care to children, adolescents and their families within the scope of practice of primary and acute care pediatric nurse practitioners. Students will have the opportunity to develop strategies to present information about critical health care problems to peers and colleagues. The student is expected to apply the concepts and theories discussed in class to the care of children and adolescents during the clinical course taken in conjunction with this course. The following elements are integrated into this course: critical thinking, crisis management, health promotion and disease prevention, research, ethics, cultural diversity, cultural competence, and social issues.

Prerequisites: NDP 623 [Min Grade: B] and NDP 687L [Min Grade: P]

NDP 625. Advanced Dual Option Pediatric Nurse Practitioner. 2 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care to primary and acute care pediatric patients and their families. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: NCC 622 [Min Grade: C] and NCC 686L [Min Grade: C]

NDP 685L. Dual Option Pediatric Nurse Practitioner Practicum I. 3 Hours.

This course prepares the student in the Dual Option Pediatric Nurse Practitioner role. The student develops the NP role with patients/clients by providing health care to individual children, adolescents, families, and groups at any point of the continuum of health statuses in acute and continuing care settings. The student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include acute and chronic health problems and human responses to disease in children, adolescents and their families. The following elements are integrated into the course: critical thinking, professional presentations, research utilization, scientific integrity and ethics, human diversity, cultural sensitivity and social issues. The advanced practice role emphasis in this course provides experiences for the developing Dual Option Pediatric Nurse Practitioner including interdisciplinary collaboration, case management, educator, and consultant roles.

NDP 686L. Dual Option Pediatric Nurse Practitioner Practicum II. 3 Hours.

This course prepares the student in the Pediatric Nurse Practitioner role. The student develops the Pediatric NP role with patients/clients by providing pediatric health care services to clients (Le. (i.e. individuals, families, groups) emphasizing the promotion of health and the prevention of disease throughout the course of clinical experiences over two or three academic terms. Further, the student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include common diseases and human responses to disease. It is anticipated that the student will be increasingly independent and skilled as each clinical experience progresses, allowing him/her to become more proficient and to contribute to the management of more complex health problems. The following elements are integrated into the course: critical thinking, professional presentations, research utilization, scientific integrity and ethics, human diversity and social issues. The advanced practice role emphasis in this course encompasses a trajectory of the nurse practitioner experience from novice to beginning expert, including interdisciplinary collaboration, coach, educator, consultant roles.

Prerequisites: (NDP 621 [Min Grade: B] or NDP 621 [Min Grade: B]) and (NDP 685L [Min Grade: P] or NDP 685L [Min Grade: P])

NDP 687L. Dual Option Pediatric Nurse Practitioner Practicum III. 3 Hours.

This course prepares the student in the Pediatric Nurse Practitioner role. The student develops the Pediatric NP role with patients/clients by providing pediatric health care services to clients (i.e. individuals, families, groups) emphasizing the promotion of health and the prevention of disease throughout the course of clinical experiences over two or three academic terms. Further, the student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include common diseases and human responses to disease. It is anticipated that the student will be increasingly independent and skilled as each clinical experience progresses, allowing him/her to become more proficient and to contribute to the management of more complex health problems. The following elements are integrated into the course: critical thinking, professional presentations, research utilization, scientific integrity and ethics, human diversity and social issues. The advanced practice role emphasis in this course encompasses a trajectory of the nurse practitioner experience from novice to beginning expert, including interdisciplinary collaboration, coach, educator, consultant roles.

Prerequisites: (NDP 622 [Min Grade: B] or NDP 622 [Min Grade: B]) and (NDP 686L [Min Grade: P] or NDP 686L [Min Grade: P])

NDP 688L. Dual Option Pediatric Nurse Practitioner Practicum III. 3 Hours.

NDP 688L prepares the student in the Dual Option Pediatric Nurse Practitioner role. The student develops the NP role with patients/clients by providing health care to individual children, adolescents, families, and groups at any point of the continuum of health statuses in acute and continuing care settings. The student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include acute and chronic health problems and human responses to disease in children, adolescents and their families. The following elements are integrated into the course: critical thinking, professional presentations, research utilization, scientific integrity and ethics, human diversity, cultural sensitivity and social issues. The advanced practice role emphasis in this course provides experiences for the developing Dual Option Pediatric Nurse Practitioner including interdisciplinary collaboration, case management, educator, and consultant roles.

Prerequisites: (NDP 621 [Min Grade: B] or NDP 621 [Min Grade: B]) and (NDP 685L [Min Grade: P] or NDP 685L [Min Grade: P]) and (NDP 622 [Min Grade: B] or NDP 622 [Min Grade: B]) and (NDP 686L [Min Grade: P] or NDP 686L [Min Grade: P]) and (NDP 623 [Min Grade: B] or NDP 623 [Min Grade: B]) and (NDP 687L [Min Grade: P] or NDP 687L [Min Grade: P])

NDP 692L. Residency: Dual Option Pediatric Nurse Practitioner. 4 Hours.

This course prepares the student in the Pediatric Nurse Practitioner role to be a beginning expert in the diagnosis and management of pediatric patient problems. In the residency, the student is expected to continue to grow toward becoming an independent practitioner, specializing in the care of children. The student further develops the pediatric NP role with patients/clients by providing pediatric health care services to clients (i.e. individuals, families, groups) emphasizing the promotion of health and the prevention of disease. Further, the student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include common diseases and human response to disease.

Prerequisites: (NCC 622 [Min Grade: B] or NCC 622 [Min Grade: B]) and (NCC 686L [Min Grade: P] or NCC 686L [Min Grade: P])

NFA-Nursing-RN First Assist

NFA 620. Surgical Techniques. 3 Hours.

This course will focus on the expanded functions unique to the RNFA role during operative and invasive procedures. The course includes the recommended content of the Core Curriculum for the RN First Assist and is designed to develop the beginning knowledge and skills needed for safe RNFA practice. Surgical practice and techniques such as sterile technique, positioning and draping, using instruments and medical devices, providing exposure, handling and cutting tissue, providing hemostasis, and suturing will be emphasized in a (hands on) laboratory experience. The course will be taught in a blended distance accessible format and on campus 4-5 day intensive session in an animal surgical laboratory. This format will enable each student to apply surgical principles and techniques to a swine surgical model. Students without operating room experience will be required to take the 4 credit hours (5 day intensive) and students with operating room experience will take 3 credit hours (4 day intensive). Admission to the ACNP/RNFA graduate program or RNFA post masters option required.

NFA 621. Advanced Perioperative Nursing I. 3 Hours.

This course prepares the advanced perioperative student to develop a theoretical knowledge base for advanced perioperative nursing. The course includes the recommended content of the Core Curriculum for the RN First Assist and is designed to develop the theoretical knowledge needed for safe RNFA practice. Content includes an in depth review of anatomy and physiology of surgical client, and prevention of injury. Knowledge of comprehensive perioperative nursing, which serve as the foundation for critical, technical, and clinical decision making in RNFA role at the advanced level. Selective literature, which evidences best practice strategies of the RNFA role and considerations of vulnerable populations requiring surgical interventions, will also be examined in selective surgical specialties. The following elements are integrated into the course: critical thinking, research utilization, ethics, human diversity, and social issues. The advanced perioperative practice role emphasis in this course continues the trajectory of the RNFA as a beginning expert and includes role components such as interdisciplinary collaborator, educator, and consultant. Admission to the ACNP/RNFA graduate program or RNFA post masters option required.

NFA 622. Advanced Perioperative Nursing I: Practicum. 1-3 Hour.

This course prepares the advanced perioperative student to function in the expanded role of first assistant to the surgeon. In this practicum, the student is expected to continue to grow toward becoming a competent advanced perioperative nurse, specializing in problems requiring surgical interventions and management and the full scope of RNFA practice. Further, the student continues to apply, knowledge and current research findings to the management of actual and potential health problems, which include common surgical diseases and human responses to disease. The following elements are integrated into the course: critical thinking, research utilization, scientific integrity and ethics, human diversity, and awareness of social and professional issues. The advanced perioperative practice role emphasis in this course continues the trajectory of the RNFA as a beginning expert and includes role components such as interdisciplinary collaborator, educator, and consultant. Prerequisite: NFA 620 and NFA 621.

Prerequisites: (NFA 620 [Min Grade: B] and NFA 621 [Min Grade: B]) or (NFA 620 [Min Grade: B] and NFA 621 [Min Grade: B])

NFH-Nursing-Family

NFH 618L. Focus on Advanced Nursing Practice Specialization. 3 Hours.

The purpose of this course will be the study of specialty track specific topics. The focus of the course will be on providing foundational materials for specialized areas of advanced nursing practice. Emphasis is on exploring specific advanced nursing practice competencies.

Prerequisites: (NUR 606 [Min Grade: B] or NUR 606 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B])

NFH 621. Family Nurse Practitioner I. 3-5 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of this course is to prepare the student to implement the role of the Advanced Practice Nurse. The emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to pediatric, adult and elderly populations.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B] or NUR 614 [Min Grade: B] or NUR 614 [Min Grade: B]) and NUR 610 [Min Grade: B]

NFH 622. Family Nurse Practitioner II. 3-4 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to pediatric, adult and elderly populations. The focus of this course is to provide the student with opportunities to integrate in depth diagnostic and management skills to provide care for pediatric, elderly and adult populations. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: (NFH 621 [Min Grade: B] or NFH 621 [Min Grade: B]) and (NFH 685L [Min Grade: P] or NFH 685L [Min Grade: P])

NFH 623. Family Nurse Practitioner III. 5 Hours.

This course is designed to provide the student with opportunities to integrate in-depth knowledge of health assessment and management skills to provide care for clients with commonly occurring chronic and complex health problems with diverse cultures over the life span. Students will also have the opportunity to develop strategies to market the nurse practitioner role, to create a specific practice position and to explore strategies to market their role in family health care. The following elements are integrated into the course: critical thinking, health promotion and disease prevention, scientific integrity and ethics, human diversity and social issues and professional role development.

Prerequisites: NFH 622 [Min Grade: B]

NFH 623L. Family Nurse Practitioner III. 5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care to pediatric, adult, and elderly populations. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: (NFH 622 [Min Grade: B] or NFH 622 [Min Grade: B]) and (NFH 686L [Min Grade: P] or NFH 686L [Min Grade: P])

NFH 685L. Practicum I: Family Nurse Practitioner. 3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to pediatric, adult and elderly populations. The focus of this course is on the delivery of health care services to pediatric, adult and elderly populations. The emphasis of this course is on promoting the progression of competence within the Advanced Practice Nursing role.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B] or NUR 614 [Min Grade: B] or NUR 614 [Min Grade: B])

NFH 686L. Practicum II: Family Nurse Practitioner. 3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to pediatric, adult and elderly populations. The focus of this course is to provide the student with opportunities to integrate in depth diagnostic and management skills to provide care for pediatric, adult and elderly populations. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: (NFH 621 [Min Grade: B] or NFH 621 [Min Grade: B]) and (NFH 685L [Min Grade: P] or NFH 685L [Min Grade: P])

NFH 692L. Residency: Family Nurse Practitioner. 3-6 Hours.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to pediatric, adult and elderly populations. The focus of this course is to evaluate progress toward achievement of professional competencies. The emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of pediatric, adult and elderly populations.

Prerequisites: (NFH 622 [Min Grade: B] or NFH 622 [Min Grade: B]) and (NFH 686L [Min Grade: P] or NFH 686L [Min Grade: P])

NFH 721. Advanced Family Nursing I. 5 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of the course is to prepare the student to implement the role Doctor of Nursing Practice prepared Advanced Practice Nurse. The emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to pediatric adult and elderly populations.

Prerequisites: NUR 612 [Min Grade: B] and NUR 613 [Min Grade: B] and (NUR 614 [Min Grade: B] or NUR 614L [Min Grade: B]) and NFH 618L [Min Grade: P]

NFH 722. Advanced Family Nursing II. 4 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness for pediatric, adult and elderly populations in the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse. The focus of this course is on the health promotion and disease prevention and the management of strategies form inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care of pediatric, adult and elderly populations.

Prerequisites: NFH 721 [Min Grade: B] and NFH 618L [Min Grade: P]

NFH 723. Advanced Family Nursing III. 5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course in on the utilization of complex models and systems of practice to deliver high quality evidence-based care as a Doctor of Nursing Practice prepared Advanced Practice Nurse to pediatric, adult and elderly populations. The emphasis of the course in on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: NFH 722 [Min Grade: B] and NFH 786L [Min Grade: P]

NFH 760. Family Health/Caregiving Across The Lifespan. 3 Hours.

The reciprocal relationship between family functioning and health is well known. The family plays an important and substantial role in the well-being of individuals and in turn, family relationships and functioning are significantly influenced by the health behaviors and status of family members. Families continue to be the major source of caregiving across the lifespan and a rapidly growing body of research speaks to the positive and negative correlates of family caregiving for persons with crisis, chronic or terminal health problems. The study of caregiving within the context of the family lifespan offers the student an opportunity to understand health and illness within a framework of human development, interaction, and adaptation, as well as cultural and gender norms.

NFH 761. Theory Development In Family Health And Caregiving. 3 Hours.

This is a survey course in which students develop skill in evaluating selected theories for their current or potential relevance to research on family health, individual health in the context of the family, and family caregiving processes in health and illness. Students become conversant with a range of family and caregiving theories toward the goal of assessing their relevance for further knowledge development in family health and caregiving processes. Students will evaluate whether empirical findings refute or support traditionally accepted or theoretically based knowledge; they will review empirical literature to draw conclusions regarding emerging theories, associated constructs and hypotheses; and they will propose testable theoretically-derived hypotheses and theoretically-driven family focused interventions aimed at altering health status of families.

NFH 762. Family Research Methods. 3 Hours.

This course provides the student with the opportunity to develop skill in the critical analysis and application of family research methods as a foundation for conducting family research. In this course, students analyze and apply research findings and acquire and apply the knowledge necessary to implement family research studies. Students examine the utilization of exploratory, descriptive, longitudinal, and experimental designs in family studies, apply techniques for strengthening designs and address instrumentation, sampling, data collection, and analysis issues particular to family research. Experience is gained in instrument evaluation and selection, decision-making regarding level of variable formation, model validation through multiple measurement, and selection of appropriate statistical tests to capture the complexity and dynamic nature of the family.

NFH 785L. Practicum I: Family Nurse Practitioner. 3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to pediatric, adult and elderly populations. The focus of this course is on the delivery of health care services to pediatric, adult, and elderly populations. The emphasis of this course is on promoting the progression of competence within the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse.

Prerequisites: (NUR 614 [Min Grade: B] or NUR 614L [Min Grade: B]) and NUR 612 [Min Grade: B] and NUR 613 [Min Grade: B]

NFH 786L. Practicum II: Family Nurse Practitioner. 3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to pediatric, adult, and elderly populations. The focus of this course is to provide the student with opportunities to integrate in-depth diagnostic, management, and leadership skills in the role of the Doctor of Nursing Practice prepared Advanced practice Nurse to provide care for pediatric, adult, and elderly populations. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: NFH 721 [Min Grade: B] and NFH 785L [Min Grade: P]

NFH 792L. Residency: Family Nurse Practitioner. 4 Hours.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to pediatric, adult, and elderly populations. The focus of this course is to evaluate progress toward achievement of competencies of the Doctor of Nursing Practice prepared Advanced Practice Nurse. The Emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of pediatric, adult, and elderly populations.

Prerequisites: NFH 722 [Min Grade: B] and NFH 786L [Min Grade: P]

NGN-Nursing-Gerontological

NGN 630. Advanced Practice Gerontology Nursing. 2 Hours.

This course is designed to provide students in all advanced practice nursing tracks with the ability to integrate knowledge of gerontology and geriatrics with other specialty knowledge concerning the management of health care of adults. The emphasis in the course is on providing students with the background to apply this knowledge with elders and their families.

NGN 631. Gerontology and Geriatrics for Advanced Nursing Practice. 3 Hours.

This course is designed to provide students with the opportunity to integrate knowledge of gerontology and geriatrics with previously acquired knowledge concerning the management of health care of adults. It is the required support course for students in the gerontological nurse practitioner option and may be taken as an elective by students in other options. In this course students acquire knowledge of gerontology and geriatrics that is relevant to the nursing and medical management of health care of elders. This knowledge is applied in the required clinical course.

NGN 632. Chronic Health Conditions for Advanced Nursing Practice. 3 Hours.

This is a required support course for students in the gerontological nurse practitioner option, and may be taken as an elective by students in other options. In this course students acquire knowledge of a variety of clinical topics that are relevant to the nursing and medical management of health care of persons with complex chronic disorders such as urinary/fecal incontinence, chronic wounds and psychiatric disorders. The course is designed to provide students with the opportunity to integrate knowledge of selected chronic conditions with previously acquired knowledge concerning the management of health care of patients.

NGN 685L. Practicum I: Gerontological Nurse Practitioner. 2 Hours.

This is the first of two gerontological practica courses for the dual adult/ Gerontological Nurse Practitioner specialty. In selected clinical settings students are expected to integrate the knowledge and competencies gained from foundation courses and didactic content to further develop the Gerontological Nurse Practitioner role. This course allows the student to develop the role by providing health care services to individuals, families, and groups, while emphasizing the promotion of health and prevention of disease. The student addresses the management of actual and potential health problems including common diseases and human responses to diseases. The following elements are integrated into the course: critical thinking, professional presentations, research utilization, scientific integrity and ethics, human diversity, and social issues. Prerequisite: NUR 614L. Corequisite: NAH 621.

Prerequisites: NUR 614L [Min Grade: B] or NUR 614 [Min Grade: B] or NUR 614 [Min Grade: B]

NGN 686L. Practicum II: Gerontological Nurse Practitioner. 2 Hours.

This is the second of two gerontological practica courses for the dual adult/ Gerontological Nurse Practitioner specialty. In selected clinical settings students are expected to integrate the knowledge and competencies gained from foundation courses and didactic content to further develop the Gerontological Nurse Practitioner role. This course allows the student to develop the role by providing health care services to individuals, families, and groups, while emphasizing the promotion of health and prevention of disease. It is anticipated that the student will be increasingly independent and skilled as the clinical experience progresses, allowing the student to contribute more toward the management of health problems. The advanced practice role emphasis in this course encompasses a trajectory of the nurse practitioner experience from novice to beginning expert, and includes role components such as interdisciplinary collaborator, coach, educator, and consultant. The following elements are integrated into the course: critical thinking, professional presentations, research utilization, scientific integrity and ethics, human diversity, and social issues. Prerequisite: NAH 621 and NGN 685L. Corequisite: NAH 622.

Prerequisites: (NAH 621 [Min Grade: B] and NAH 658L [Min Grade: P]) or (NAH 621 [Min Grade: B] and NAH 621 [Min Grade: P])

NGN 692L. Residency: Gerontological Nurse Practitioner. 1-4 Hour.

This course is the third of three clinical practicum courses and is designated as the culminating practical experience for Gerontology nurse practitioner students. This course encourages the student to apply knowledge and theories from the core courses as well as previous clinical and clinical support courses. A comprehensive examination is given during this residency course. Failure to pass the comprehensive examination will delay graduation. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NGN 686L.

Prerequisites: NAH 686L [Min Grade: P] or NAH 686L [Min Grade: P]

NGN 731. Advanced Practice Gerontological Nursing I. 3 Hours.

This course is designed to provide DNP students who are already adult, adult acute, and/or family nurse practitioners and who are delivering care to a majority of gerontological patients, with an advanced theoretical and empirical knowledge of aging. This level of specialized gerontological nursing knowledge is beyond what would be obtained in an acute, adult, or family nurse practitioner program. The content in NGN 731Q and NGN 732Q satisfies the ANCC didactic requirements for a secondary certification as a gerontological nurse practitioner under the alternative eligibility requirements. This course and NGN 732Q should be considered for students interesting in a secondary licensure and is not intended for initial licensure as an advanced practice gerontological nurse. Documentation of clinical hours required by the ANCC is incumbent upon the student, not the UASON. Questions concerning the alternative eligibility requirements may be addressed by course faculty or by the ANCC registrar.

NGN 732. Advanced Practice Gerontological Nursing II. 3 Hours.

This course is designed to provide DNP students who are already adult, adult acute, and/or family nurse practitioners and who are delivering care to a majority of gerontological patients, with an advanced theoretical and empirical knowledge of aging. This level of specialized gerontological nursing knowledge is beyond what would be obtained in an acute, adult, or family nurse practitioner program. The content in NGN 731Q and NGN 732Q satisfies the ANCC didactic requirements for a secondary certification as a gerontological nurse practitioner under the alternative eligibility requirements. This course and NGN 731Q should be considered for students interesting in a secondary licensure and is not intended for initial licensure as an advanced practice gerontological nurse. Documentation of clinical hours required by the ANCC is incumbent upon the student, not the UASON. Questions concerning the alternative eligibility requirements may be addressed by course faculty or by the ANCC registrar.

NHSA-Nursing-Health Administration

NHSA 616. Nursing Financial Management. 4 Hours.

Nurse leaders play an important role in managing the financial responsibilities for providing high quality care. This course explores health care economics and health care policy as it applies to access, costs, and quality, current and future mechanisms for financing health care services, and organization and unit level budgeting principles. Content will include creating, monitoring, and analyzing a budget, interpreting financial information, and capital budgeting. Corequisite: NHSA 617L.

NHSA 617L. Nursing Financial Management Practicum. 2-3 Hours.

This course provides a practical base for students to apply financial concepts in a health care organization. Students will work with healthcare administrators to create, monitor, and/or analyze budgets, examine revenue cycle for opportunities for improvement, and develop a business case for a new product or service. Students arrange their own clinical site(s) with assistance/approval from clinical faculty.

NHSA 618. Human Resource Management. 3 Hours.

This course provides a theoretical basis for students to learn and apply human resources and organizational concepts, theories, and behaviors. The course will facilitate the individual growth and development of the nurse leader. Content includes human resource management issues; recruitment and retention; staff development; roles clarification; leadership development and succession planning; teamwork and collaborative practice; conflict management; performance management; cultural competence and the work environment; personnel policies, standards, and laws; and decision making and governance models. Students will begin developing a professional portfolio. Successful completion of field experience is required.

NHSA 620. Nursing and Health Systems Administration I. 3 Hours.

This course provides a theoretical base for students to develop the role of nursing and health systems administrator at the unit level. Emphasis is placed on the development of the knowledge and skills necessary for implementing the management role. Students will develop specific administrative competencies to include the ability to: understand self and others, communicate effectively, develop subordinates, manage conflict, monitor personal and individual performance, manage projects, delegate effectively, manage time and stress, foster a productive work environment, live with change, and build and maintain a power base. Content builds on the theoretical foundations of leadership, organizational behavior, and capital management applied to the structure of nursing and health organizations, patient care delivery and classification systems, staffing, budgeting, quality standards and improvement, risk management, leadership development, strategic planning, and change management. The following elements are integrated into this course: critical thinking, research, scholarly writing, professional presentation, scientific integrity and ethics, cultural diversity, and social issues. The role emphasis of this course is that of beginning nurse manager. Prereq: Admission to the Nursing and Health Systems Administration option.

Prerequisites: NUR 601 [Min Grade: B] and (MBA 609 [Min Grade: C] or HCO 615 [Min Grade: C]) and (MBA 632 [Min Grade: C] or HA 631 [Min Grade: C]) and NUR 602 [Min Grade: C]

NHSA 621. Nursing and Health Systems Administration II. 2,4 Hours.

This course provides a theoretical and experiential base for students to develop and implement the role of nursing and health systems administrator at the division/ department level. Emphasis is placed on the synthesis of knowledge and skills from the disciplines of nursing and business management that is necessary to apply when assuming the middle management role. Students will develop specific administrative competencies to include the ability to manage collective performance, design and organize projects, negotiate agreement and commitment, and create change. Content includes analysis of administrative roles and functions, strategies for coordination of quality care within and across departments and systems, strategies for service as an expert resource, business planning, cost and productivity, redesigning practice to achieve goals, models of practice and service delivery, utilization of consultants, managing product/service lines, and utilization of research for improving nursing processes and patient care outcomes. The following elements are integrated into this course: critical thinking, research, scholarly writing, professional presentation, scientific integrity and ethics, cultural diversity, and social issues. The role emphasis of this course is that of mid-level manager. Prerequisite: NHSA 620. Corequisite: NHSA 685L.

Prerequisites: NHSA 620 [Min Grade: B]

NHSA 622. Nursing and Health Systems Administration III. 2 Hours.

This course continues to provide a theoretical and experiential base for students to develop and implement the role of nursing and health systems administrator at the executive level. Through seminar discussion and with an executive level preceptor, emphasis is placed on the application, synthesis, and integration of knowledge and skills necessary for effective and efficient management of human and material resources, while incorporating the ethical, social, legal, financial, and economic aspects of health care delivery, health policy, and regulatory requirements for both staff and the organization. Students will develop specific administrative competencies to include the ability to manage organizational performance, manage across functions, present ideas, think creatively, and develop a vision, mission, strategic plan, and set goals. Content includes health care regulation and policy, practice plans and financing, internal and external environmental influences on nursing and health care systems, information system development and management, quality improvement, and managed care systems. The following elements are integrated into this course: critical thinking, research, scholarly writing, professional presentation, scientific integrity and ethics, cultural diversity, and social issues. The role emphasis of this course is that of chief nurse executive. Prerequisite: NHSA 621 and NHSA 685L. Corequisite: NHSA 686L.

Prerequisites: NHSA 621 [Min Grade: B]

NHSA 630. Health Services Marketing Management. 3 Hours.

The redesign of healthcare organizations has mandated larger spans of control for nurse managers with expertise and leadership skills in organizational, human resource, and financial management. The need for the integration of clinical skills with business know-how has been fueled by a more diverse work force with direct responsibility for non-nursing staff, an increased emphasis on customer service and risk management, and the ability to design and implement care delivery models that extend beyond the walls of the organization into the community and its stakeholders. Health systems across the country (and internationally), including home health agencies, managed care entities, public and private sector hospitals, long-term and ambulatory care facilities, and insurance companies, are searching for advanced level nurses for management and executive level positions.

NHSA 631. Advanced Quality and Patient Safety. 3-4 Hours.

This course examines current issues in quality improvement and patient safety activities. The course includes a review of past and current efforts, tools, and theories of quality assessment, assurance, utilization management, and measuring and improving outcome. In addition, the course looks at new initiatives to improve quality and safety through regulation, reporting and financial incentives.

NHSA 632. Nursing and Health Systems Administration I. 2-4 Hours.

This course provides a theoretical base for students to develop the role of nursing and health systems administrator. Emphasis is placed on development of knowledge and skills necessary for implementing the management role. Students will develop specific administrative competencies to include the ability to: understand self and others; communicate effectively, develop subordinates, manage conflict, monitor personal, individual, and team performance, manage projects, delegate effectively, manage time and stress, foster a productive work environment, live with change, and build and maintain a power base. Content builds on the theoretical foundations of leadership, organizational behavior, financial management, patient care delivery, quality standards and improvement, risk management, leadership development, and change management. The following elements are integrated into this course: critical thinking, research, scholarly writing, professional presentation, scientific integrity and ethics, cultural diversity, and social issues. The role emphasis of this course is for entry and mid-level nurse leaders. Prerequisite: Admission to the Nursing and Health Systems Administration option.

Prerequisites: NHSA 616 [Min Grade: B] and NHSA 617L [Min Grade: P] and NHSA 618 [Min Grade: B] and NHSA 631 [Min Grade: B] and NHSA 681L [Min Grade: P]

NHSA 633. Nursing and Health Systems Administration II. 4 Hours.

This course offers a theoretical base for students to develop and implement the role of nursing and health systems administrator at the service line/division or higher level. Emphasis is on the synthesis of knowledge and skills from multiple disciplines including nursing and business necessary when assuming a mid-level to senior level leadership role. A primary focus of this course is to develop the nurse leader as an expert to influence patient care, systems and community outcomes in a variety of settings such as ambulatory clinics, long-term care, acute care, community, managed care and policy-making. Content includes strategic management, health care policy and regulation, internal and external environmental assessments, disaster preparedness, and organizational and professional accountability. The following elements are integrated into this course: critical thinking, research, scholarly writing, professional presentation, scientific integrity and ethics, cultural diversity, and social issues. The role emphasis of this course is mid-level to senior level leadership roles. Prerequisite: NHSA 632 and NHSA 682L. Corequisite: NSHA 683L.

Prerequisites: NHSA 632 [Min Grade: B] and NHSA 682L [Min Grade: P]

NHSA 640. Economics for Nursing. 3 Hours.

Nurses care for people and caring is the central concept of modern nursing. Yet caring takes many forms, including caring about the economics of services provided. Changes in payment systems, organizational structure and the U.S. healthcare market have led to new interests in the economics of care delivery. Nurses play a major role in this care delivery, as clinicians, administrators and scholars. Topics for the completely on-line course include a basic introduction to economics as it applies to nursing, the nursing labor and service markets and critical professional economic issues facing nursing today.

NHSA 681L. Advanced Quality and Patient Safety Practicum. 2-3 Hours.

This course provides an experiential base for students to develop and implement the role of nursing and health systems quality and outcomes manager within a healthcare organization. Students will analyze outcomes measurement and quality improvement in a health care setting from a strategic perspective and engage, as leaders and participants, in efforts to improve the quality of health services. Students arrange their own clinical sites with assistance/approval from clinical faculty. Co-requisite: NHSA 631Q Advanced Quality and Patient Safety.

NHSA 682L. Nursing and Health Systems Administration I Practicum. 2-4 Hours.

This course is the third of four required practicum courses for the nursing and health systems administration student. Students in this course will synthesize theoretical concepts for administration practice and apply knowledge and skills obtained in masters core courses and prerequisite support courses to meet the objectives of the course. Students will arrange their own clinical site(s) with assistance/approval from clinical faculty. Co-requisite: NHSA 632Q Nursing and Health Services Administration I. Prerequisite: NHSA 616, NHSA 617L, NHSA 618, NHSA 631 and NHSA 681L. Corequisite: NHSA 632.

Prerequisites: NHSA 616 [Min Grade: B] and NHSA 617L [Min Grade: P] and NHSA 618 [Min Grade: B] and NHSA 631 [Min Grade: B] and NHSA 681L [Min Grade: P]

NHSA 683L. Nursing and Health Systems Administration II Practicum. 2 Hours.

This course is the last of four practicum courses for the nursing and health-systems administration student. Students in this course will synthesize theoretical concepts for administration practice and apply knowledge and skills obtained in masters core courses and prerequisite support courses to meet the objectives of the course. Emphasis is placed on the synthesis of knowledge and skills from the disciplines of nursing and business management that is necessary to apply when assuming a mid- or senior level management/leadership role. Students will arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NHSA 632 and NHSA 682L. Corequisite: NHSA 633.

Prerequisites: NHSA 632 [Min Grade: B] and NHSA 682L [Min Grade: P]

NHSA 685L. Nursing and Health Systems Administration Practicum I. 1-2 Hour.

This course is the first of two required application courses for the nursing and health-systems administration student. Students in this course will synthesize theoretical concepts for administration practice and apply knowledge and skills obtained in masters core courses and prerequisite support courses to meet the objectives of the course. Students arrange their own clinical sites with assistance/approval from clinical faculty.

Prerequisite: NHSA 620. Corequisite: NHSA 621.

Prerequisites: NHSA 620 [Min Grade: B]

NHSA 686L. Nursing and Health Systems Administration/Quality Management Practicum II. 4 Hours.

Nursing and Health Systems Administration/Quality and Outcomes Management in Health Systems: This course provides an experimental base for students to develop and implement the role of nursing and health systems administrator and quality and outcomes manager at the executive level. Emphasis is placed on the synthesis of knowledge and skills from the disciplines of nursing and business management that is necessary to apply when assuming a management and leadership role. Students will analyze outcomes measurement and quality improvement in a health care setting from a strategic perspective and engage, as leaders and participants, in efforts to improve the quality of health services. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NHSA 621 and NHSA 685L. Corequisite: NHSA 622.

Prerequisites: NHSA 621 [Min Grade: B] and NHSA 685L [Min Grade: P]

NMD-Nursing-Diabetes Management

NMD 621. Advanced Management of Diabetes I. 3 Hours.

A variety of management strategies will be presented from multiple healthcare disciplines. The perspectives of the multi-disciplinary team in assisting persons to achieve self-care goals is an important theme throughout this course as are the current controversies, issues, and research findings underlying present approaches to treatment and patient/family education. Topics presented are based on the curriculum blueprint of the American Diabetes Educators Program recommendations for the ANCC/AADE Advanced Diabetes Management certification examination for clinical nurse specialist and/or nurse practitioners. The topics addressed in this course include: recognition of early signs of diabetes mellitus, self glucose monitoring, diabetes among: minorities, and those residing in rural settings. Pre-req: NUR 600, NUR 614, NCA 621 and NCA 685L or equivalent or ANCC certification as a Nurse Practitioner.

NMD 622. Advanced Management of Diabetes II. 3 Hours.

This online course is the second in a program of study focusing on advanced diabetes management across the lifespan. Two didactic and three clinical courses are offered that will provide a multi-disciplinary framework for the identification of those at risk for or who already possess the metabolic syndrome, prediabetes, frank type 1 or 2 diabetes mellitus and/or the associated complications. A variety of management strategies will be presented from multiple healthcare disciplines. The perspectives of the multi-disciplinary team in assisting persons to achieve self-care goals is an important theme throughout this course as are the current controversies, issues, and research findings underlying present approaches to treatment and patient/family education. Topics presented are based on the curriculum blueprint of the American Diabetes Educators Program recommendations for the ANCC/AADE Advanced Diabetes Management certification examination for clinical nurse specialist and/or nurse practitioners. Topics presented will be based on the curriculum of the American Diabetes Educators Program recommendations for the Certified Diabetes Educator. These topics include: family planning, gestational diabetes, polycystic ovarian syndrome (PCOS), orthopedic sequelae of diabetes, transplantation, glucose monitoring, insulin pump and other advanced diabetes technologies, diabetes in: rural minorities, elderly, children; diabetes in persons with disabilities, insurance issues, cultural issues, economic issues, mood disorders, eating disorders, hypoglycemia, pain management, foot care, risks of ESRD, hypertension, obesity, dental concerns and provider reimbursement issues regarding diabetes education services. Prerequisite: NMD 621 and NMD 685L or ANCC certification as a nurse practitioner.

Prerequisites: NMD 621 [Min Grade: B] or NMD 621 [Min Grade: B]

NMD 685L. Practicum I: Advanced Management of Diabetes. 3 Hours.

NMD 685L allows the student to begin the development of the Advanced Diabetes Management role by providing health care services to clients across the lifespan (i.e., individuals, families, groups) in a variety of settings and emphasizing the promotion of health and the prevention of disease. Further, the student applies knowledge and current research findings to the management of actual and potential health problems, which include common diseases and human responses to disease. It is anticipated that the student will be increasingly independent and skilled as each clinical experience progresses, allowing him/her to become proficient and to contribute to the management of more complex health problems. The following elements are integrated into the course: critical thinking, professional presentations, research utilization, scientific integrity and ethics, human diversity and awareness of social and professional issues. The advanced practice role emphasis in this course begins the trajectory of the NP experience from novice to beginning expert, and includes role components such as interdisciplinary collaborator, coach, teacher, manager, researcher, and consultant. Students arrange their own clinical sites with assistance/approval from clinical faculty. Corequisite: NMD 621.

NMT-Nuclear Medicine Technology

NMT 601. Introduction to MRI Clinic. 2 Hours.

Overview of patient management, MRI screening and safety procedures, quality assurance procedures and FDA guidelines.

NMT 602. Introduction to Nuclear Medicine, Patient Care & Communication Skills. 3 Hours.

Overview of professional organizations and nuclear medicine; hospital organization; medical terminology; medical records; communication skills, health law and medical ethics; basic patient care theory.

NMT 605. Cross-Sectional Anatomy. 3 Hours.

Integration of the knowledge of gross anatomy with the identification and location of structures in cross-sectional images. Computed Tomography (CT) and Magnetic Resonance (MR).

NMT 610. Medical Radiation Physics. 4 Hours.

Overview of basic medical radiation physics concepts and experiments.

NMT 621. Nuclear Medicine Instrumentation I. 4 Hours.

Theory and experiments on radiation detection instrumentation; calibration; maintenance standards; practical uses of gaseous detectors, scintillation detectors, and multichannel analyzers; quality assurance testing for nuclear medicine instrumentation including GM detectors, ionization chambers and scintillation detectors.

NMT 622. NMT Instrumentation II. 3 Hours.

Applies computer fundamentals to the acquisition and processing of nuclear medicine patient data. Quality control of SPECT and PET camera systems.

Prerequisites: NMT 621 [Min Grade: C]

NMT 623. CT Instrumentation. 3 Hours.

Theoretical principles of Computed Tomography (CT); CT instrumentation, data acquisition, data processing, and image quality.

Prerequisites: NMT 605 [Min Grade: C]

NMT 624. Physics/Instrumentation of Nuclear Magnetic Resonance. 3 Hours.

Fundamental physical principles of nuclear magnetic resonance, including structure of atom, concept of resonance, Larmor frequency, gyromagnetic ratio, T1 and T2 and methods of generating magnetic fields.

NMT 631. Nuclear Medicine Anatomy & Physiology - Procedure I. 4 Hours.

Study of the utilization of nuclear medicine procedures including skeletal, respiratory, endocrine, gastrointestinal and genitourinary systems.

Anatomy and relevant concepts in physiology are reviewed and applied to each procedure.

NMT 632. Nuclear Medicine Anatomy & Physiology - Procedures II. 4 Hours.

Study of the utilization of nuclear medicine procedures including nuclear cardiology, oncology, central nervous and hematopoietic systems and applications of positron emission tomography. Anatomy and relevant concepts in physiology are reviewed and applied to each procedure.

Prerequisites: NMT 631 [Min Grade: C]

NMT 633. Computed Tomography Procedures. 3 Hours.

Overview of CT positioning criteria, specific selections, and options in protocols. Understanding concepts in advanced CT including interventional imaging, positron emission tomography and special procedures.

Prerequisites: NMT 623 [Min Grade: C]

NMT 634. MRI Scanning and Sequence. 3 Hours.

Overview of basic MRI theory; imaging sequences, parameter optimizations, and imaging procedures, flow imaging, and MR spectroscopy.

Prerequisites: NMT 624 [Min Grade: C]

NMT 641. Regulations, Radiation Protection/Biology and Lab. 4 Hours.

Overview of principles and methods of radiation protection, radiation biology and ionizing radiation regulations.

NMT 660. Radiopharmacy, Pharmacology & Lab. 3 Hours.

Overview of fundamentals of radiopharmacy and experiments including radionuclide generator design, elution and operation, labeling and quality control of Tc-99m labeled compounds, unit dose preparation; radiopharmaceutical design, IND process, MIRD, contrast media and pharmacology.

Prerequisites: NMT 610 [Min Grade: C]

NMT 675. Special Topics in Nuclear Medicine Technology. 1-4 Hour.

Faculty-led exploration of current topics and issues in nuclear medicine technology.

NMT 691. NMT Clinical Practice. 3-7 Hours.

Directed clinical practice: in vivo procedures; instrumentation quality control; radiopharmacy; applied radiation safety procedures.

NMT 694. Computed Tomography Clinical Practice. 10 Hours.

Directed clinical practice: CT instrumentation quality control; applied application of CT procedures.

Prerequisites: NMT 605 [Min Grade: C] and NMT 623 [Min Grade: C] and NMT 633 [Min Grade: C]

NMT 695. MRI Clinical Practice. 10 Hours.

Directed clinical practice: MRI instrumentation quality control; applied application of MRI procedures.

Prerequisites: NMT 602 [Min Grade: C] and NMT 605 [Min Grade: C] and NMT 624 [Min Grade: C] and NMT 634 [Min Grade: C]

NMT 698. Non-Thesis Research. 4 Hours.

Directed research for a non-thesis master of science degree project.

NMT 699. Thesis Research. 1-6 Hour.

Original research in nuclear medicine technology and interpretation of results. Demonstrates student's acquaintance with literature of field and competency in proper selection and execution of research methodology.

Prerequisites: GAC M

NNE-Nursing-Neonatal

NNE 613. Neonatal Pharmacology and Therapeutics. 3 Hours.

This course focuses on the analysis and utilization of principles of pharmacology and pharmacokinetics for the purpose of planning, implementing, and evaluating therapeutic pharmacological interventions within the specified population. The unique characteristics of the neonatal population, related to therapeutic needs, as well as drug absorption, metabolism and excretion are defined.

NNE 614L. Assessment and Diagnostic Reasoning for Advanced Nursing Practice. 4 Hours.

This course is designed to provide students with an advanced level of skill and knowledge in critical thinking, procedures and skills, and diagnostic reasoning for conducting health assessments and planning care for wholistic, adaptive human beings. The following elements are integrated into the course: professional presentations, critical thinking, scientific integrity and ethics, human diversity and social issues. Pre or Corequisite: NUR 612.

Prerequisites: NUR 612 [Min Grade: B](Can be taken Concurrently) or NUR 612 [Min Grade: B](Can be taken Concurrently)

NNE 618L. Focus on Advanced Nursing Practice Specialization. 3 Hours.

The purpose of this course will be the study of specialty track specific topics. The focus of the course will be on providing foundational materials for specialized areas of advanced nursing practice. Emphasis is on exploring specific advanced nursing practice competencies.

Prerequisites: (NUR 606 [Min Grade: B] or NUR 606 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B])

NNE 621. Advanced Neonatal Nursing I. 3-5 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of this course is to prepare the student to implement the role of the Advanced Practice Nurse. The emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to neonates, infants, and young toddlers up to two years of age.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614 [Min Grade: B] or NUR 614 [Min Grade: B] or NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B])

NNE 622. Advanced Neonatal Nursing II. 4-5 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness of neonates, infants, and young toddlers up to the age of two. The focus of this course is on health promotion and disease prevention and management strategies from inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care to neonates, infants, and young toddlers up to the age of two.

Prerequisites: (NNE 621 [Min Grade: B] or NNE 621 [Min Grade: B]) and (NNE 684L [Min Grade: P] or NNE 684L [Min Grade: P])

NNE 623. Advanced Neonatal Nursing III. 4-5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care to neonates, infants, and young toddlers up to the age of two. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: (NNE 622 [Min Grade: B] or NNE 622 [Min Grade: B]) and (NNE 685L [Min Grade: P] or NNE 685L [Min Grade: P])

NNE 684L. Practicum I: Neonatal Nurse Practitioner. 2-3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to neonates, infants, and young toddlers up to the age of two. The focus of this course is on the delivery of health care services to neonates, infants, and young toddlers up to the age of two. The emphasis of this course is on promoting the progression of competence within the Advanced Practice Nursing role.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614 [Min Grade: B] or NUR 614 [Min Grade: B] or NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B])

NNE 685L. Practicum II: Neonatal Nurse Practitioner. 2-3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to neonates, infants, and toddlers up to the age of two. The focus of this course is to provide the student with opportunities to integrate in depth diagnostic and management skills to provide care for neonates, infants, and toddlers up to the age of two. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: (NNE 621 [Min Grade: B] or NNE 621 [Min Grade: B]) and (NNE 684L [Min Grade: P] or NNE 684L [Min Grade: P])

NNE 686L. Practicum III: Neonatal Nurse Practitioner. 1-3 Hour.

This course is the second of two practicum courses that will be followed by a residency. In selected clinical settings, students are expected to integrate the knowledge and competencies gained from foundation courses to begin to further develop the NNP Role. Students and faculty cooperatively arrange clinical sites. Prerequisite: NNE 622 and NNE 685L. Corequisite: NNE 623.

Prerequisites: NNE 622 [Min Grade: B](Can be taken Concurrently) or NNE 622 [Min Grade: B](Can be taken Concurrently)

NNE 692L. Residency: Neonatal Nurse Practitioner. 1-6 Hour.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to neonate, infant, and young toddler up to the age of two. The focus of this course is to evaluate progress toward achievement of professional competencies. The emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of neonate, infant, and young toddler up to the age of two.

Prerequisites: (NNE 622 [Min Grade: B] or NNE 622 [Min Grade: B]) and (NNE 685L [Min Grade: P] or NNE 685L [Min Grade: P])

NNE 721. Advanced Neonatal Nursing I. 5 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of this course is to prepare the student to implement the role Doctor of Nursing Practice prepared Advanced Practice Nurse. The Emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to neonates.

Prerequisites: NNE 618L [Min Grade: P] and (NUR 614 [Min Grade: B] or NUR 614L [Min Grade: B])

NNE 722. Advanced Neonatal Nursing II. 4 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness for neonates in the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse. The focus of this course is on the health promotion and disease prevention and the management of strategies form inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care of neonates.

Prerequisites: NNE 721 [Min Grade: B]

NNE 723. Advanced Neonatal Nursing III. 5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course in on the utilization of complex models and systems of practice to deliver high quality evidence-based care as a Doctor of Nursing Practice prepared Advanced Practice Nurse to neonates. The emphasis of the course in on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: NNE 722 [Min Grade: B] and NCA 784L [Min Grade: P]

NNE 784L. Practicum I: Neonatal Nurse Practitioner. 3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to neonates. The focus of this course is on the delivery of health care services to neonates. The emphasis of this course is on promoting the progression of competence within the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse.

Prerequisites: NNE 721 [Min Grade: B]

NNE 785L. Practicum II: Neonatal Nurse Practitioner. 3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to neonates. The focus of this course is to provide the student with opportunities to integrate in-depth diagnostic, management, and leadership skills in the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse to provide care for neonates. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: NNE 722 [Min Grade: B] and NNE 784L [Min Grade: P]

NNE 786L. Practicum II: Neonatal Nurse Practitioner. 3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to neonates. The focus of this course is to provide the student with opportunities to integrate in-depth diagnostic, management, and leadership skills in the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse to provide care for neonates. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: NNE 722 [Min Grade: B] and NNE 784L [Min Grade: P]

NNE 792L. Residency: Neonatal Nurse Practitioner. 4 Hours.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to neonates. The focus of this course is to evaluate progress toward achievement of competencies of the Doctor of Nursing Practice prepared Advanced Practice Nurse. The Emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of neonates.

Prerequisites: NNE 723 [Min Grade: B] and NNE 786L [Min Grade: P]

NNI-Nursing-Informatics

NNI 621. Conceptual Basis for Informatics Practice. 3 Hours.

This course is based on the concepts underpinning nursing informatics practice as delineated in the American Nurses Association's Scope and Standards of Nursing Informatics Practice. Students will explore theories of adult education, communication, systems, decision making, human-computer interaction and the concepts of data, information and knowledge. They will have the opportunity to learn how these theories and concepts are utilized in informatics practice. Prerequisite: NUR 643.

Prerequisites: NUR 643 [Min Grade: C](Can be taken Concurrently)

NNI 622. The Information System Life Cycle. 3 Hours.

This offering is designed to be the culminating course of the nursing informatics specialist curriculum. This course ties together all previous course work together in an application based review of the information system life cycle from systems analysis to system evaluation and maintenance. The course is designed to be taken in conjunction with a clinical experience in which the student will be exposed to aspects of the hands on application of course content.

Prerequisites: NUR 643 [Min Grade: C] and NNI 621 [Min Grade: B]

NNI 625. Organizational Process and Behavior. 3 Hours.

This course will assist the Nurse Informatician to understand and evaluate how organizations change and innovate with new information technologies to compete in the marketplaces, collaborate with partners, serve customers, motivate employees, and improve operations. This course provides the students with the opportunities to: learn the main theoretical perspectives on managing IT change through innovations: familiarize with current best practices and models of change of innovation through IT: and develop innovation skills in various organizational settings and within the framework of project management.

Prerequisites: (NUR 610 [Min Grade: C] or NUR 610 [Min Grade: C]) and (NHA 631 [Min Grade: C] or NHA 631 [Min Grade: C]) and NUR 643 [Min Grade: C](Can be taken Concurrently)

NNI 630. Biomedical Informatics Research. 3 Hours.

This course provides an overview of the field of biomedical informatics, including subfields ranging from bioinformatics to public health informatics, from the perspective of research accomplishments and challenges. Each topic will be taken from a historical perspective-where are we now and how did we get here 0 and then explore the current research directions. There will be emphasis on underlying concepts, theories and methods. Although this course can serve as a survey of the field, it is also intended for students who will pursue research in some area of biomedical informatics. This course would be useful for any students doing research using healthcare data.

NNI 631. Foundations of Nursing Informatics-Scope of Practice, Models, Standards, and Theories. 3 Hours.

In this course, the graduate nursing informatics student will be grounded in the Scope and Standards of Nursing Informatics (NI) Practice beginning with forming an understanding of the foundational model of all informatics: data to information to knowledge to wisdom (DIKW). NI students will then apply the DIKW model to an examination of concept oriented, standardized terminologies and the impact of this on evidence formation, outcomes, evaluation, and the calculation of the value of nursing. The graduate nursing informatics student will explore standards guiding interoperability, security, and data transfer. Lastly, the nursing informatics student will analyze and evaluate the role of the Informatics Nurse Specialist in leading change using relevant informatics theories.

NNI 632. Nursing Informatics Systems Analysis and Design. 4 Hours.

Information systems development and implementation is a process in which technical, organizational, and human aspects of a system are analyzed with the goal of creating an improved and more efficient system. The process of systems analysis and design contains best practice process but is still largely an art. There is a high dependence on the skills of individual analysts and designers even though there are established principles, methods, and tools. This course will give nursing informatics graduate students an understanding of the most common tools, techniques, and theories currently used in healthcare information systems analysis and design.

NNI 633. Informatics and Information Technology Review to Advance Care. 3 Hours.

In this course, the graduate informatics nurse student will be presented with the latest federal policies directing the infusion of technology at the point of care and the broad goals of expected impact on the health of the nation. A survey and critical appraisal of the latest technologies used in administrative, clinical, research, educational, and consumer spaces will be facilitated along with best practice implementation strategies and research to support optimal outcomes and quality.

NNI 634. Informatics Project Evaluation/Human Factors. 3 Hours.

In this course, the graduate student informatics nurse will gain the knowledge and skills to effectively develop an evaluation protocol for the implementation of a health information technology. This course will assist the student to understand the challenges of evaluation in this specialization. Students will: determine objectives for study; design a study methodology; offer possible measurement tools; and will compare and contrast analyses. This course will include a review of human factors as part of the measurement process.

Prerequisites: NNI 632 [Min Grade: B] and NNI 633 [Min Grade: B] and NHA 631 [Min Grade: B]

NNI 635. Essentials of Project Management for Nursing Information Specialists. 3 Hours.

This course emphasizes the application of nursing informatics theories, models, and skill to the role of the informatics nurse specialist as a project manager. In this course, students will demonstrate the application of the concepts, principles, and practices of formal informatics project management through the knowledge, skills, and competencies of an informatics nurse specialist. An informatics project will be planned, implemented and evaluated in a selected healthcare-related setting.

Prerequisites: NNI 632 [Min Grade: B] or NNI 633 [Min Grade: B] or NHA 631 [Min Grade: B]

NNI 685L. Nursing Informatics: Practicum I. 2 Hours.

This course provides an experimental base for students to develop and implement the role of the informatics nurse specialist. Emphasis is placed on the synthesis and application of the theories and concepts that provide the basis of informatics practice. Students will develop the ability to collaborate in multidisciplinary groups, identifying areas for the design and implementation of administrative and clinical technological applications. Students will spend 100 hours during the semester working with a clinical informatics specialist in practice. Students and faculty cooperatively arrange clinical sites. Prerequisite: NNI 621.

Prerequisites: NNI 621 [Min Grade: B](Can be taken Concurrently)

NNI 686L. Nursing Informatics: Practicum II. 2 Hours.

This course provides an experimental base for students to develop and implement the role of the informatics nursing specialist at the organizational level. Students will be paired with a nursing informatics specialist working on aspects of system analysis, design, implementation and evaluation. This experience requires the student synthesize knowledge gained in all previous courses in the curriculum. This course includes 100 hours of clinical practice and is designed to function as the clinical capstone to the NNI curriculum. A comprehensive examination is given during this residency course. Failure to pass the comprehensive examination will delay graduation. Students and faculty cooperatively arrange clinical sites. Prerequisite: NNI 685L.

Prerequisites: NNI 621 [Min Grade: B]

NNI 730. Biomedical Informatics Research. 3 Hours.

This course provides an overview of the field of biomedical informatics, including subfields ranging from bioinformatics to public health informatics, from the perspective of research accomplishments and challenges. Each topic will be taken from historical perspective- where are we now and how did we get here- and then explore the current research directions. There will be emphasis on underlying concepts, theories and methods. Although this course can serve as a survey of the field, it is also intended for students who will pursue research in some area of biomedical informatics. This course would be useful for any student doing research using healthcare data.

NOH-Nursing-Occupational Health

NOH 625. Principles and Practice of Occupational Safety, Ergonomics, and Industrial Hygiene. 4 Hours.

The purpose of this course is to introduce major concepts from occupational safety, ergonomics, and industrial hygiene and the collaborative relationship among occupational health and safety professionals. Emphasis is on exploring risk factors in disciplines to control injury and illness in the national and international workplace. Students will also develop an appreciation of the history of occupational health along with an understanding of legal and regulatory influences on worker populations.

NPA-Nursing-Palliative Care

NPA 621. Advanced Palliative Care Nursing I. 3 Hours.

The purpose of this course is to provide a theoretical and practical foundation for students to diagnose and manage the health needs of the patient and family in the delivery of palliative care across the life span. The focus of the course is on interdisciplinary, holistic palliative care management strategies. The emphasis of the course is on critical thinking, research, ethics, cultural competence, disease management, complication prevention and healthcare delivery as they apply to chronic disease management and quality of life for the palliative care patient and family.

Prerequisites: (NUR 614 [Min Grade: B] or NUR 614 [Min Grade: B] or NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B])

NPA 622. Advanced Palliative Care Nursing II. 3 Hours.

The purpose of this course is to provide the student with opportunities to integrate in-depth knowledge of health assessment and management skills to provide care for clients with commonly occurring chronic and complex health problems as well as palliative care problems. The focus of the course is the development of strategies to market the nurse practitioner role, to create a specific practice position, and to explore strategies to market palliative care and their role in family health care. The emphasis of the course is on critical thinking, health promotion, disease prevention, scientific integrity and ethics, human diversity and social issues, professional role development, education and marketing.

Prerequisites: NPA 621 [Min Grade: B] or NPA 621 [Min Grade: B]

NPA 626. Palliative Care for Advanced Nursing Practice I. 3 Hours.

This course provides a theoretical and practical foundation for students to diagnose and manage the health needs of the palliative care patient and family in the delivery of culturally competent care across the life span. Content includes multidisciplinary management strategies to holistic healthcare delivery as it applies to administration of culturally competent palliative care. This course will utilize discussion, online activities for application of class content, readings, lecture and guest lecture approach to supplement text readings and online delivery of didactic content. The students are expected to apply culturally competent and palliative care theories to clinical assessment and decision-making strategies in order to provide direct patient care to the palliative care patient and family. Prerequisite: NUR 614L. Corequisite: NPA 685L.

Prerequisites: NUR 614L [Min Grade: B] and NUR 613 [Min Grade: B] (Can be taken Concurrently) or NUR 613 [Min Grade: B](Can be taken Concurrently)

NPA 627. Palliative Care for Advanced Nursing Practice II. 3 Hours.

This course is designed to provide the student with opportunities to integrate in-depth knowledge of health assessment and management skills to provide care for patients with commonly occurring palliative care problems. Students will also have the opportunity to develop strategies to market the advanced practice nurse role, to create a specific practice position and to explore strategies to market their role in health care. The following elements are integrated into the course: critical thinking, health promotion, disease prevention and palliative care, scientific integrity and ethics, human diversity and social issues and professional role development. Corequisite: NPA 686L.

Prerequisites: (NPA 626 [Min Grade: B] or NPA 626 [Min Grade: B])

NPA 685L. Practicum: Advanced Palliative Care. 2-4 Hours.

The purpose of this course is for the student to develop the Palliative Care Nurse Practitioner role by providing health and palliative care services to clients across the lifespan, families, and groups while emphasizing the promotion of health, the prevention of disease and the palliative care for life altering conditions. The focus of the course is on application of knowledge and current research findings to the management of actual and potential health problems, which include common diseases and human responses to disease. The emphasis of this course encompasses a trajectory of the nurse practitioner experience from novice to beginning expert, and includes role components such as interdisciplinary collaborator, coach, educator, and consultant.

Prerequisites: (NUR 614 [Min Grade: B] or NUR 614 [Min Grade: B] or NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B]) and NPA 621 [Min Grade: B](Can be taken Concurrently) or NPA 621 [Min Grade: B] (Can be taken Concurrently) or NPA 622 [Min Grade: B](Can be taken Concurrently) or NPA 622 [Min Grade: B](Can be taken Concurrently)

NPA 686L. Practicum: Culturally Competent Palliative Care Nurse Practitioner II. 3 Hours.

This course allows the student to develop the Culturally Competent Palliative Care Nurse Practitioner role by providing health and palliative care services to clients across the lifespan, families and groups while emphasizing the promotion of health, the prevention of disease and palliative care for life altering conditions throughout the course of clinical experiences over two academic terms. Further, the student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include common diseases and human responses to disease. An Objective Structured Patient Experience held during this course will determine if the student can progress into 6 hours of the final residency course, NCA 692L. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NPA 621 and NPA 685L. Corequisite: NPA 622.

Prerequisites: NPA 685L [Min Grade: P] or NPA 685L [Min Grade: P]

NPA 692L. Residency: Culturally Competent Palliative Care Nurse Practitioner. 3-6 Hours.

This course prepares the student in the Culturally Competent Palliative Nurse Practitioner role to be a beginning expert in the diagnosis and management of client's health problems. During residency, the student is expected to continue growth toward becoming an independent practitioner, specializing in the culturally competent care of clients from across the lifespan. The student further develops the Palliative Care Nurse Practitioner role with patient/clients by providing health care services to clients (i.e. individuals, families, groups) emphasizing the promotion of health, prevention of disease and/or palliation of symptoms of life-altering diseases. A comprehensive examination is given during this residency course. Failure to pass the comprehensive examination will delay graduation. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NPA 622 and NPA 686L.

Prerequisites: (NPA 627 [Min Grade: B] or NPA 627 [Min Grade: B]) and (NPA 685L [Min Grade: P] or NPA 685L [Min Grade: P]) and (NPA 686L [Min Grade: P] or NPA 686L [Min Grade: P])

NPE-Nursing-Pediatrics

NPE 613. Primary Care Pediatric Pharmacology. 1 Hour.

This course is a supplement course for Primary Care Practitioner students to provide them with information necessary to safely and competently prescribe medications for infants, children and adolescents. It complements the information provided in NUR 613 Pharmacology and Therapeutics but focuses on the unique physiologic and metabolic characteristics of this population. Pre or corequisite: NUR 613.

Prerequisites: NUR 613 [Min Grade: B](Can be taken Concurrently) or NUR 613 [Min Grade: B](Can be taken Concurrently)

NPE 618L. Focus on Advanced Nursing Practice Specialization. 3 Hours.

The purpose of this course will be the study of specialty track specific topics. The focus of the course will be on providing foundational materials for specialized areas of advanced nursing practice. Emphasis is on exploring specific advanced nursing practice competencies.

Prerequisites: (NUR 606 [Min Grade: B] or NUR 606 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B])

NPE 621. Nurse Practitioner Pediatric Primary Care I. 4-5 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of this course is to prepare the student to implement the role of the Advanced Practice Nurse. The emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to primary care pediatric patients and their families.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B] or NUR 614 [Min Grade: B] or NUR 614 [Min Grade: B])

NPE 622. Nurse Practitioner Pediatric Primary Care II. 2-4 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness of primary care pediatric patients and their families. The focus of this course is on health promotion and disease prevention and management strategies from inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care to primary care pediatric patients and their families.

Prerequisites: (NPE 621 [Min Grade: B] or NPE 621 [Min Grade: B]) and (NPE 685L [Min Grade: P] or NPE 685L [Min Grade: P])

NPE 623. Nurse Practitioner Pediatric Primary Care III. 4-5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care to primary care pediatric patients and their families. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: (NPE 622 [Min Grade: B] or NPE 622 [Min Grade: B]) and (NPE 686L [Min Grade: P] or NPE 686L [Min Grade: P])

NPE 685L. Practicum I: Nurse Practitioner Pediatric Primary Care. 2-3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to primary care pediatric patients and their families. The focus of this course is on the delivery of health care services to primary care pediatric patients and their families. The emphasis of this course is on promoting the progression of competence within the Advanced Practice Nursing role.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B] or NUR 614 [Min Grade: B] or NUR 614 [Min Grade: B])

NPE 686L. Practicum II: Nurse Practitioner Pediatric Primary Care. 2-3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to primary care pediatric patients and their families. The focus of this course is to provide the student with opportunities to integrate in depth diagnostic and management skills to provide care for primary care pediatric patients and their families. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: (NPE 621 [Min Grade: B] or NPE 621 [Min Grade: B]) and (NPE 685L [Min Grade: P] or NPE 685L [Min Grade: P])

NPE 687L. Practicum III: Primary Care Pediatric Nurse Practitioner. 2 Hours.

This course prepares the student in the Pediatric Nurse Practitioner role. The student develops the Pediatric NP role with patients/clients by providing pediatric health care services to clients (i.e. individuals, families, groups) emphasizing the promotion of health and the prevention of disease throughout the course of clinical experiences over two or three academic terms. Further, the student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include common diseases and human responses to disease. It is anticipated that the student will be increasingly independent and skilled as each clinical experience progresses, allowing him/her to become more proficient and to contribute to the management of more complex health problems. The following elements are integrated into the course: critical thinking, professional presentations, research utilization, scientific integrity and ethics, human diversity and social issues. The advanced practice role emphasis in this course encompasses a trajectory of the nurse practitioner experience from novice to beginning expert, including interdisciplinary collaboration, coach, educator, consultant roles. Prerequisite: NPE 622 and NPE 686L. Corequisite: NPE 623.

Prerequisites: (NPE 622 [Min Grade: B] and NPE 686L [Min Grade: P]) or (NPE 622 [Min Grade: B] and NPE 686L [Min Grade: P])

NPE 692L. Practicum III: Nurse Practitioner Pediatric Primary Care Residency. 1-6 Hour.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to primary care pediatric patients and their families. The focus of this course is to evaluate progress toward achievement of professional competencies. The emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of primary care pediatric patients and their families.

Prerequisites: (NPE 622 [Min Grade: B] or NPE 622 [Min Grade: B]) and (NPE 686L [Min Grade: P] or NPE 686L [Min Grade: P])

NPE 721. Advanced Pediatric Nursing I. 5 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of this course is to prepare the student to implement the role Doctor of Nursing Practice prepared Advanced Practice Nurse. The Emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to primary care pediatric patients and their families.

Prerequisites: NPE 618L [Min Grade: P] and (NUR 614 [Min Grade: B] or NUR 614L [Min Grade: B])

NPE 722. Advanced Pediatric Nursing II. 4 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness for primary care pediatric patients and their families in the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse. The focus of this course is on the health promotion and disease prevention and the management of strategies form inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care of primary care pediatric patients and their families.

Prerequisites: NPE 721 [Min Grade: B]

NPE 723. Advanced Pediatric Nursing III. 5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care as a Doctor of Nursing Practice prepared Advanced Practice Nurse to primary care pediatric patients and their families. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: NPE 722 [Min Grade: B] and NPE 785L [Min Grade: P]

NPE 785L. Practicum I: Pediatric Nurse Practitioner. 3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to primary care pediatric patients and their families. The focus of this course is on the delivery of health care services to primary pediatric patients and their families. The emphasis of this course is on promoting the progression of competence within the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse.

Prerequisites: NPE 721 [Min Grade: B]

NPE 786L. Practicum II: Pediatric Nurse Practitioner. 3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to primary care pediatric patients and their families. The focus of this course is to provide the student with opportunities to integrate in-depth diagnostic, management, and leadership skills in the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse to provide care for primary care pediatric patients and their families. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: NPE 722 [Min Grade: B] and NPE 685L [Min Grade: P]

NPE 792L. Residency: Pediatric Nurse Practitioner. 4 Hours.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to pediatric patients and their families. The focus of this course is to evaluate progress toward achievement of competencies of the Doctor of Nursing Practice prepared Advanced Practice Nurse. The Emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of pediatric patients and their families.

Prerequisites: NPE 723 [Min Grade: B] and NPE 786L [Min Grade: P]

NPN-Nursing-Psychiatric/Mental Health

NPN 613. Psychopharmacology for Advanced Practice Nursing. 3 Hours.

This course will provide advanced knowledge of psychobiological information in conjunction with the use of psychopharmacological interventions with patients. This course will focus on the pharmacokinetics and clinical management including prescription of medications for psychiatric disorders. Prerequisite: NUR 613, NPN 621 and NPN 685L.

Prerequisites: (NUR 613 [Min Grade: B] and NPN 621 [Min Grade: B] and NPN 685L [Min Grade: P]) or (NUR 613 [Min Grade: B] and NPN 621 [Min Grade: B] and NPN 685L [Min Grade: P])

NPN 618L. Focus on Advanced Nursing Practice Specialization. 3 Hours.

The purpose of this course will be the study of specialty track specific topics. The focus of the course will be on providing foundational materials for specialized areas of advanced nursing practice. Emphasis is on exploring specific advanced nursing practice competencies.

Prerequisites: (NUR 606 [Min Grade: B] or NUR 606 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B])

NPN 621. Advanced Psychiatric Nursing I. 4-5 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice psychiatric nursing. The focus of this course is to prepare the student to implement the role of the Psychiatric Advanced Practice Nurse. The emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to a psychiatric population across the lifespan.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614 [Min Grade: B] or NUR 614 [Min Grade: B] or NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B])

NPN 622. Advanced Psychiatric Nursing II. 3-5 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness of psychiatric patients across the lifespan. The focus of this course is on health promotion and disease prevention and management strategies for psychiatric patients from inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care to psychiatric patients across the lifespan.

Prerequisites: (NPN 621 [Min Grade: B] or NPN 621 [Min Grade: B]) and (NPN 685L [Min Grade: P] or NPN 685L [Min Grade: P])

NPN 623. Advanced Psychiatric Nursing III. 4-5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice psychiatric nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care to psychiatric patients across the lifespan. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health in psychiatric patients across the lifespan.

Prerequisites: (NPN 622 [Min Grade: B] or NPN 622 [Min Grade: B]) and (NPN 686L [Min Grade: P] or NPN 686L [Min Grade: P])

NPN 685L. Practicum I: Psychiatric Nurse Practitioner. 3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to psychiatric and substance use patients across the lifespan. The focus of this course is to provide the student with opportunities to integrate in depth diagnostic and management skills to provide care for psychiatric patients across the lifespan. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B] or NUR 614 [Min Grade: B] or NUR 614 [Min Grade: B])

NPN 686L. Practicum II: Psychiatric Nurse Practitioner. 3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to psychiatric patients across the lifespan. The focus of this course is on the delivery of health care services to psychiatric patients across the lifespan. The emphasis of this course is on promoting the progression of competence within the Advanced Practice Nursing role.

Prerequisites: (NPN 621 [Min Grade: B] or NPN 621 [Min Grade: B]) and (NPN 685L [Min Grade: P] or NPN 685L [Min Grade: P])

NPN 692L. Residency: Psychiatric Nurse Practitioner. 1-6 Hour.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to psychiatric patients across the lifespan. The focus of this course is to evaluate progress toward achievement of professional competencies in advanced practice psychiatric nursing. The emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of psychiatric patients across the lifespan.

Prerequisites: (NPN 622 [Min Grade: B] or NPN 622 [Min Grade: B]) and (NPN 686L [Min Grade: P] or NPN 686L [Min Grade: P])

NPN 721. Advanced Psychiatric/Mental Health Nursing I. 5 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of this course is to prepare the student to implement the role Doctor of Nursing Practice prepared Advanced Practice Nurse. The Emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to the psychiatric population across the lifespan.

Prerequisites: NPN 618L [Min Grade: P] and (NUR 614 [Min Grade: B] or NUR 614L [Min Grade: B])

NPN 722. Advanced Psychiatric/Mental Health Nursing II. 5 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness for the psychiatric population across the life-span in the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse. The focus of this course is on the health promotion and disease prevention and the management of strategies form inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care of the psychiatric population across the life-span.

Prerequisites: NPN 721 [Min Grade: B]

NPN 723. Advanced Psychiatric/Mental Health Nursing III. 4 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course in on the utilization of complex models and systems of practice to deliver high quality evidence-based care as a Doctor of Nursing Practice prepared Advanced Practice Nurse to the psychiatric population across the life-span. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: NPN 722 [Min Grade: B] and NPN 785L [Min Grade: P]

NPN 785L. Practicum I: Psychiatric/Mental Health Nurse Practitioner. 3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to the psychiatric population. The focus of this course is on the delivery of health care services to the psychiatric population. The emphasis of this course is on promoting the progression of competence within the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse.

Prerequisites: NPN 721 [Min Grade: B]

NPN 786L. Practicum II: Psychiatric/Mental Health Nurse Practitioner. 3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to the psychiatric population across the life-span. The focus of this course is to provide the student with opportunities to integrate in-depth diagnostic, management, and leadership skills in the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse to provide care for the psychiatric population across the life-span. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

NPN 792L. Residency: Psychiatric/Mental Health Nurse Practitioner. 4 Hours.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to the psychiatric population. The focus of this course is to evaluate progress toward achievement of competencies of the Doctor of Nursing Practice prepared Advanced Practice Nurse. The Emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of the psychiatric population.

Prerequisites: NPN 723 [Min Grade: B] and NPN 786L [Min Grade: P]

NPR-Nursing-Promotion/ Protection/Restorative Health

NPR 760. Conceptual Foundations for Promoting, Protecting, and Restoring Health. 3 Hours.

This course will be focused on theories, concepts and research related to promoting, protecting and restoring health. Students are expected to analyze cultural, social, racial and gender influences on health and research related to health promotion, protection and restoration.

NPR 761. Interventions to Promote, Protect, and Restore Health. 3 Hours.

This course will be focused on in-depth exploration and critical analysis of current intervention research including conceptual and methodological issues. In addition, the course will be focused on designing research to evaluate the outcomes of interventions designed to promote, protect or restore health on individuals or community groups.

NRM-Nursing-Research Methods

NRM 750. Foundations of Quantitative Research. 3 Hours.

This course is a survey of quantitative research methods and the first required research core course in the PhD doctoral nursing program. The course is designed to prepare PhD doctoral nursing students with the research knowledge and skills to: (1) critically evaluate research; (2) use the process of research to examine questions identified in one's own nursing practice; and (3) contribute to expansion of nursing's knowledge base. This course will include integration of the following elements and/or activities: critical thinking, critique and synthesis of quantitative research literature in a focused area of interest, scholarly writing, scientific integrity and ethics, human diversity, and social issues. Students will apply criteria for the critique of research to assess the design, methods and validity of research findings. Students will be exposed to various critique frameworks for both quantitative and qualitative research. Strategies for conducting both systematic and integrated reviews will be addressed. The advanced practice role emphasis of this course is that of investigator, research collaborator, and content expert in a selected practice field.

NRM 752. Responsible Conduct of Research. 3 Hours.

This course will examine a wide range of historical and modern treatises that have shaped ethical practices and medical ethical theories both in the United States and globally. The course will emphasize comparing and contrasting various world views of ethical research practice from a cultural and global perspective. The content will focus on ethical principles such as respect for persons, autonomy, justice and rights-based codes. In addition, the expectations and regulations of Institutional Review Boards will be examined with an emphasis on developing effective strategies to expedite approval of student research applications. In addition, students will complete and provide proof of current completion of the UAB IRB training course as an initial pass/fail learning activity. This course will also include integration of the following elements and/or activities: critical thinking, informatics, collaboration, scholarly writing, preparing/giving professional presentations, theory evaluation and application, human diversity, cultural competence, global concerns and health disparity issues. The advanced role emphasis of this course is that of investigator, research collaborator, and content expert in a selected practice field.

NRM 761. Research in Children with Chronic Health Conditions. 3 Hours.

This course provides students with an understanding of the ethical developmental and regulatory considerations necessary for the responsible conduct of research in children with chronic illness. The focus of this course is on critical evaluation of published research in populations of children with chronic illness, understanding of scientific and methodological considerations necessary when conducting research involving children, and development of a mock research proposal focused on a question of importance to the field that addresses processes necessary to assure appropriate protection of pediatric research participants. Inter-professional enrollment on this course is encouraged.

NRM 770. Designs for Nursing Studies I. 3 Hours.

Designs For Nursing Studies I. In this course, special emphasis is placed upon the beginning phases of the research process, including formulation of research questions/aims, integration of theory and/or conceptual framework in the development of research, the critique and review of knowledge that support an identified area of research, and the discussion of the type of research design. Cultural implications and ethical standards for research will be addressed.

NRM 771. Methods/Measurement In Nursing Research. 3 Hours.

Instrumentation in nursing research involves measurement of biological, psychological and/or sociological aspects of human systems. This course is an overview of the theories, principles and techniques that yield reliable and valid measurement of human systems. Opportunities will be provided to evaluate the psychometric properties of selected measures and strategies. This course is designed to aid the student in writing the measurement section of a research proposal in the focal area. 999999.

NRM 772. Designs of Nursing Studies II. 3 Hours.

Designs for Nursing Studies II. This course focuses on sampling, collection of data, data analysis plans, presentation of findings, conclusions in various research designs and the reintegration of the findings into the body of knowledge in an identified area of research. Ethical and cultural issues related to the conduct of research will be addressed. Students will develop a research proposal.

NRM 773. Qualitative Research Methods. 4 Hours.

This core course focuses on sampling, design, analysis plans, presentation of results, findings, and conclusions in various research designs and the reintegration of the findings into the body of knowledge in an identified area of research. Ethical and cultural issues related to the conduct of research are also examined.

NRM 774. Designs and Methods for Research of Vulnerable Populations With Health Disparities. 3 Hours.

This course is designed for doctoral level students in nursing and other health-related disciplines. Special emphasis is placed on critical analysis of health disparities research, and the integration of theory and empirical evidence in designing studies of vulnerable populations such as minorities and other underserved populations. Issues of race, gender, age, ethnicity, social class and cultures are examined in relation to research design and successful implementation of research studies. Intervention approaches commonly used in health disparities research will be evaluated and ethical issues of relevance to vulnerable populations will be explored.

NRM 775. Research on Applied Cognitive Neuroscience for Health Professionals. 3 Hours.

This elective course for the PhD program provides the student with knowledge in the fundamentals of behavioral neuroscience and cognitive psychology as it relates to intervention studies and research designs. The student has an opportunity to practice cognitive assessment, develop behavioral intervention plans, and design research studies involving such knowledge.

NRM 777. Mixed Methods Research I: Introduction to the Field. 3 Hours.

The course will provide students with an introduction to the field of mixed methods research. The course will focus on understanding what constitutes mixed methods research, its fundamental principles, and the main trends, issues, and debates involved in the application of this research approach. Students will examine the process of mixed methods research, including its definition, rationale for using it, the key characteristics, major design applications, and means of assessing the quality of mixed methods inferences. In addition, students will learn how the mixed methods research process is shaped by personal, interpersonal, and social contexts and how mixed methods intersects with other quantitative and qualitative research approaches and designs.

Prerequisites: (NRM 750 [Min Grade: B] or NRM 750 [Min Grade: B]) and (NRM 773 [Min Grade: B] or NRM 773 [Min Grade: B])

NRM 778. Mixed Methods Research II: Designing and Conducting a Mixed Methods Study. 3 Hours.

Building on the foundation knowledge received in Mixed Methods Research I, the course will provide students with knowledge and skills of designing and conducting mixed methods studies in social and health sciences. The topics will include types of research problems addressed, specification of mixed methods purpose statements and research questions, types of mixed methods designs, data collection and analysis strategies within mixed methods designs, and procedures for reporting and evaluating mixed methods studies. Students will get applied knowledge of choosing an appropriate mixed methods design, following the steps in designing and conducting a mixed methods study, and visually presenting mixed methods procedures employed in the study. Students will develop a proposal for a mixed methods study with the major emphasis on the study methodology.

Prerequisites: (NRM 750 [Min Grade: B] or NRM 750 [Min Grade: B]) and (NRM 773 [Min Grade: B] or NRM 773 [Min Grade: B])

NRM 779. Mixed Methods Application in Community-Based Action Research. 3 Hours.

The course will provide students with a detailed overview of how mixed methods can be applied in designing and conducting community-based action research studies. The topics will include: community-based action research, its purposes and cross-disciplinary utilization; a mixed methods methodological framework for action research; steps in designing and conducting mixed methods action research studies in community settings; specific types of mixed methods action research designs; sampling, data collection, analysis, validation, and evaluation of mixed methods action research projects. Students will get applied knowledge of choosing an appropriate mixed methods action research design, of applying the steps to designing and conducting a mixed methods action research study, and visually presenting the procedures employed in the study. Students will develop a proposal for a mixed methods action research study with the major emphasis on the study methodology.

NRM 780. Application of Research Design Principles I. 3 Hours.

In this course, special emphasis is placed upon the beginning phases of the research process, including formulation of research questions/aims, integration of theory and/or conceptual framework in the development of research, the critique and review of knowledge that support an identified area of research, and the discussion of the type of research design. Cultural implications and ethical standards for research will be addressed.

Prerequisites: (NRM 750 [Min Grade: B] or NRM 750 [Min Grade: B]) and (NUR 755 [Min Grade: B] or NUR 755 [Min Grade: B])

NRM 781. Quantitative Measurement in Research. 3 Hours.

The purpose of this course is to provide the student with the knowledge of how to best measure biological, psychological and/or sociological variables within individuals, families, and/or systems. This course includes an overview of the theories, principles and techniques that yield effective operationalization in order to obtain valid and reliable measurements.

Prerequisites: NRM 750 [Min Grade: B]

NRM 782. Application of Research Design Principles II. 3 Hours.

This course focuses on proposal development to include design, sampling, data collection, and data analysis plans for a focal area of interest. Ethical and cultural issues related to the conduct of research will be addressed.

Prerequisites: NRM 780 [Min Grade: B] and NRM 783 [Min Grade: B] and NST 778 [Min Grade: B] and NST 758 [Min Grade: B]

NRM 783. Foundations of Qualitative Research. 3 Hours.

The purpose of this course is to examine research traditions that guide the collection and analysis of qualitative data in the development of science. Included are naturalistic, conceptual, interpretive and analytical research methods such as phenomenology, grounded theory, ethnography, descriptive inquiry and narrative inquiry.

Prerequisites: NUR 751 [Min Grade: B] and NRM 750 [Min Grade: B]

NRM 784. Qualitative Research: A Grounded Theory Approach. 3 Hours.

This course will provide students with in-depth knowledge of the historical origins, philosophical and theoretical foundations, methodological principles and applications of a grounded theory qualitative research approach. Students will explore types of research problems addressed, specification of the purpose statement and research questions, sampling, data collection and analysis strategies, establishing credibility and trustworthiness, and procedures for reporting a grounded theory study. The course will provide a structured field experience of designing and conducting a small-scale grounded theory study. The use of qualitative research software NVivo for data organization, management and analysis will be emphasized.

NRM 785. Qualitative Research: Analysis and Interpretation. 3 Hours.

The course will provide students with applied knowledge of data analysis and interpretation in qualitative inquiry. Students will understand the nature of qualitative data and explore different approaches to qualitative data analysis. The course will provide a structured experience of learning how to analyze, interpret, display and report qualitative data and results within five basic approaches to qualitative inquiry (narrative, case study, ethnography, grounded theory, and phenomenology). Students will develop basic skills in using qualitative research software NVivo for data organization, management and analysis.

NRM 786. Qualitative Research: Case Study and Ethnographic Approaches. 3 Hours.

The course will provide students with in-depth knowledge of the historical origins, philosophical and theoretical foundations, methodological principles and applications of case study and ethnographic qualitative research approaches. Students will explore types of research problems addressed, specification of the purpose statement and research questions, sampling data collection and analysis strategies, establishing credibility and trustworthiness, and procedures for reporting a case study and ethnography. The course will provide a structured field experience of designing and conducting a small-scale case study or an ethnographic study. The use of qualitative research software NVivo for data organization, management and analysis will be emphasized.

NRM 787. Qualitative Research: A Phenomenological Approach. 3 Hours.

The course will provide students with an in-depth knowledge of the historical origins, philosophical and theoretical foundations, methodological principles and applications of a phenomenological qualitative research approach. Students will explore types of research problems addressed, specification of the purpose statement and research questions, sampling, data collection and analysis strategies, establishing credibility and trustworthiness, and procedures for reporting a phenomenological study. The course will provide a structured field experience of designing and conducting a small scale phenomenological study. The use of qualitative research software NVivo for data organization, management and analysis will be emphasized.

NRM 798L. Research Immersion. 3-6 Hours.

The purpose of this course is to provide the student the opportunity to participate as a member of an established and funded research team. Research team members will mentor students taking part in relevant research experiences. Students will be expected to participate in various research activities including, but not limited to, research team meetings, consent of study participants, intervention implementation, data collection, data base management, data analysis, and manuscript preparation. Students will apply concepts and principles from research core courses in their research immersion experience. As part of an established funded research team, students will explore various research team roles and responsibilities. Additionally, students will take the opportunity to learn about and participate in various components of the UAB research enterprise. Through the research immersion experiences, students will learn about sources and mechanisms of research funding and strategies for dissemination of research findings. As appropriate, students will participate as a member of an established funded research team in preparation and dissemination of reports of research findings. Students will also have the opportunity to work with research team members in analysis, interpretation of findings and in the development manuscripts, research presentations and posters for dissemination.

Prerequisites: NRM 750 [Min Grade: B] and NRM 752 [Min Grade: B]

NST-Nursing Statistical Methods**NST 755. Data Mining & Statistical Techniques. 3 Hours.**

This course covers major concepts and algorithms of data mining. The course will be taught using the SAS Enterprise Miner program. The final project will demonstrate all the data mining techniques covered in the course and furthermore expose students working with real data. At the end of the course students will be proficient in utilizing data mining techniques to exploit data patterns and behavior, gain insider understanding of the data, and produce new knowledge that healthcare decision-makers can act upon.

Prerequisites: NUR 756 [Min Grade: B]

NST 758. Inferential Statistics I. 3 Hours.

The purpose of this course is to provide an underpinning for the understanding of statistical methods and findings. Students will gain an understanding of common statistical models and applications of probability, sampling distributions, parametric and non-parametric one and two sample tests, confidence intervals, applications of analysis of two-way contingency table data, simple linear regression, and simple analysis of variance.

Prerequisites: NST 778 [Min Grade: B]

NST 772. Data Mining and Statistical Learning I. 3 Hours.

NST 772 is an elective course for PhD students. This is the first course in a two-course series that provides further exposition of advanced statistical analysis and data mining techniques for students interested in doing research that involves considerable quantitative analysis in their dissertation and/or future professional work.

NST 773. Data Mining/Stats Learning II. 3 Hours.

NST 773 is an elective course for PhD students. This is the second course in a two-course series that provides further exposition of advanced statistical analysis and data mining techniques for students interested in doing research that involves considerable quantitative analysis in their dissertation and/or future professional work.

Prerequisites: NST 772 [Min Grade: B] or NST 772 [Min Grade: B]

NST 775. Introduction to Statistical Software Packages: SPSS and SAS. 2 Hours.

Special emphasis of this laboratory course will be on the use of the statistical packages, SAS and SPSS, in the creation of the data files, data entry, manipulation of data, descriptive analysis and selected statistical techniques.

NST 776. Linear Models For Clinical Nursing Research. 3 Hours.

Linear Models For Clinical Nursing Research. This course is designed as a survey course on the application of advanced General Linear Model and related techniques in health care research. The course will focus on application to research questions of importance to nursing, with an emphasis on practice-related problems.

NST 777. Multivariate Statistical Methods For Clinical Nursing Research. 3 Hours.

Multivariate Methods For Clinical Nursing Research. This course is designed as a survey course on the application of multivariate techniques in health care research. The course will focus on application of multivariate statistical methods to nursing-related research questions, with emphasis on interpretation within clinical nursing research problems.

NST 778. Data Management. 2 Hours.

A hands-on exposure to data management with common statistical software packages, including concepts of types of variables, data entry and cleaning, importing and converting datasets, merging and concatenating datasets, sorting, sub-setting, and producing reports and descriptive statistics.

NST 779. Statistical Modeling I - Linear Models. 3 Hours.

This course is designed as a survey course on the application of General Linear Models and Logistic Regression, with emphasis on health-related problems. These techniques are covered in detail including appropriate diagnostic and remedial measures.

Prerequisites: NST 758 [Min Grade: B]

NST 780. Statistical Model II - Topics in Multivariate Analysis. 3 Hours.

This course will extend concepts introduced in NST 779: Statistical Modeling I - Linear Models into multivariate applications. This course is designed as a survey course on the application of common multivariate methods, with emphasis on health-related data.

Prerequisites: NST 779 [Min Grade: B]

NTC-Nursing-Teaching

NTC 618L. Focus on Advanced Nursing Practice Specialization. 2 Hours.

The purpose of this course will be the study of specialty track specific topics. The focus of the course will be on providing foundational materials for specialized areas of advanced nursing practice. Emphasis is on exploring specific advanced nursing practice competencies.

Prerequisites: (NUR 606 [Min Grade: B] or NUR 606 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B])

NTC 650. Instructional Strategies For Teaching in Nursing. 3 Hours.

This course is required for students in the Teacher in Nursing Certificate program and maybe chosen as an elective course by other graduate students. The content is general and applicable to a variety of teaching situations and learners. The course is an introduction to a systematic approach to developing and implementing adult learning experiences. This course emphasizes the application of a systematic approach (assessing, planning, implementing, and evaluating) to the design of an educational unit. The focus will be on assessing learning needs, identifying learning objectives, selection of resources, and development of teaching strategies for different learner populations.

NTC 652. Program and Curriculum Development. 3 Hours.

This course is a required for students in the Teaching Nursing Certificate program and may be chosen as an elective course by other graduate students. The content is general and applicable to course, educational program, and/or curriculum development. The course is an introduction to the educational development process. This course emphasizes the basic components of program/curriculum development, philosophy, goals, planning learning experiences, implementing learning experiences, and evaluation of the curriculum or an educational program. The focus is on an understanding of program/curriculum determinants (learning, knowledge, man, society) and their impact on curriculum and educational program planning. The impact of philosophy, organizing framework, goals, learning experiences, and evaluation on curricular and program design and development will be discussed.

NTC 654. Evaluation of Instruction in Nursing. 3 Hours.

This course is a required for students in the Teacher in Nursing Certificate program and may be chosen as an elective course by other graduate students. The content is general and applicable to a variety of health related educational settings and learners. This course is an introduction to educational testing and measurement, teaching effectiveness, and clinical performance appraisal. This course provides an overview of evaluation techniques that enable nurses to plan and implement a variety of education related evaluation approaches, including test construction, item analysis, teaching effectiveness, and clinical performance appraisals. Emphasis will be placed on classroom and clinical evaluation of learning and on the use of technology for evaluation purposes. Prereq: Admission to Graduate Studies in the School of Nursing or as a non-degree post-baccalaureate student or by permission of instructor; knowledge of statistics and writing measurable educational objectives in the domains of knowledge, skills, and attitudes.

NTC 656. WebCT for Instructors and Designers. 3 Hours.

Provides students with an advanced level of skill and knowledge of WebCT. Students are introduced to WebCT tools in a sequence that will permit development of a new course using WebCT as a learning management system. This course is offered only when sufficient interest by students is generated.

NTC 658. Simulation and Classroom Technologies for Student Learning. 2-3 Hours.

Designed to introduce graduate nursing students to the use of technology and simulation in nursing education. Students will be introduced to simulation as an educational strategy addressing issues related to the development implementation and evaluation of simulations. The use of technology available to enhance the educational environment will also be explored. Students will analyze advantages and disadvantages of various technologies and determine appropriate application of these technologies.

NTC 660. Foundations of Evidence-Based Nursing Education. 3 Hours.

Designed to prepare graduate nursing students to understand the concepts fundamental to nursing education. Students will be expected to analyze the effects of student and faculty diversity, legal and ethical issues, evidence-based practice on nursing education.

NTC 683L. Teaching Practicum in Nursing. 1-3 Hour.

This course is a required practicum for students in the Teacher in Nursing Certificate program and may be taken as an elective course by other graduate students who are concurrently enrolled in one or more NTC courses. The practicum provides an opportunity for students to concurrently or retrospectively implement the knowledge and skills acquired in NTC 650, NTC 652, and NTC 654 to selected teaching (classroom and clinical) situations. This course provides opportunities for students to integrate previously or concurrently acquired knowledge concerning teaching, curriculum, and/or evaluation into selected classroom and clinical situations. This practicum course allows students to assume limited responsibilities in classroom and clinical teaching while under the guidance of an instructor and/or preceptor. Students will be expected to meet all the course objectives upon completion of the three credit hour practicum. The practicum should involve both didactic and clinical teaching. Students arrange their own clinical sites with assistance/ approval from clinical faculty. Prerequisite: Admission to Graduate Studies in the School of Nursing or as a non-degree post-baccalaureate student. Prerequisite: NTC 650, NTC 652, and NTC 654.

Prerequisites: (NTC 650 [Min Grade: C] and NTC 652 [Min Grade: C] and NTC 654 [Min Grade: C]) or (NTC 650 [Min Grade: C] and NTC 652 [Min Grade: C] and NTC 654 [Min Grade: C])

NTC 692L. Residency: Nurse Educator. 3-6 Hours.

A comprehensive examination is given during this residency course. Failure to pass the comprehensive examination will delay graduation. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NTC 650, NTC 652 and NTC 654.

Prerequisites: (NTC 650 [Min Grade: B] or NTC 650 [Min Grade: B]) and (NTC 652 [Min Grade: B] or NTC 652 [Min Grade: B]) and (NTC 654 [Min Grade: B] or NTC 654 [Min Grade: B])

NTC 760. Transitions to Academic Nursing Education. 3 Hours.

This course provides content relevant to the role of the nurse educator in an academic setting. The course includes information on nurse educator competencies, trends in higher education, the nature of our students in the 21st century, and strategies for building a successful nurse-educator career, including building collegial relationships and integrating the teaching, research, and service missions of the university into one position. This course may be included in a program of study as an elective, or taken as a non-degree student. NTC 760 may also be taken by students in the Nurse Educator track in the MSN program.

NTR-Nutrition Science

NTR 500. Communications in Nutrition. 1 Hour.

This course is designed to enable students to communicate effectively with the public via blogs, media interviews, traditional written education materials, social media, and websites. Emphasis in all of these areas of communication will be on translating scientific evidence into accurate and engaging communications for consumers and the press.

NTR 501. RDN Certification Review. 0 Hours.

Sponsored workshop to prepare students for the Registered Dietitian Nutritionist examination.

NTR 521. Nutrition Assessment and the Nutrition Care Process. 3 Hours.

Introduction to the Nutrition Care Process (NCP), a systematic approach to providing high-quality nutrition care. The NCP provides a framework for critical thinking and decision making. Gain factual knowledge, learn to apply course material through case study application, and explore fundamental principles in medical nutrition related content areas.

Prerequisites: NTR 222 [Min Grade: D] and NTR 621 [Min Grade: C]

NTR 579. Obesity in the 21st Century. 3 Hours.

Overview of the facts and research findings underlying the understanding of obesity, its co morbidities, and its consequences in the population.

NTR 589. Internship Practicum. 1-12 Hour.

Clinical experience in food service management and nutritional care in facilities throughout community; specific objectives vary depending on rotation.

NTR 600. Principles of Food Science Operations and Menu Planning. 3 Hours.

Practice Management and Use of Resources: strategic application of principles of management and systems in the provision of food services to individuals and organizations.

NTR 601. Advanced Medical Nutrition. 3 Hours.

Roles of nutrition in relationship to health; prevention of disease and correction of disorders due to nutritional imbalance throughout life cycle; disease states and their nutritional management; biochemical, clinical, and dietary assessment of nutritional status; drug-nutrient interactions; inborn errors of metabolism.

NTR 604. Principles and Practice of Nutrition Support. 3 Hours.

Critical review of current methods of providing nutrition support for critically ill patients; theory integrated with clinical practice.

NTR 609. Applied Nutrition for Physical Activity and Disease Prevention. 3 Hours.

Theoretical and applied aspects of nutrition for sport performance and health promotion. Provides practical application of evidence-based analysis of topics to promote consumer health.

NTR 611. Advanced Food System and Resource Management. 3 Hours.

Management systems and their application to hospital food service; legal aspects of dietetic practice; quality assurance, departmental planning, and organization.

NTR 612. Research and Technology Applications in Dietetics. 3 Hours.

Utilization of internet technology and research design in dietetics practice.

NTR 618. Nutritional Biochemistry. 6 Hours.

Metabolism and function of nutrients; biosynthesis of vitamins and their cofactors; human requirements for energy, amino acids, minerals, and vitamins; current human nutritional problems.

NTR 621. Applied Statistics to Nutrition Sciences I. 3 Hours.

This course has been designed to introduce students to statistical methods and approaches used to test hypotheses in the field of nutrition. Students will learn statistical tools that will equip them to analyze data, and will apply their knowledge to data sets addressing scientific questions related to nutrition and the application of nutrition to health.

NTR 622. Recent Advances In Nutrition Cancer Research. 3 Hours.

Critical evaluation of effects of genetics and environmental factors, especially nutrients, on development and prevention of obesity, atherosclerosis and cancer.

NTR 623. Applied Statistics to Nutrition Sciences II. 3 Hours.

This course has been designed to expose students to advanced statistical methods and approaches used to test hypotheses in the field of nutrition. Students will learn statistical tools that will include longitudinal data, clustering methods, and treatment of covariates in statistical analyses. The course will equip students to analyze data, and will apply their knowledge to data sets addressing scientific questions related to nutrition and the application of nutrition to health.

Prerequisites: NTR 621 [Min Grade: C]

NTR 625. Human Nutr Through the Life Cy. 3 Hours.

This course will examine the role of nutrition and dietary factors on the growth, development, and maintenance of health throughout the human life cycle. Nutritional guidelines/recommendations, special nutritional needs, physiology, and nutritional health concerns for each stage of the human lifecycle beginning with preconception and continuing throughout adulthood and aging will be addressed.

NTR 626. Consumer Issues in Nutrition. 3 Hours.

This course examines contemporary nutritional issues that affect consumers. Focus will be on the translation of science to public policy, consumer communications, and food choices.

NTR 630. Maternal Child Hlth Ped Nutrit. 4 Hours.

Public health and interdisciplinary approach to pediatric and maternal and child nutrition; translation of evidence based approaches to pediatric nutrition, including prevention and intervention.

NTR 631. Community Interventions for Healthy Lifestyles. 3 Hours.
Community-based strategies for promoting healthy lifestyles through improved eating and physical activity behaviors; emphasis on childhood obesity prevention and intervention; integration of the Life Course model.

NTR 632. Nutrition Counseling and Education. 4 Hours.
Theoretical and applied aspects of nutrition counseling and education. Practical application of counseling strategies to promote consumer health.

NTR 633. Laboratory Instruments and Methods in Nutrition Research. 1-5 Hour.
Individualized instruction in theory and use of laboratory instruments specific to a student's research project.

NTR 636. Scientific Methods. 3 Hours.
Approaches for nutrition investigation; design of experiments and research proposals.

NTR 637. Applied Research in Nutrition Sciences. 3 Hours.
Introduction to research methodologies and application of research related to nutrition and dietetics using practical application of qualitative and quantitative research and evaluation methods in community and health-related settings.

Prerequisites: NTR 621 [Min Grade: C]

NTR 650. Body Composition and Energy Metabolism. 3 Hours.
Methods of measurement of body composition and energy expenditure and their relationship to health and disease.

NTR 666. Nutrition, Mindfulness, and Wellness. 3 Hours.
Exploration of relationship between dietary practices and health; guide to design of individualized health lifestyle practices, including meditation and mindfulness.

NTR 670. Practicum in Wellness. 3 Hours.
This course is designed to give students practical experiences to meet nutrition and wellness needs in a variety of populations. Students will complete wellness activities in campus dining, corporate, healthcare, and school sites. These activities will include developing wellness messages for social media, investigating new wellness and nutrition trends, and practicing counseling/ health coaching skills leading to health behavior change.

NTR 671. Practicum in Community Nutrition. 3 Hours.
Students will apply strategies to meet nutrition needs outside of the acute-care setting with emphasis on cultural competency, effective communication, nutrition education, public policy, program planning and food assistance programs.

NTR 672. Practicum in Food Systems Management. 3 Hours.
This practicum provides supervised experiences that will help students explore issues and topics to develop the skills necessary to manage foodservice systems, including production, inventory control, sanitation and quality management. Emphasis on applications to healthcare facilities.

NTR 673. Practicum in Medical Nutrition Therapy I. 3 Hours.
Students will round with the dietitian to gain competence in the Nutrition Care Process in long-term, in-patient, and out-patient hospital or clinic setting. Students also prepare and present case study reports to become skillful in investigating and discussing these disease states and conditions in professional settings. Students use a clinical log to track the populations they are serving and the disease states and conditions they are treating during this practicum.

NTR 674. Practicum in Medical Nutrition Therapy II. 4 Hours.
Students will work, under the supervision of registered dietitians, in local hospitals (acute care, out-patient) and long-term medical care facilities to assess, diagnose, chart and plan Medical Nutrition Therapy. Students will practice the skills developed in Practicum in Medical Nutrition Therapy I.

NTR 675. Practicum in Dietetic Administration. 4 Hours.
This practicum focuses on the application of management and leadership principles and techniques specific to the provision of nutrition services in foodservice. Students practice the care and operation of equipment, sanitation audits, HACCP Guidelines, budget planning and customer service.

NTR 676. Advanced Practicum in Dietetics. 4 Hours.
This course provides the opportunity for the student to work independently under the supervision of a registered dietitian. The student will demonstrate competence at an entry-level before beginning this experience.

NTR 680. Journal Club in Clinical Nutrition. 1 Hour.
Review, discussion, and critique of current literature in clinical nutrition.

NTR 685. Pediatric Pulmonary Care: An Interdisciplinary App. 1-3 Hour.
Theory and practice of interdisciplinary health care delivery to pediatric clients at risk for or compromised by pulmonary disease by team representing medicine, nutrition, nursing, social work, and physical therapy.

NTR 690. Seminar. 2 Hours.
Review of current literature and research in nutrition.

NTR 691. Clinical Practicum: Nutritional Aspects of Mental. 1-6 Hour.
Evaluation of nutritional status, feeding behavior, and food habits of retarded children; nutritional care; functioning in interdisciplinary team; field trips to agencies serving retarded children.

NTR 692. Clinical Practicum: Community Nutrition. 1-6 Hour.
Clinical experiences in health care delivery systems with nutrition components; methods of determining nutritional status of most vulnerable groups; nutrition education of community; current community nutrition issues; food fads, weight control, food misinformation, and nutrition legislation.

NTR 693. Clinical Practicum: Pediatric Nutrition. 1-6 Hour.
Clinical experiences in normal growth patterns in children; nutritional needs in health and disease; medical problems of pediatric patients; diet therapy.

NTR 694. Clinical Practicum: General Clinical Research. 1-6 Hour.
Clinical experiences in a multi-disciplinary research facility involving human subjects.

NTR 695. Special Topics in Nutrition. 1-4 Hour.
Exploration of current issues in Nutrition Sciences.

NTR 696. Clinical Practicum: Nutr Support of Pediatric Clin. 1-6 Hour.
Observation of and participation in interdisciplinary team delivery of health care to pediatric patients with pulmonary disease; variety of settings utilized, including neonatal intensive care, medical/surgical pediatric acute care, and pediatric pulmonary clinics; emphasis on optimizing nutritional support to pediatric patients with pulmonary dysfunction.

NTR 697. Clinical Practicum: Nutrition Support Service. 3-6 Hours.
Observation of and participation in interdisciplinary team delivery of nutrition support to critically ill hospitalized patients and ambulatory patients.

NTR 698. Master's Level Non-Thesis Research. 1-6 Hour.

Project designed to meet student's particular interest in nutrition and dietetic field; review of current literature; limited research and paper required.

NTR 699. Master's Level Thesis Research. 1-9 Hour.

Projects designed individually to meet student's particular interest within nutrition and dietetic field; emphasis on research approach to problem solving, including review of current literature in topic area.

Prerequisites: GAC M

NTR 701. Advanced Medical Nutrition. 3 Hours.

Role of nutrition and its relationship to health, prevention of disease, and correction of disorders due to nutritional imbalance throughout the life cycle. Emphasis on nutrition assessment and current research, including biochemical clinical, dietary, and anthropometric measurements.

NTR 704. Principles and Practice of Nutrition Support. 3 Hours.

Critical review of current methods of providing nutrition support for critically ill patients; theory integrated with clinical practice.

NTR 708. Nutrition Immunity and Infection. 3 Hours.

Impact of nutrition on immune function and effects of infection on nutritional status.

NTR 711. Clinical Nutrition. 4 Hours.

Nutritional biochemistry, nutrient requirement, sources, toxicities. Nutritional aspects of growth, development, pregnancy, chronic diseases, and the hospitalized patient.

NTR 718. Nutritional Biochemistry. 6 Hours.

Metabolism and function of nutrients; biosynthesis of vitamins and their cofactors; human requirements for energy, amino acids, minerals, and vitamins; current human nutritional problems.

NTR 720. Trace Elements in Human Nutrition I. 2 Hours.**NTR 721. Trace Elements in Human Nutrition II. 2 Hours.****NTR 722. Recent Advances in Nutrition and Cancer Research. 1-3 Hour.**

Review of recent advances in nutrition and cancer research; emphasis on advances in biomarkers of nutritional exposure; modification of cancer risk by gene-nutrient interactions.

NTR 723. Assessment of Nutritional Status in Populations. 3 Hours.

Theoretical and hands-on instruction in methods of assessment of dietary intakes, body composition, and biochemical levels of macro- and micronutrients. Proper techniques for collecting measurements and review of computer software packages that specialize in analysis of specific measurements.

NTR 724. Research Strategies for the Study of Diet, Energetics and Cancer. 2 Hours.

Overview of dietary, physical activity, nutritional status, and body composition assessment as applied to research design and implementation of cancer-related studies in both animals and humans.

NTR 725. Human Nutr Through Life Cycle. 3 Hours.

Nutritional guidelines/recommendations, special nutritional needs, physiology, and nutritional health concerns for each stage of human lifecycle beginning with preconception and continuing throughout adulthood and aging will be addressed.

NTR 726. Consumer Issues in Nutrition. 3 Hours.

This course examines contemporary nutritional issues that affect consumers. Focus will be on the translation of science to public policy, consumer communications, and food choices.

NTR 728. Cancer Prevention and Control Seminar. 1-3 Hour.

Presentations related to cancer prevention and control and participation on cancer research review boards. Required for pre- and post-doctoral fellows in the NCI-supported R25 Cancer Prevention and Control Training Program.

NTR 733. Laboratory Instruments and Methods in Nutrition Research. 1-5 Hour.

Instruction in theory and use of selected laboratory instruments (selected according to student's need related to research project).

NTR 734. Laboratory Methods in Vitaminology. 3 Hours.

Vitamin determinations in clinical and other specimens: theory; procedures; practical exercises.

NTR 736. Scientific Methods. 3 Hours.

This course is designed to provide the students with the knowledge necessary to plan, design, and undertake research on topics related to nutrition science.

NTR 737. Research Concept Development. 1 Hour.**NTR 738. Human Investigations: Ethics Rights and Regulations. 1 Hour.**

Procedures, regulations, and ethics pertaining to conduct of human investigations, informed consent, human use committees, internal review boards.

NTR 742. Nutritional and Toxicological Aspects of Food Safe. 2 Hours.**NTR 743. Macronutrients. 3 Hours.****NTR 744. Vitamins: Nutritional Clinical and Biochemical A. 2 Hours.****NTR 745. Origin of Cancer: Microenviron. 1 Hour.**

This course is a journal club that will provide insights into the importance of the matrix microenvironment in tumorigenesis. Tumorigenesis is the process by which initiated cells form tumors.

NTR 746. Nutritional Aspects of Aging. 2 Hours.**NTR 747. Molecular Biology and Nutrition Sciences. 3 Hours.**

Overview of molecular biology applications in nutrition science research. Examination of basic molecular biology techniques, current usage of molecular biology to solve nutrition problems, and application of biotechnology to study disorders with nutritional component.

NTR 750. Body Composition and Energy Metabolism. 3 Hours.

Methods of measurement of body composition and energy expenditure and their relationship to health and disease.

NTR 755. Teaching Practicum in Nutrition Sciences. 3 Hours.

Students will apply the concepts that they learned from the graduate teaching certificate program of UAB Center for the Integration of Research, Teaching and Learning (CIRTL) to formal teaching instruction. Students will serve as co-teachers, working with a Nutrition Science faculty course-master to participate in teaching activities of a specified course.

NTR 760. Foundations of Nutrition Research. 1 Hour.**NTR 761. Enhancing Research Productivity Through Intensive Writing. 3 Hours.**

Instruction and practice in techniques for developing publishable manuscripts, including establishing consistent and sustainable writing habits, improving the quality of writing, seeking and incorporating feedback from mentors and co-authors, identifying appropriate statistical approaches for research questions, and responding to reviewers/editors comments for revision or rejection.

NTR 769. Race, Nutrition and Health. 3 Hours.

Introduction to the identification, measurement and exploration of etiological factors that underlie racial/ethnic disparities in health outcomes.

NTR 778. Special Topics in Nutrition Sciences. 1-5 Hour.**NTR 779. Obesity in the 21st Century. 3 Hours.**

General overview of the facts and research findings underlying the understanding of obesity, its co morbidities, and its consequences in the population.

NTR 788. Advanced Nutrition Seminar. 1 Hour.**NTR 789. Diabetes and Energy Metabolism Seminar.. 1 Hour.**

Discussions on the latest research involving energy metabolism issues with diabetes through the presentation and discussion of scientific peer-reviewed articles.

NTR 791. Advanced Clinical Nutrition Diagnosis and Treatments. 4 Hours.

Clinical rounds with nutrition support team; clinical nutrition research procedures related to human nutrition.

NTR 798. Doctoral Level Non-Dissertation Research. 1-15 Hour.**NTR 799. Doctoral Level Dissertation Research. 1-15 Hour.**

Prerequisites: GAC Z

NUR-Nursing

NUR 519. Evidence-Based Nursing & Health Care Technology. 4 Hours.

The purpose of this course is to prepare students to translate current evidence, identify existing gaps, and use technology to improve care outcomes. The focus is on the knowledge and skills needed to deliver and coordinate care across multiple settings, apply research outcomes, resolve practice problems, and disseminate results. The emphasis is on leading continuous improvement processes individually or through an inter-professional team, implementing evidence-based practice and determining the appropriate technology to support evidence based care and health education.

NUR 520. Foundational Competencies for the Professional Nurse. 3 Hours.

The purpose of this course is to introduce fundamental nursing concepts and processes of professional nursing that assist in providing safe, quality nursing care to clients and their families. The course focuses on the role of the nurse as a caregiver and educator of individuals and groups from diverse populations. Emphasis is on the professional attributes of the generalist nurse, legal and ethical implications for nursing practice, and beginning care competencies of the professional nurse.

NUR 521L. Foundational Skills for the Professional Nurse. 3 Hours.

The purpose of this course is to introduce fundamental nursing skills and professional behaviors needed to provide safer, quality patient/family centered nursing care to clients within diverse settings and communities. The focus is on applying the nursing process and developing clinical judgment and reasoning skills, emphasis is on clinical competencies including health assessment and history taking, foundational clinical nursing skills, basic nursing care for adult clients, and nursing documentation.

NUR 522. Mental Health Nursing. 3 Hours.

The purpose of this course is to introduce concepts of mental health and psychiatric illness throughout the lifespan with consideration given to therapeutic communication and evidence-based nursing interventions for clients and their families. The course focuses on the use of critical thinking and clinical decision-making skills in the promotion, maintenance and restoration of optimum mental health of vulnerable individuals and families. Emphasis is placed on the independent and collaborative roles of nursing in identifying risk factors for mental disorders, assessing mental health status, and designing and implementing psychobiological and psychosocial interventions associated with expected therapeutic outcomes.

NUR 524. Pharmacology for AMNP. 3 Hours.

The purpose of this course is to increase understanding of pharmacologic concepts needed by the generalist nurse. The course focuses on preparing the generalist nurse to apply acute pharmacological concepts in clinical practice and deliver safe, effective administration of medications. The emphasis of the course is a systematic overview of pharmacological concepts, pharmacokinetics, and pharmacodynamics.

NUR 526. Adult Health Nursing I: Managing Chronic and Episodic Health Conditions. 2 Hours.

The purpose of this course is to introduce concepts and processes needed to provide safe, quality family-centered nursing care to adults. The course focuses on the practice of professional nursing as an evidence-based, goal-directed activity designed to assist adult clients in achieving optimal health by meeting basic human needs, providing holistic care, and engaging in health promotion and disease/injury prevention strategies. Emphasis is on the individual and collaborative roles of nursing to identify risk factors, assess health status of adults, and design, implement, and evaluate nursing interventions associated with expected therapeutic outcomes for chronic disease and episodic health conditions such as heart disease, hypertension, type 2 diabetes, obesity, and arthritis.

NUR 527L. Nursing Practicum with Adults I. 2 Hours.

The purpose of this course is to apply fundamental nursing skills and professional behaviors needed to provide safe, quality client/family centered nursing care. The focus is on applying the nursing process and developing clinical judgment and reasoning skills with adult clients from diverse backgrounds and communities. Emphasis is on developing clinical competencies including health assessment and history taking, foundational clinical nursing skills, basic nursing care for adult clients, and nursing documentation.

NUR 528. Pathophysiology for AMNP. 2 Hours.

The purpose of this course is to increase understanding of pathophysiological concepts/ processes needed to provide safe, quality client/family centered nursing care across the lifespan. The course focuses on preparing the generalist nurse to apply [pathophysiological concepts in clinical practice. The emphasis is on a systematic study of pathophysiological concepts/processes associated with cellular injury and genetics; alterations in fluid and electrolytes, acid base balance, immunity, inflammation, and metabolism; and a basic introduction to oxygenation and perfusion.

NUR 533. Spirituality in Health Care. 3 Hours.

This course will focus on spirituality, including a greater understanding of different spiritual traditions, personal spiritual development, and the incorporation of spirituality into professional practice. The content will examine spirituality and health from the perspective of the major world religions and spiritual practices. The impact of spirituality on illness and healing will be examined. Spiritual care, including assessment and selected interventions, legal and ethical issues will be discussed with respect to individuals and families of varying developmental stages, socio-cultural backgrounds, and life situations. Students will be challenged to explore their own spirituality and its impact on their personal and professional lives. A foundation in computer utilization and accessing resources through use of the internet is strongly recommended.

NUR 534. Living With Loss. 3 Hours.

This course includes loss, grief, body-image changes, loss due to chronic conditions, and loss of life in childhood and adulthood explored from the viewpoint of a health-care professional.

NUR 537L. Nursing Practicum with Adults II. 3 Hours.

The purpose of this course is to apply nursing clinical skills and professional behaviors needed to provide safe, quality client/family centered nursing care in acute care settings for adult clients from diverse backgrounds and communities. The focus is on applying the nursing process and using clinical judgment and reasoning skills in acute care situations. Emphasis is on increasing competency in the design, coordination, and evaluation of client/family centered care of adults with acute disease or injury associated conditions.

Prerequisites: NUR 520 [Min Grade: C] and NUR 526 [Min Grade: C] and NUR 524 [Min Grade: C] and NUR 528 [Min Grade: C] and NUR 522 [Min Grade: C]

NUR 538. Pathophysiology for AMNP II. 2 Hours.

The purpose of this course is to increase understanding of pathophysiological concepts/processes needed to provide safe, quality client/family centered nursing care across the lifespan. The course focuses on preparing the generalist nurse to apply acute pathophysiological concepts in clinical practice. The emphasis of the course is a systematic study of pathophysiological concepts/processes associated with alterations in fluid and electrolytes, perfusion, oxygenation, intracranial regulation, metabolism, and infection.

Prerequisites: NUR 520 [Min Grade: C] and NUR 524 [Min Grade: C] and NUR 528 [Min Grade: C] and NUR 522 [Min Grade: C]

NUR 542. Health Promotion, Prevention, Populations, and Policy. 3 Hours.

The purpose of this course is to prepare the generalist nurse to lead population focused health promotion and prevention initiatives that address national and global health issues. The focus is on health hazards, social determinants, and regulatory, legal, and ethical issues that affect population health. Emphasis is on analyzing current data and best evidence to advocate through policy change for improved health status of individuals. Communities and diverse populations.

Prerequisites: NUR 520 [Min Grade: C] and NUR 526 [Min Grade: C] and NUR 524 [Min Grade: C] and NUR 528 [Min Grade: C] and NUR 522 [Min Grade: C]

NUR 546. Adult Health Nursing III: Managing Complex Health Conditions. 2 Hours.

The purpose of this course is to expand the knowledge of concepts and processes needed to provide safe, quality family-centered nursing care to adults with complex health conditions. The course focuses on the practice of professional nursing as an evidence-based, goal-directed activity designed to assist adult clients in achieving optimal health by meeting basic human needs, providing holistic care and engaging in health promotion and disease/injury prevention strategies. Emphasis is on the individual and collaborative roles in nursing used to identify risk factors for complex health conditions: assess health status of adults; and design implement, and evaluate nursing interventions associated with expected therapeutic outcomes associated with life-threatening cardiac conditions, traumatic injuries, immunodeficiency, and neurological events.

Prerequisites: NUR 556 [Min Grade: C] and NUR 552 [Min Grade: C] and NUR 538 [Min Grade: C] and NUR 542 [Min Grade: C]

NUR 547L. Nursing Practicum with Adults III. 1 Hour.

The purpose of this course is to apply nursing clinical skills and professional behaviors needed to provide safe, quality client/family centered nursing care in acute care settings for clients from diverse backgrounds and communities. The focus is on applying the nursing process and using clinical judgement and reasoning skills in client care situations with increasing complexity. Emphasis is on increasing competency in the design, coordination, and evaluation of client/family centered care and therapeutic outcomes for adults with complex disease and traumatic injury conditions.

Prerequisites: NUR 556 [Min Grade: C] and NUR 552 [Min Grade: C] and NUR 538 [Min Grade: C] and NUR 542 [Min Grade: C]

NUR 549. Synthesis Review Course. 1 Hour.

The purpose of this course is to prepare the student to successfully complete the NCLEX examination. The course focuses on all professional nursing roles. Emphasis is on the synthesis of knowledge from all nursing courses as well as humanities, and the social, behavioral, and natural sciences.

NUR 550. Professional Leadership and Role Transition. 4 Hours.

The purpose of this course is to expand the knowledge of concepts, processes, and strategies of leader and change agent needed to transition into the professional nurse role within the healthcare team and profession as a generalist nurse. The course focuses on evidence-based, goal-directed activities designed to control health care costs and promote continuous quality improvement for the individual and collaborative nursing roles used to identify hazards with the healthcare environment that create risks to health and safety, to enact evidence-based "nurse-sensitive" quality improvement processes, and to evaluate healthcare outcomes from a systems and financial perspective.

Prerequisites: NUR 556 [Min Grade: C] and NUR 552 [Min Grade: C] and NUR 538 [Min Grade: C] and NUR 542 [Min Grade: C]

NUR 551L. Nursing Practicum with Vulnerable Populations. 2 Hours.

The purpose of this course is to implement therapeutic communication and safe, quality, family-centered nursing care to individuals and groups among vulnerable populations in diverse healthcare and community settings. Focus is on developing roles of the generalist nurse in population health care as clinician, educator, health counselor, advocate, and care manager. Emphasis is on the professional attributes and nursing skills concerning legal, regulatory, ethical, and cultural implications for health promotion, illness and injury prevention, health maintenance, emergency preparedness, and coordination of health care across the lifespan for vulnerable populations.

Prerequisites: NUR 556 [Min Grade: C] and NUR 552 [Min Grade: C] and NUR 538 [Min Grade: C] and NUR 542 [Min Grade: C]

NUR 552. Nursing Care of Woman and Children. 4 Hours.

The purpose of this course is to obtain knowledge and skills to provide safe, quality client/family centered nursing care to women across the lifespan with special attention given to women of childbearing age and children. The course focuses on the practice of professional nursing as an evidence-based, goal-directed activity to assist clients to achieve optimal health, meet basic human needs, provide holistic care, and engage in health promotion and disease/injury prevention strategies. Emphasis is on the individual and collaborative roles of nursing to identify risk factors, assess health status, and design, implement, and evaluate nursing interventions to obtain therapeutic outcomes for neonates, infants, children, adolescents, and women across the lifespan in diverse family and care settings.

Prerequisites: NUR 520 [Min Grade: C] and NUR 526 [Min Grade: C] and NUR 524 [Min Grade: C] and NUR 528 [Min Grade: C] and NUR 522 [Min Grade: C]

NUR 553L. Nursing Practicum with Women and Children. 2 Hours.

The purpose of this course is to apply nursing clinical skills and professional behaviors needed to provide safe, quality client/family centered nursing to women and children from diverse backgrounds and communities. The focus is on applying the nursing process, using clinical judgment and reasoning skills in health care situations, and promoting health and preventing disease/injury among women and children. Emphasis is on increasing competency in the design, coordination, and evaluation of client/family centered care for this population.

Prerequisites: NUR 520 [Min Grade: C] and NUR 526 [Min Grade: C] and NUR 524 [Min Grade: C] and NUR 528 [Min Grade: C] and NUR 522 [Min Grade: C]

NUR 556. Adult Health Nursing II: Managing Acute Health Conditions. 4 Hours.

The purpose of this course is to obtain knowledge and skills to provide safe, quality client-family centered nursing care to adults with acute health problems. The course focuses on the practice of professional nursing as an evidence-based, goal-directed activity to assist adults achieve optimal health, meet basic human needs, provide holistic care, and engage in health promotion and disease/injury prevention strategies. Emphasis is on the individual and collaborative roles of nursing to identify risk factors, assess health status, and design, implement, and evaluate nursing interventions to obtain therapeutic outcomes for conditions such as myocardial infarction, stroke, acute renal failure, and exacerbations of respiratory and metabolic disorders.

Prerequisites: NUR 520 [Min Grade: C] and NUR 526 [Min Grade: C] and NUR 524 [Min Grade: C] and NUR 528 [Min Grade: C] and NUR 522 [Min Grade: C]

NUR 557. Leadership and Management in Professional Nursing for RNs. 3 Hours.

This course focuses on leadership and management theories and models, resource allocation and management, delegation, conflict resolution, legal implications of practice, managed care, evaluation of practice, continuous quality improvement, healthcare systems, and contemporary issues in the workplace. Emphasis is placed on the integration of all professional role behaviors, application of research, and leadership/management skills. For students enrolled in 557, this course is a transition course into the RN-MSN option for baccalaureate degree RN Mobility students. Evaluation methods for the course will be different from those used for students enrolled in NUR 457.

Prerequisites: NUR 574 [Min Grade: C](Can be taken Concurrently) and NUR 597 [Min Grade: C](Can be taken Concurrently)

NUR 558L. Clinical Synthesis and Role Immersion. 4 Hours.

The purpose of this course is the synthesis and assimilation of skills and nursing content from all previous courses and is intended to prepare students to function independently in the roles of the generalist nurse. The focus of the course is on the professional roles of direct caregiver, health policy advocate, translator/integrator of nursing scholarship, interprofessional team collaborator, nursing practice innovator, and leader of organizations and systems. The course emphasizes independent nursing practice as a generalist nurse under the supervision of a nursing preceptor, involvement in organizational/systems leadership, and application of best evidence to deliver safe, quality, client/family centered care.

Prerequisites: NUR 556 [Min Grade: C] and NUR 552 [Min Grade: C] and NUR 538 [Min Grade: C] and NUR 542 [Min Grade: C]

NUR 559L. Concepts of Transitional Care Coordination. 4 Hours.

The purpose of this course is to apply nursing knowledge and skills to promote safe, quality patient care in a variety of transitional care settings across the lifespan. The focus of this course will be to apply concepts of care coordination and transitional care in order to focus on achieving the outcomes of increasing access to care, preventing hospital readmissions, and promoting innovative, cost-effective, quality care for highly vulnerable and/or chronically ill clients during critical transitions. Emphasis will be upon coordination and promotion of care continuity within, between and across settings, as well as between providers. Additionally, emphasis will be placed on identification of required community resources, development of a mutually-agreeable plan of care with the client, coordination of care with all providers, the time-limited nature of transitional care services, client, family and caregiver education, identifying root causes of poor health outcomes, avoiding hospital readmissions and promoting optimal client outcomes.

NUR 574. Transition to Professional Nursing Practice for RNs. 4 Hours.

Using an online format, this course is designed to enhance the registered nurse's knowledge of the role of the professional nurse in meeting the healthier needs of society. Historical, legal, political, and ethical issues affecting the profession will be examined. The relationship between selected issues, trends, and theories and professional nursing practice will be analyzed. Students will examine behaviors related to various roles of the professional nurse, including caregiver, teacher, advocate, research consumer, and counselor. Additionally, this course addresses communication skills necessary to a professional nurse including writing and computer literacy. For students enrolled in NUR 574, this course is a transition course into the RN-MSN option for post-baccalaureate degree RN Mobility students.

NUR 587. Supplemental Academic Course for Support (SACS). 1-3 Hour.

The purpose of this distance-accessible course is to introduce a structured format for students to review nursing concepts and processes related to a specific patient population. The course focuses on the role of the nurse as caregiver. Emphasis is on test-taking strategies and the review of didactic content to strengthen the student's knowledge base.

NUR 597. Community and Public Health Nursing for RNs. 4 Hours.

This course is designed for RN students to build on existing clinical expertise and knowledge, broaden exposure to different roles of the professional nurse in the areas of community and public health, and apply knowledge learned throughout the BSN curriculum to meet the needs of population aggregates. Emphasis is on professional nurse role development focused on illness and injury prevention, health promotion, health education, public health preparedness and advocacy for population aggregates across the life span. For students enrolled in NUR 597, this course is a transition course into the RN-MSN option for post-baccalaureate degree RN Mobility students.

Prerequisites: NUR 574 [Min Grade: C](Can be taken Concurrently)

NUR 600. Research and Statistics for Advanced Practice. 4 Hours.

This course is designed to prepare master's students with the research knowledge and skills to (1) use current research findings to improve practice, (2) use the process of research to examine questions identified in nursing practice, and (3) participate in collaborative research. This course will include integration of the following elements: critical thinking, current technologies for data management and statistical analysis, scholarly writing, scientific integrity and ethics and human diversity. Statistical procedures examined will include univariate and bivariate statistics, parametric and nonparametric procedures and selected epidemiological measures. Prerequisite: Under-graduate statistics.

Prerequisites: NUST A or MA 180 [Min Grade: C] or PY 214 [Min Grade: C] or MA 480 [Min Grade: C] or QM 214 [Min Grade: C] or JS 120 [Min Grade: C] or (NUR 517 [Min Grade: C] and NUR 518L [Min Grade: P])

NUR 601. Role Development for Advanced Nursing Practice. 3 Hours.

This course is designed to prepare graduate nursing students to understand the concepts of advanced nursing practice and advanced practice nursing. Students will be expected to differentiate between advanced nursing practice and the practice of other nurses and health care providers. Concepts from a variety of models and theories from nursing and other disciplines will be discussed, and examples of how these concepts may be applied in advanced nursing practice will be offered. The concept of cultural competence will be explored as will its application when interacting with people from diverse ethnic and racial groups.

NUR 602. Issues Affecting Advanced Nursing Practice. 3 Hours.

This course prepares graduate nursing students to incorporate management and leadership skills in the practice arena. The health care environment and culture, selected organizational, economic, and financial theories, strategic planning, change theory, health care marketing and information and quality management will be explored in the context of contemporary issues such as bioterrorism and health care policy and regulation. This course will also include integration of the following elements: critical thinking, scholarly writing, research, theory evaluation and application, scientific integrity and ethics, human diversity and social issues.

NUR 603. Primary Health Care in Low Resource Countries. 3 Hours.

This course is designed for the Advanced Health Care Provider who plans to deliver primary health care in countries considered to be low resource areas as designated by the World Health Organization. These students will study the epidemiology, pathophysiology, diagnosis, and management of infectious and parasitic diseases throughout the global community. In addition, nutritional deficiencies and obstetric problems will be reviewed. Emphasis will be placed on those health problems which are not common in high resource countries. Implementation of the World Health Organization's Integrated Management standards will be included in the study of each disease as they apply to adults adolescents, and children. Potential personal safety issues for world travelers, and information designed to alleviate these issues will be studied. Each student will focus on a specific country or global area for a more in-depth learning experience.

NUR 604. Leadership in Advanced Nursing Practice Roles. 3 Hours.

The purpose of this course is to provide students with the foundation for an in-depth understanding of advanced nursing practice leadership. The focus of the course is on the principles and standards of advanced nursing practice. The emphasis of the course is on inter-professional collaboration in healthcare.

NUR 605. Research for Evidence-Based Practice. 3 Hours.

This core course is designed to prepare master's nursing students with the research knowledge and skills to (1) use current research findings to improve practice, (2) use the process of research to examine questions identified in one's own nursing practice, (3) develop an evidence-based advanced nursing practice, and (4) contribute to expansion of nursing's knowledge base. This course will also include integration of the following elements and/or activities: critical thinking, informatics, current technologies for data management and statistical analysis, collaboration, scholarly writing, preparing/giving professional presentations, theory evaluation and application, scientific integrity and ethics, human diversity, and social issues. The advanced-practice role emphasis of this course is that of investigator, research collaborator, and content expert in a selected practice field. A graduate course in inferential statistics and a solid foundation in computer utilization and accessing scientific sources by internet is required.

NUR 606. Translating Evidence into Practice. 3 Hours.

The purpose of this course is to provide students with the knowledge and skills to evaluate and interpret evidence that supports application in practice. The focus of the course will be on the management and analysis of health care evidence and translation for practice. The emphasis of the course will be on evidence-based practice, safety and quality, informatics, emerging technologies, data management, applied statistics, evaluation and trend analysis.

Prerequisites: (NUR 604 [Min Grade: B] or NUR 604 [Min Grade: B]) and (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (MA 180 [Min Grade: C] or MA 480 [Min Grade: C] or PY 214 [Min Grade: C] or PY 216 [Min Grade: C] or QM 214 [Min Grade: C] or JS 120 [Min Grade: C]) or (NUR 517 [Min Grade: C] or NUR 518L [Min Grade: P])

NUR 607. Interprofessional Global Health Service Learning I. 1 Hour.

This course provides students with an opportunity to apply principles of interprofessional collaboration, community partnerships, and global health in the development of a plan to address a global health problem in collaboration with a community partner. Students apply concepts and theories related to global health, interprofessional collaboration, team building, community partnerships, and the ecological framework developing a plan to address a specific global health problem with a community partner. The course focuses on planning a service learning project that will benefit a community partner. The project is planned and carried through by an interprofessional team. The course is primarily experiential, with students' time spent on planning the project and learning leadership and project planning skills.

NUR 608. Interprofessional Collaboration (IPC) and Community Partnerships in Global Health. 1 Hour.

This course provides students with an understanding of principles of interprofessional collaboration and community partnerships that, together with key social and economic concepts of global health, enables them to participate in developing and implementing sustainable global health projects in collaboration with local and international community partners. Working in interdisciplinary teams, students apply concepts and theories related to global health, interprofessional collaboration, team building, community partnerships, and the socioecological framework to develop a plan to address a specific global health problem with a community partner.

NUR 609. Radiology for Advanced Practice. 3 Hours.

This course provides nurse practitioners and other mid-level providers with an introduction to radiography. The course provides the novice the opportunity to incorporate radiographic studies into working through a differential diagnosis. The course utilizes various common radiographic techniques including plain films, computed tomography and magnetic resonance imaging.

NUR 610. Health Care Systems for Advanced Nursing Practice. 3 Hours.

The purpose of this course is to provide students an opportunity to evaluate health care systems that influence advanced nursing practice. The focus of the course is on organizational theories of business practice and health care economics. The emphasis of the course is on the incorporation of business, legal, political, and organizational concepts in advanced nursing practice.

Prerequisites: NUR 606 [Min Grade: B](Can be taken Concurrently) and NUR 613 [Min Grade: B](Can be taken Concurrently)

NUR 611. Management of Diabetes Mellitus (Type 1 and 2). 3 Hours.

This course will provide a multi-disciplinary framework for the identification of those at risk or who already possess the metabolic syndrome, frank type 2 diabetes mellitus and its complications. A variety of management strategies will be presented from the perspectives of multiple healthcare disciplines. The perspectives of the multi-disciplinary team in assisting persons to achieve self-care goals are an important theme throughout this course as are the current controversies, issues and research findings underlying present approaches to treatment and patient/family education.

NUR 612. Advanced Pathophysiology. 3 Hours.

This course is designed to provide the student with an opportunity to build upon existing knowledge of basic physiology and pathophysiology. Emphasis is placed on the use of critical thinking to apply physiologic principles in explaining adaptations to pathogenic changes in the systems discussed.

NUR 613. Pharmacology and Therapeutics. 3 Hours.

This course focuses on analysis and utilization of principles of pharmacology and pharmacokinetics for the purpose of planning, implementing, and evaluating therapeutic pharmacological interventions. The unique characteristics of special populations related to therapeutic needs, as well as drug absorption, metabolism, and excretion, are defined.

NUR 614. Assessment and Diagnostic Reasoning for Advanced Nursing Practice. 3 Hours.

This course is designed to provide students with an advanced level of skill and knowledge in critical thinking and diagnostic reasoning for conducting health assessments and planning care for holistic, adaptive human beings. The following elements are integrated into the course: professional presentations, critical thinking, scientific integrity and ethics, human diversity, and social issues.

NUR 614L. Assessment and Diagnostic Reasoning for Advanced Nursing Practice. 3 Hours.

This course is designed to provide students with an advanced level of skill and knowledge in critical thinking and diagnostic reasoning for conducting health assessments and planning care for holistic, adaptive human beings. The following elements are integrated into the course: professional presentations, critical thinking, scientific integrity and ethics, human diversity, and social issues. Pre or corequisite: NUR 612.

Prerequisites: NUR 612 [Min Grade: B](Can be taken Concurrently) or NUR 612 [Min Grade: B](Can be taken Concurrently)

NUR 615. Sexuality Issues in Health and Illness: A Lifespan Approach. 3 Hours.

This course includes the ethical, social, biological, and psychological concepts of human sexuality.

NUR 616L. Focus on Advanced Nursing Practice Specialization. 2 Hours.

The purpose of this course will be the study of specialty track specific topics. The focus of the course will be on providing foundational materials for specialized areas of advanced nursing practice. Emphasis is on exploring specific advanced nursing practice competencies.

Prerequisites: (NUR 606 [Min Grade: B] or NUR 606 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B])

NUR 617. Interprofessional Ethical Issues in Clinical Genetics. 2 Hours.

This course will incorporate basic knowledge of clinical genetics and build knowledge of ethical and legal issues related to genetics. The course focuses on interprofessional collaboration and team development of solutions and approaches for cases from clinical practice. Examination of clinical genetic competencies according to professional standards is highlighted.

NUR 618L. Clinical Diagnostic Reasoning. 4 Hours.

A modular organ system approach utilizing case studies will be used to pull together basic principles from pathophysiology, pharmacology and physical/health assessment to develop clinical diagnostic reasoning skills necessary for the nurse practitioner. This course is designed to provide students with an advanced level of skill and knowledge in critical thinking and diagnostic reasoning to apply in the subsequent clinical nursing courses. Students will utilize the knowledge and skills learned in NUR 618QL as they diagnose and manage the care of clients with acute, chronic, and episodic health problems throughout the life span.

NUR 619. Health Issues in Culturally Diverse Populations in the United States. 3 Hours.

This course provides students with an overview of health issues and health disparities confronting culturally diverse populations in the United States. The course also addresses genetic, cultural, historical and demographic factors that influence these health issues and disparities, implications for culturally effective health care, and for development of health policy.

NUR 620. Social Responsibility in Global Health. 1 Hour.

This course provides students with an understanding of key social and economic concepts of global health that, together with an understanding of interprofessional collaboration and community partnerships, will enable them to participate in developing and implementing sustainable global health projects in collaboration with local and international community partners. The course is open to undergraduate and graduate students who are enrolled in two co-requisite courses that are requirements for students participating in the interprofessional global health service learning program at the University of Alabama at Birmingham. Working in interdisciplinary teams, students apply concepts and theories related to global health, interprofessional collaboration, team building, community partnerships, and the socioecological framework to develop a plan to address a specific global health problem with a community partner.

NUR 625. Concepts of Addiction Across the Lifespan. 3 Hours.

The purpose of this course is to explore the concept of substance use, misuse and addiction across the lifespan from a nursing perspective. The course will focus on exploring substance use, misuse and addictions nursing, and will include: the epidemiology of substance use, misuse and addiction, a review of addictive substances and medications, an overview of the pathophysiological effects of substance use, misuse, addiction, and overdose, pertinent legislation, and the impact of substance use, misuse and addiction on the professional registered nurse. Emphasis will be placed upon the nurse's role in screening, brief intervention, and referral to treatment for patients across the lifespan experiencing substance use, misuse, and addiction.

NUR 628. Men's Health Across the Lifespan. 3 Hours.

The purpose of this course is to provide an expansion of knowledge of health related issues for the pre-adolescent, adolescent, adult, and aging male population. The focus of this course is on physiologic and psychologic development, age related health complications, emotional challenges of adolescence, social determinants of health, policy, sexual health and related issues, and complications specific to aging males. The emphasis of the course is on promoting the progression of knowledge of health related issues of the male population.

NUR 630. Principles of Epidemiology. 3 Hours.

This course is intended to provide the advanced practice nurse with a working knowledge of epidemiology and biostatistics as they relate to nursing practice. Additionally, phenomena along the wellness continuum will be discussed. The Natural History of Disease Model will be applied to the study of health and illness in human populations.

Prerequisites: NUR 600 [Min Grade: C]

NUR 633. Growth and Development. 3 Hours.

The content of this course is centered on major theories of development including physiological, psychoanalytic, social, stimulus-response, cognitive and moral. Current areas and findings of research are investigated and research designs and methods are critiqued. Self-selected in depth studies are made and shared. Contributions of the study of development to the functional practice of nursing are demonstrated.

NUR 634. Perspectives in Global Health Leadership. 3 Hours.

This course is designed to provide students with an understanding of global aspects of health care leadership. The course will focus on identification of characteristics of global health care leaders, leadership theories, and strategies to develop one's own personal leadership abilities. The course will provide students with a unique opportunity to interact with health care leaders from countries around the world, and develop projects related to an aspect of global health care leadership of interest to each student.

NUR 637. Genetic Principles and Issues. 3 Hours.**NUR 639. Complementary Therapies and Integrative Health Care. 3 Hours.**

The focus of this elective course is on holistic nursing utilizing complementary and alternative therapies and integrative health care as an emerging paradigm in the health care arena. This course will examine both the concepts of integrative health care and major complementary therapies, including theoretical basis and research support, actions, uses, contraindications, and side effects. The socio-cultural, economic, legal and ethical issues associated with complementary therapies will be included as well as standards for practice and available resources. Students will be encouraged to explore ways in which they can counsel patients regarding complementary therapies as well as potential inclusion of the therapies in their own practice.

NUR 641. Herbs and Nutritional Supplements. 3 Hours.**NUR 642. Health Education and Social Welfare in a Global Community. 3 Hours.**

The purpose of this course is to provide students with a cross-cultural experience in which they will spend time in a selected global community while learning about health, educational and social welfare issues. Students will participate in pre-trip seminar in Birmingham or on-line prior to travel. The seminar(s) will focus on an overview of the course, a model of assessing culture and an overview of selected global community's culture. Students will also participate in seminars on a variety of health, education and social welfare topics provided by the course instructor and by resource persons from the selected global community.

NUR 643. Introduction to Nursing Informatics. 3 Hours.

The organizing framework for this course is based on the three concepts that form the theoretical basis of nursing informatics, data, information and knowledge. Students will explore how data can be organized into information for the generation of knowledge through the design, selection and implementation of clinical information systems. The course has two sections: theory and laboratory. The theoretical content will focus on the collection, organization, analysis and dissemination of information in nursing and healthcare. Laboratory work will familiarize the student with computer applications designed to manage nursing and healthcare information.

NUR 644. Principles of Developmental Care Newborn Infants. 3 Hours.

Provides students with an overview of principles of individualized developmental care for newborns and infants. The course also addresses principles of family-centered care as a key component of developmental care. Students review concepts and theories related to molecular biology, fetal, infant and family development, psychology and sociology in assessing and planning care to promote optimal development of high risk infants and families. Students explore roles of nurses and other interdisciplinary team members in developmental care are assessed, and develop plans to promote organizational change in order to incorporate developmental care principles in a clinical setting.

NUR 645. Sleep Across the Lifespan I. 3 Hours.

This course provides students with knowledge and skills required for: 1) screening, diagnosing, and treatment of adults (age 13 and beyond) with sleep disturbances and disorders, 2) understanding the articulation between physiologic, social, cultural, and environmental influences on sleep, sleep disturbances, and sleep disorders, 3) critical analysis of sleep, sleep disturbances and sleep disorders and how they relate to public policy, and law, 4) strategies for health promotion related to sleep, and 5) views of knowledge development, and scientific progress in sleep disturbances and disorders among diverse groups of adults.

NUR 667. Psychosocial Aspects of Evidence-Based Practice in Chronic Illness. 3 Hours.

This course is organized around the concepts of evidence-based practice, psychosocial nursing and chronic illness. The chronic illness trajectory across the individual's and family's life span and the needs of vulnerable populations with attention to disparity of care and cultural competence of involved health care providers is included. This course is designed to provide the undergraduate student with the basic knowledge and skills needed to provide evidence-based interventions and the graduate student to analyze needs for development of interventions to address the psychosocial needs of those with chronic illness.

NUR 670. Occupational Health Management Principles. 1 Hour.

This course provides the student with a working knowledge of management topics specific to planning, directing, and evaluating occupational health services.

NUR 671. Principles and Practice of Occupational Toxicology and Disease. 4 Hours.

This course is designed to provide the student with an opportunity to build upon existing knowledge of physiology and pathophysiology. Emphasis is placed on the use of critical thinking to assess risk, determine effects, and plan strategies to minimize effects of toxicant exposure and occupational diseases in worker populations.

NUR 674L. Evaluation and Management of Occupational Health and Safety Programs. 1,2 Hour.

The aim of NUR 674QL is to provide the occupational health student with a working knowledge of program planning and managerial processes in occupational settings. This graduate course is designed to give the master's student an opportunity to actively explore factors which influence the delivery of occupational health and safety services and to critically evaluate the role functions of managers of those services. Decision-making processes related to financial management and resource allocation, along with management of health and safety programs, will be emphasized. Planning for and implementing a worksite occupational health and safety intervention in industry at the aggregate level will be a major part of the course.

NUR 686. Honors Seminar III: Project Implementation. 3 Hours.

This required course for Honors Program students provides opportunities for implementation of an innovative evidence-based practice strategy which integrates human responses to health and illness and professional practice roles. Course content includes clinical or research experiences in innovative practice approaches, discussions of implications for evidence-based practice and professional nursing roles, and guidelines for preparation of manuscript and presentations. Professional expectations include dissemination of findings through a public forum and collaboration with agencies for integration of findings into practice.

NUR 690. Independent Study in Nursing. 1-6 Hour.

Course allows concentration on a selected topic of interest relevant to the Program of Studies.

NUR 691. Independent Study in Clinical Nursing. 1-6 Hour.

Course provides for clinical learning activities which are in addition to the activities in the regular clinical sequence of a given option. Students apply or test out theories and knowledge obtained in established or independent study theory courses.

NUR 692. Clinical Practicum in Genetics. 1-2 Hour.

Course provides students with the opportunity to apply concepts related to Genetic Principles and Issues in a clinical practicum experience. Students will work with an approved preceptor in a clinical site that provides genetic services to prenatal clients and in a site that serves children with known or suspected genetic disorders. Students will conduct genetic assessments, apply the nursing process to develop culturally-appropriate and ethical plans of care, participate as a member of an interdisciplinary team and use genetic counseling principles in interactions with families and children who have known or suspected genetic problems. Students will also implement an educational program related to genetics for nurses in a clinical or community setting.

NUR 697. Department of Transportation Medical Examiner Certification Review Course. 1 Hour.

The purposes of this course are to: (1) introduce and assist the student to gain mastery of the regulations and guidelines set forth by the U.S. Department of Transportation related to medical fitness for duty determination of commercial motor vehicle drivers; and (2) provide the student with an opportunity to demonstrate competency in conducting a DOT medical examination in the laboratory setting.

NUR 698. Research Practicum. 1-2 Hour.

This graduate course is designed to give the master's nursing student an opportunity to actively participate in the research process. This practicum course allows students to assume limited responsibilities in the development, execution, and/or dissemination of a research study by performing selected roles within the research team. It is acknowledged that given the limited time allotted to the practicum, students may only have the opportunity to participate in one phase of a study due to the extended period usually required to initiate and conduct a study, or to compile the data to present results to target audiences. This course may include integration of the a wide range of experiences such as: using informatics, data management, using statistical analysis software programs, scholarly writing, and preparing or giving presentations to professional or lay audiences. The advanced practice role emphasis of this course is that of investigator and research collaborator.

NUR 699. Thesis Research. 1-4 Hour.

The thesis is the result of original research work undertaken by the student and the interpretation of those results. The document should also demonstrate the candidate's acquaintance with the literature of the field and with proper selection and execution of research methodology. The physical form of the thesis must comply with published departmental and university guidelines for theses and dissertations. The student works under the guidance of a major professor with a committee of faculty members. However, the obligations of research, accuracy, writing, and quality rest with the student. A public defense of this work is expected. A minimum of four hours of credit is required for completion of thesis hours, although a variable number of hours may be taken per term as necessary. The advanced practice role emphasis of this course is that of investigator, research collaborator, and author.

Prerequisites: GAC M

NUR 700. Clinical Data Management and Analysis. 3 Hours.

This required course provides students with the knowledge base to understand, collect, manage, and measure clinical data. Students will explore data collection and management processes, levels of measurement, basic statistics, and measurement for improvement in order to effectively use clinical data. Data entry exercises employed through analytical tools and statistical software packages will allow the students to practice and apply the basic data management and analysis skills needed for the evaluation of clinical data and evidence-based practice.

NUR 701. Writing for Publication. 3 Hours.

This course concerns the development of skills in writing, editing, and preparing manuscripts for publication from initial idea to submission of a publishable manuscript. The course emphasizes a writing process that encourages productivity and collegial peer review. Legal and ethical aspects of authorship prepare students for responsible practices expected of scholars. Students should have mastered basic writing skills, e.g., grammar, syntax, and computer skills, prior to enrolling in this course.

NUR 706. Theory Building in Nursing. 4 Hours.

This course focuses on the nature of knowledge in practice disciplines with an emphasis on philosophy of science as an underpinning for knowledge development and research; approaches to theory, statement, and conceptual development, and criteria for evaluation of theory. Students examine a variety of sources regarding the nature and modes of theory, model, and concept development in practice disciplines. They select research literature in their substantive area for isolation of concepts, theories, and research contexts to assess congruence between theoretical and operational systems, and suggest ways to remedy problems. They interpret research reports in their substantive area from a theory development and testing perspective, providing a visual schematic representation of their analysis. Through group interaction, they formulate conclusions about the state of the art and forecast directions for theory development as a basis for practice. Each student develops a personal philosophy of science. Admission to PhD program in nursing or permission of instructor.

NUR 70A. Grad Nursing Elective. 3 Hours.**NUR 70B. Grad Nursing Elective. 3 Hours.****NUR 70C. Grad Nursing Elective. 3 Hours.****NUR 729. Evidence-Based Practice Design and Translation. 3 Hours.**

The purpose of this course is to provide students with models for evidence-based practice (EBP) design and improvement translation. Students learn to formulate clinical questions in answerable format, and search for and identify best research evidence. The focus of the course is to evaluate and critically appraise evidence for rigor and applicability to the clinical problem and is designed to improve clinical outcomes. Students will translate the evidence into practice environments for safe, high-quality care. Students will gain access to information that will support optimal clinical decision-making. Improvement translation sciences will also be introduced.

Prerequisites: NUR 700 [Min Grade: B](Can be taken Concurrently) or NUR 700 [Min Grade: B](Can be taken Concurrently)

NUR 730. Current Topics in Nursing. 1-3 Hour.

A special topic seminar with variable focus.

NUR 731. Philosophical, Theoretical, and Conceptual Foundations for Advanced Practice Nursing. 3 Hours.

This required core course in the Doctorate of Nursing Practice program provides an understanding of the use of theory and conceptual foundation to guide the complexity of specialty nursing practice at the doctoral level. The content is derived from the philosophical and scientific underpinnings of nursing, natural, and psycho-social sciences.(on-line) (Essential I).

NUR 732. Design and Statistical Methods for Advanced Practice Nursing. 3 Hours.

This required core course for the Doctorate of Nursing Practice program provides the student with the basis to search, retrieve, and manipulate statistical data. The focus of this course is on quantitative and qualitative methodologies, research design, and data analysis. The content provides essential knowledge for evaluation of research to guide evidence-based practice at the highest level. (Essential III).

NUR 733. Informatics for Advanced Practice Nursing. 3 Hours.

This course focuses on the collection, organization, analysis, and dissemination of information in nursing and health care. Students are introduced to the specialty of nursing informatics, the information system life-cycle, telemedicine, and the use of technology to enhance nursing care delivery and patient safety. Also, students learn how to design, use, and manipulate large and small patient databases for the analysis of patient outcomes. (Essential IV).

NUR 734L. Advanced Experiential Clinical Course. 1-6 Hour.

This course provides the opportunity for DNP students to demonstrate excellence in providing complex care and leadership in healthcare settings.

NUR 735. Population Health in Advanced Practice Nursing. 3 Hours.

This course for the Doctor of Nursing Practice program prepares the student to implement specialty population-based disease prevention and health promotion activities to achieve national and international goals of improving worldwide health status. The course focuses on a spectrum of issues affecting health, which include emerging infectious diseases, emergency preparedness, disparities in health and healthcare services, and the impact of behavior and lifestyle choices on health. 3 credit hours (Essentials V and VII).

NUR 736. Application of Best Practices. 3-4 Hours.

This course prepares the student to evaluate interdisciplinary clinical and health systems for best practices and outcomes in a specialty area. Students acquire the knowledge, skills and tools to support, promote, and implement evidence-based specialty practice in nursing and health care delivery systems to improve health outcomes. Emphasis is on the synthesis, critique, and application of evidence to support quality clinical and organizational practices.

Prerequisites: NUR 731 [Min Grade: C] and NUR 732 [Min Grade: C]

NUR 737. Interdisciplinary Leadership and Role Development for Practice Excellence. 3 Hours.

This course is a required core DNP course that focuses on organizational and systems leadership and knowledge and skills critical to role development in independent and inter- and intra-disciplinary practice. Content includes communication, conflict resolution, collaboration and negotiation, leadership, and team functioning to maximize success in the establishment of safe, effective patient-centered care in complex environments.

NUR 738L. DNP Project Development. 2-3 Hours.

NUR 738L is a 3-hour seminar designed to assist the student in selecting an area of interest within a practice specialization, and in demonstrating professional competencies related to that area of interest. The student will document previously acquired abilities and competencies in a professional portfolio. Students will participate in the seminar to obtain guidance, be involved in discussion, and receive peer suggestions about the portfolio and project plans.

Prerequisites: (NUR 729 [Min Grade: B] or NUR 729 [Min Grade: B]) and (NUR 743 [Min Grade: B] or NUR 743 [Min Grade: B])

NUR 739L. DNP Project Implementation and Evaluation. 1-4 Hour.

This required course is the capstone clinical course in all advanced practice tracks. The student presents evidence of achievements and competencies in a professional portfolio. The practice residency is completed in a specialty area of the student's choice. One credit hour of each semester of the residency is devoted to classroom seminar. The seminar focuses on the aspects of the final practice project and interventions that promote health, prevent illness and disability, and alleviate health disparities. Small group sessions are formed for students who are at similar stages of completion of the course requirements. The final project is selected and planned by the student and the advisor, and is implemented during this course. The student completes the project, evaluates the outcomes, disseminates the findings, and makes a formal, scholarly presentation to faculty and peers. (Essentials I, VIII).

Prerequisites: NUR 738L [Min Grade: P](Can be taken Concurrently) or NUR 738L [Min Grade: P](Can be taken Concurrently)

NUR 740. Health Policy and Politics: Implications in Health Care. 3 Hours.

This required core course in the Doctor of Nursing Practice program focuses on the basic principles of health policy and the influence of the political process as a systematic approach to health care in the United States and internationally. The course prepares students to assume complex leadership roles in order to advance specialty practice and health. This course focuses on the unique challenges of engaging and influencing health care policy in the U.S. and internationally. It is designed to develop skills, techniques, and approaches to the critical analysis of health policy proposals, health policies, and related issues from the perspective of consumers, nursing, other health professions, and other stakeholders in policy and public forums. The health policy framework is analyzed from a governmental, institutional, and organizational perspective. (Essentials I, II, III and V).

NUR 741. Cancer Prevention and Control Training Program (CPCTP): Research Intensive. 2 Hours.

Grants process and proposal writing in healthcare research using NIH predoctoral and postdoctoral applications. Strategies for successful proposal preparation include the production of elements required in PHS-398 research grant proposal.

NUR 742. Program Evaluation and Methods. 3 Hours.

The purpose of this course is to synthesize knowledge related to translational/implementation science models and strategies to improved health outcomes. The emphasis in the course is the use of program evaluation as a strategic planning tool to achieve positive changes in health status, to initiate quality improvement, to engage in risk anticipation, management and to facilitate organizational and system level changes.

Prerequisites: (NUR 700 [Min Grade: B] or NUR 700 [Min Grade: B]) and (NUR 729 [Min Grade: B] or NUR 729 [Min Grade: B])

NUR 743. Evidence-Based Practice Strategies. 3 Hours.

This course is a required core Doctor of Nursing Practice Program course, which expands on foundational evidence-based practice concepts to refine a problem statement and derive a searchable and answerable clinical question. Content includes conducting a systematic review of the literature to guide the selection of methods, strategies, tools and metrics needed to complete a successful scholarly project. The course also addresses targeted strategies for disseminating evidence associated with scholarly projects.

Prerequisites: NUR 729 [Min Grade: B] and NUR 731 [Min Grade: B]

NUR 744. Program Evaluation and Methods. 3 Hours.

The purpose of this course is to synthesize knowledge related to translational/implementation science models and strategies to improve health outcomes. The emphasis in the course is the use of program evaluation as a strategic planning tool to achieve positive changes in health status, to initiate quality improvement, to engage in risk anticipation, management and to facilitate organizational and system level changes.

Prerequisites: NUR 700 [Min Grade: B] and NUR 729 [Min Grade: B] and NUR 743 [Min Grade: B]

NUR 745. Foundations of Scholarly Writing. 3 Hours.

The purpose of this course is to provide students with the skills necessary for articulating concepts in a logical and scholarly manner. The focus of the course is on the development of literacy skills needed to locate, analyze, and apply information using a variety of techniques and resources. The emphasis is on the development of skills in writing and editing the manuscript using scholarly grammar, syntax, punctuation, and sentence and paragraph structure.

Prerequisites: NUR 737 [Min Grade: B] and NUR 740 [Min Grade: B]

NUR 750. Quantitative Research Methods. 3 Hours.

This course is a survey of quantitative research methods and the first required, research core course in the doctoral nursing program. The course is designed to prepare doctoral nursing students with the research knowledge and skills to: (1) use current research findings to improve practice, (2) use the process of research to examine questions identified in one's own nursing practice, and (3) contribute to expansion of nursing's knowledge base. This course will also include integration of the following elements and/or activities: critical thinking, synthesis of quantitative research literature, scholarly writing, scientific integrity and ethics, human diversity, and social issues. The advanced practice role emphasis of this course is that of investigator, research collaborator, and content expert in a selected practice field. Students must have a solid foundation in computer utilization and accessing scientific sources by Internet.

NUR 751. Philosophical Foundations of Science. 3 Hours.

The purpose of this course is to introduce the student to the concept of truth, and scientific worldviews used to confirm or refute truth over the course of history and during specific periods of social and political contexts. The overall desired student outcome of students participating in the course is demonstrated skill in analysis and application of diverse approaches to knowledge development to research.

NUR 752. Responsible Conduct of Research: A Cross-Cultural Perspective. 3 Hours.

This course will examine a wide range of historical and modern treatises that have shaped ethical practice in the dominant western culture as well as medical ethical theories in other cultures. The course will emphasize comparing and contrasting various world views of ethical research practice from a cultural and global perspective. The content will focus on the pillars of liberal political theory which include respect for persons, autonomy, justice and rights-based codes. In addition, the expectations and regulations of Institutional Review Boards will be examined with an emphasis on developing effective strategies to anticipate procedural problems and expedite approval of student research applications. In addition, students will complete and provide proof of current completion of the UAB IRB training course (within 12 months) as an initial pass/fail learning activity. This course will also include integration of the following elements and/or activities: critical thinking, informatics, collaboration, scholarly writing, preparing/giving professional presentations, theory evaluation and application, human diversity, cultural competence, global concerns and health disparity issues. The advanced role emphasis of this course is that of investigator, research collaborator, and content expert in a selected practice field.

NUR 753. Nursing as a Scientific Discipline. 2 Hours.

The purpose of this course is to provide students with an overview of the processes of knowledge development and contributions of nursing to scientific knowledge. The course focuses on multiple ways of knowing and strategies for expanding knowledge to meet changing societal needs. Students will have an opportunity to appraise different modes of inquiry that contribute to knowledge development as well as integrate different scientific perspectives into a trajectory of research within nursing and multidisciplinary contexts.

NUR 754. Issues in Leadership and Health Policy. 3 Hours.

This graduate core course is designed to prepare doctoral nursing students with advanced theory in health care leadership and analysis of health policy: (1) examine theories of leadership behavior to improve the delivery and or provision of nursing care, (2) examine aspects of leadership in policy analysis and advocacy, (3) develop an evidence-based foundation for practice as a nursing leader and (4) contribute to the improvement of patient care across the health care continuum through leadership. This course will also include integration of the following elements and /or activities: critical thinking, informatics, current technologies for information retrieval and data management, collaboration, scholarly writing, preparing/giving professional presentations, theory evaluation and application, scientific integrity and ethics, human diversity, cultural competence and health disparity issues. The advanced role emphasis of this course is that of research team leader, academic administrator, health policy advocate and content expert in a selected practice field. Admission to the Doctorate of Philosophy (PhD) Program of the School of Nursing.

NUR 755. Critical Analysis of Theories, Models, and Frameworks. 3 Hours.

The purpose of this course is to identify the underlying concepts and theories that will serve as the basis of conducting research in a focused area. Through literature review and discussion students will challenge each other to link the most relevant theory(s) including physiological, behavioral, and other theories of health and illness to their developing research questions. Students will perform a concept analysis relevant to their proposed area of research focus in order to begin to understand the complexity and issues of measurement and testing that they will face as they undertake rigorous study.

Prerequisites: NUR 751 [Min Grade: B] and NUR 753 [Min Grade: B]

NUR 756. Applied Statistical Analysis Techniques. 4 Hours.

This required core course in the Doctor of Philosophy program is intended to provide the student with the basis to search, retrieve, and manipulate statistical data. It provides an underpinning for the understanding of research methods and findings, and supports clinical scholarship practice.

NUR 757. Health Services Research in Nursing. 3 Hours.

The purpose of this course is to introduce health services research to a nursing audience. Students will gain an understanding of the domains of health services research, to include organizational systems research, patient outcomes research, improvement science, and program evaluation through analyzing studies that seek to answer contemporary problems in our health care system, particularly as they apply to nursing aspects of patient care. They will have the opportunity to identify critical problems in health care delivery, pose research questions and hypotheses, explore existing and innovative indicators and sources of data, and develop skill in analyzing such data. Students will also develop an appreciation for the broad implications of health services research in nursing.

NUR 758. Research and Health Policy. 3 Hours.

This graduate core course is designed to prepare PhD nursing students for designing research and translating evidence so as to influence health policy. This course will include integration of the following elements and/or activities: critical thinking, informatics, current technologies for information retrieval and data management, collaboration, scholarly writing, preparing/giving professional presentations, theory evaluation and application, scientific integrity and ethics, human diversity, cultural competence and health disparity issues.

NUR 759. Writing the Career Development Grant Proposal. 1 Hour.

The purpose of this course is to prepare PhD students in the foundations of writing grants for external funding. The Course addresses the grants process and proposal writing in healthcare research using the NIH pre-doctoral application as a template. Strategies for successful proposal preparation including development of elements required in NIH research grant proposal are covered.

Prerequisites: NRM 750 [Min Grade: B](Can be taken Concurrently) and NRM 752 [Min Grade: B]

NUR 760. Scientific Dissemination. 1 Hour.

The purpose of this course is to provide the student an understanding of why dissemination is essential for scientific advancement, with particular emphasis on peer-reviewed journals. To accomplish this, students will be provided with the basic components of writing a peer-reviewed manuscript for publication. Students will be provided a framework for how to generate a detailed outline for a scientific manuscript. Topics to be addressed include but are not limited to plagiarism, self-plagiarism, referencing guidelines (e.g., Endnote), and strategies for improving dissemination productivity. Additional topics to be addressed include: rules and responsibilities of authorship, copyright and conflict of interest, how to select a journal (i.e., impact factors, pros and cons of open access journals), the role of the editor and reviewers, the importance of adhering to journal guidelines and instructions, how and why to contact the editor, how to negotiate electronic submission portals, the peer-review process, how to respond to journal reviewers' feedback, and monitoring production details after the article is accepted (i.e., reviewing galley proofs, communication with production staff).

NUR 790. Independent Study in Nursing. 1-9 Hour.

Independent Study in Nursing.

NUR 791. Independent Study in Clinical Nursing. 1-9 Hour.

Independent Study in Clinical Nursing.

NUR 797. Writing the Dissertation. 3 Hours.

The purpose of this course is to guide students in the development of an internally consistent dissertation research proposal that can be successfully defended as they progress toward candidacy. In addition, students will explore strategies for discussing research results and their contributions to the state of the science and theory development. Students are to work closely with their dissertation chair and members of their dissertation committee while developing the proposal.

Prerequisites: NRM 781 [Min Grade: B] or (NRM 783 [Min Grade: B] and NRM 798L [Min Grade: B])

NUR 798. Research Practicum. 1-9 Hour.

Research Practicum. The research practicum is a series of course credits taken throughout the student's doctoral coursework to provide continuous experience under the supervision of the mentor.

NUR 799. Dissertation Research. 1-9 Hour.

Dissertation Research - Prerequisites: Comprehensive Examination and admission to candidacy.

Prerequisites: GAC Z

NWH-Nursing-Women's Health

NWH 618L. Focus on Advanced Nursing Practice Specialization. 3 Hours.

The purpose of this course will be the study of specialty track specific topics. The focus of the course will be on providing foundational materials for specialized areas of advanced nursing practice. Emphasis is on exploring specific advanced nursing practice competencies.

Prerequisites: NUR 606 [Min Grade: B]

NWH 631. Women's Health for Advanced Nursing Practice I. 5 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of this course is to prepare the student to implement the role of the Advanced Practice Nurse. The emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to women.

Prerequisites: (NUR 612 [Min Grade: B] or NUR 612 [Min Grade: B]) and (NUR 613 [Min Grade: B] or NUR 613 [Min Grade: B]) and (NUR 614L [Min Grade: B] or NUR 614L [Min Grade: B] or NUR 614 [Min Grade: B] or NUR 614 [Min Grade: B])

NWH 632. Women's Health for Advanced Nursing Practice II. 4 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness of women. The focus of this course is on health promotion and disease prevention and management strategies from inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care to women.

Prerequisites: NWH 631 [Min Grade: B] or NWH 631 [Min Grade: B]

NWH 633. Women's Health for Advanced Practice III. 3-5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course is on the utilization of complex models and systems of practice to deliver high quality evidence-based care to women's health patients. The emphasis of the course is on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: NWH 632 [Min Grade: B] and NWH 686L [Min Grade: P]

NWH 685L. Practicum I: Women's Health Care Nurse Practitioner. 3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to women. The focus of this course is on the delivery of health care services to women. The emphasis of this course is on promoting the progression of competence within the Advanced Practice Nursing role.

NWH 686L. Practicum II: Women's Health Care Nurse Practitioner. 3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to women. The focus of this course is to provide the student with opportunities to integrate in depth diagnostic and management skills to provide care for women. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: (NWH 631 [Min Grade: B] or NWH 631 [Min Grade: B]) and (NWH 685L [Min Grade: P] or NWH 685L [Min Grade: P])

NWH 692L. Residency: Women's Health Care Nurse Practitioner. 4 Hours.

The purpose of this course is to refine management strategies and best practice models in the delivery of high quality care to women. The focus of this course is to evaluate progress toward achievement of professional competencies. The emphasis is on incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of women.

Prerequisites: NWH 686L [Min Grade: P] or NWH 686L [Min Grade: P]

NWH 731. Advanced Women's Health Nursing I. 5 Hours.

The purpose of this course is to introduce essential concepts in the safe and effective provision of advanced practice nursing. The focus of this course is to prepare the student to implement the role Doctor of Nursing Practice prepared Advanced Practice Nurse. The Emphasis of this course is on the acquisition of the knowledge and skills necessary to deliver safe and effective care to women.

Prerequisites: NWH 618L [Min Grade: P] and (NUR 614 [Min Grade: B] or NUR 614L [Min Grade: B])

NWH 732. Advanced Women's Health Nursing II. 4 Hours.

The purpose of this course is to integrate prior theoretical and practical knowledge for diagnoses and management of the health and illness for women in the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse. The focus of this course is on the health promotion and disease prevention and the management of strategies form inter-professional domains. The emphasis of this course is to examine current evidence that supports the delivery of safe and high quality evidence-based care of women.

Prerequisites: NWH 731 [Min Grade: B]

NWH 733. Advanced Women's Health Nursing III. 5 Hours.

The purpose of this course is to synthesize in-depth knowledge and theoretical concepts as related to advanced practice nursing. The focus of this course in on the utilization of complex models and systems of practice to deliver high quality evidence-based care as a Doctor of Nursing Practice prepared Advanced Practice Nurse to women. The emphasis of the course in on the critical analysis of the evidence for applications that optimize health outcomes.

Prerequisites: NWH 732 [Min Grade: B] and NWH 785L [Min Grade: P]

NWH 785L. Practicum I: Women's Health Nurse Practitioner. 3 Hours.

The purpose of this course is to demonstrate management strategies and apply selected practice models for the delivery of high quality care to women. The focus of this course is on the delivery of health care services to women. The emphasis of this course is on promoting the progression of competence within the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse.

Prerequisites: NWH 731 [Min Grade: B]

NWH 786L. Practicum II: Women's Health Nurse Practitioner. 3 Hours.

The purposes of this course are to prioritize management strategies and apply selected practice models for delivery of care to women. The focus of this course is to provide the student with opportunities to integrate in-depth diagnostic, management, and leadership skills in the role of the Doctor of Nursing Practice prepared Advanced Practice Nurse to provide care for women. The emphasis of this course is on the formulation and management of individualized treatment plans based on diagnostic findings and current practice models.

Prerequisites: NWH 732 [Min Grade: B] and NWH 785L [Min Grade: P]

NWH 792L. Residency: Women's Health Nurse Practitioner. 4 Hours.

The purpose of this course is to enhance acquired management strategies and the use of best practice models in the delivery of high quality evidence-based care to women. The focus of this course is to evaluate progress toward achievement of competencies of the Doctor of Nursing Practice prepared Advanced Practice Nurse. The Emphasis is on the incorporation of evidence and concepts from previous coursework and clinical practice to improve the health status of women.

Prerequisites: NWH 733 [Min Grade: B] and NWH 786L [Min Grade: P]

OT-Occupational Therapy

OT 595. Occupations and Health: Groups and Communities I. 1 Hour.

A service-based learning model, pairing students with community partners to provide opportunities to reflect upon the facilitating and inhibiting nature of group and community settings. The course will also provide opportunity to consider the domains and contexts of both occupation and its influence on health, well-being, and lifestyle. The course aims to facilitate self-awareness through reflection of personal values, family, and roles as aspects of development of personality type and sense of self, as well as emphasizing cultural diversity competence and clearance of institutional administrative requirements for off campus experiences.

OT 596. Occupations and Health: Groups and Communities II. 1 Hour.

A service-based learning model, pairing students with community partners to provide opportunities to reflect upon the facilitating and inhibiting nature of group and community settings. In addition, the course will allow the opportunity to consider the domains and contexts of both occupation and its influence on health, well-being, and lifestyle. The course introduces the Occupational Therapy Practice Framework and application of the Occupational Therapy Process for clients at the groups and communities level. Service-based learning is introduced, and a number of service-based experiences are coordinated as a means to introduce the existing community partnerships.

Prerequisites: OT 595 [Min Grade: C]

OT 597. Occupations and Health: Groups and Communities III. 1 Hour.

A service-based learning model, pairing students with community partners to provide opportunities to reflect upon the facilitating and inhibiting nature of group and community settings. The course will allow for consideration of the domains and contexts of both occupation and its influence on health, well-being, and lifestyle. The course will facilitate use of the Occupational Therapy Practice Framework and the Occupational Therapy Process when working with groups and communities. An emphasis on establishing rapport with the partners and initiating the evaluation process (i.e., development of the occupational profile, beginning the analysis of occupation, generating project ideas including outcomes, and development of a working hypothesis for the focus of the intervention plan).

Prerequisites: OT 595 [Min Grade: C] and OT 596 [Min Grade: C]

OT 598. Occupations and Health: Groups and Communities IV. 1 Hour.

A service-based learning model, pairing students with community partners to provide opportunities to reflect upon the facilitating and inhibiting nature of group and community settings. In addition, the course will allow for consideration of the domains and contexts of both occupation and its influence on health, well-being, and lifestyle. Application of the Practice Framework and Occupational Therapy Process is continued, with emphasis on completion of evaluation, development of an intervention plan including selecting desired outcomes and goals, identifying possible intervention approaches and specific interventions, and potential discharge recommendations and plan.

Prerequisites: OT 595 [Min Grade: C] and OT 596 [Min Grade: C] and OT 597 [Min Grade: C]

OT 599. Occupations and Health: Groups and Communities V. 2 Hours.

A service-based learning model, pairing students with community partners to provide opportunities to reflect upon the facilitating and inhibiting nature of group and community settings and to consider the domains and contexts of both occupation and its influence on health, well-being, and lifestyle. Application of the Practice Framework and Occupational Therapy Process with emphasis on reassessment and discharge recommendations and public dissemination of the project via poster presentation.

Prerequisites: OT 595 [Min Grade: C] and OT 596 [Min Grade: C] and OT 597 [Min Grade: C] and OT 598 [Min Grade: C]

OT 600. The Nature of Occupation. 2 Hours.

Study of the complex nature of occupation and how it contributes to the experience of being human across the life span and through life transitions. Development of student's perspective of how health and well-being are influenced by the interplay of the person, their environment, and the nature of occupation.

OT 605. Therapeutic Skills. 3 Hours.

Group theory and group dynamics; basic group and individual client-therapist interaction and evaluation skills; therapeutic skills and tools used in occupational therapy practice.

OT 606. Frameworks for Occupational Therapy Practice. 3 Hours.

Introduction to fundamental concepts of Occupational Therapy frameworks, theory, philosophy, conceptual models and models of practice.

OT 607. Analysis of Occupational Performance. 3 Hours.

Introduction to intervention techniques commonly used in occupational therapy practice; activity analysis and synthesis; application of typical growth and development in relationship to different age groups and populations.

OT 609. Barriers to Occupational Performance. 3 Hours.

Exposure to content specific to human disease processes, injuries, and developmental or inherited abnormalities within body systems that affect individual's occupational performance.

OT 610. Mental Health Diagnosis Across Life Span. 3 Hours.

Examines developmental and psychiatric conditions that result from disease, congenital, traumatic, environmental or social processes. Relationships among disease or disorder, impairments, activity limitations and participation restrictions are emphasized in terms of the impact upon occupational performance.

OT 620. Found of Occupation: A&P. 4 Hours.

Designed to provide occupational therapy students a fundamental knowledge of human anatomy. An emphasis will be placed on the musculo-skeletal and peripheral nervous systems to enhance the understanding of conditions that will likely be encountered in the practice of Occupational Therapy.

OT 622. Introduction to Occupations of Infants, Children and Adolescents. 3 Hours.

Aspects of common pediatric diagnoses seen by occupational therapists; process of occupational therapy evaluation birth through adolescence, addressing needs through a holistic approach; assessment of occupational performance and occupational performance issues related to adaptation and life satisfaction.

OT 623. Found of Occup: Neuroscience. 3 Hours.

Advanced study of structure and function of central nervous system augmented with client examples.

OT 624. Occupations of Infants, Children and Adolescents. 4 Hours.

Evaluation, intervention planning, implementation, and specific intervention strategies across diagnostic categories for children, birth through adolescents using a holistic approach. Focus on components of occupational performance and occupational performance issues related to adaptation and life satisfaction.

Prerequisites: OT 622 [Min Grade: C]

OT 625. Occupations of Adults and Older Adults I. 4 Hours.

This course addresses aspects of evaluation, intervention planning, implementation, and specific intervention strategies across diagnostic categories in adult and elder rehabilitation. Occupational therapy addresses client needs using a holistic approach that incorporates all aspects of an individual's lifestyle. This course will focus on occupational areas of work, play, and leisure addressing components of occupational performance and contexts and how these areas affect occupational performance.

OT 630. Fieldwork Preparatory. 1 Hour.

Knowledge and ideas in preparation for upcoming fieldwork experiences throughout the program.

OT 631. Found of Occup: Biomechanics. 3 Hours.

Basic kinesiological principles and functional movement patterns of the human body during occupational performance. Study of principles and techniques for obtaining data about the status of the client's joint range of motion and muscle strength.

OT 632. Fieldwork Experience I. 1 Hour.

Fieldwork experience to enrich the didactic coursework through direct observation and participation in selected aspects of the occupational therapy process with emphasis on increasing awareness of better therapeutic use of self, occupational barriers and decision making skills when working with clients. An in class forum for exchange of ideas and experiences will be conducted after participating in the clinical experience.

Prerequisites: OT 630 [Min Grade: C]

OT 633. Fieldwork Experience II. 1 Hour.

Forum for exchange of ideas and experiences; detailed case study/inservice on modality and interventions chosen from client census during previous term's Level I Fieldwork experience.

Prerequisites: OT 630 [Min Grade: C] and OT 632 [Min Grade: C]

OT 634. Seminar in Professional Readiness. 2 Hours.

Forum for exchange of ideas and experiences; student, faculty, and alumni presentations on variety of topics.

OT 642. Research Design in Occupational Therapy. 1-3 Hour.

Review of research methodologies appropriate for use in clinical practice; topics include sampling, data management, and IRB training and approval. Students will design, implement, and document final projects.

OT 643. Data Analysis in Occupational Therapy Research. 1-3 Hour.

Review of data management and data analysis using SPSS Student Version to design, implement, analyze and document student final projects.

OT 644. Project Dissemination - Professional Writing and Presentation. 1-3 Hour.

Review documentation of project outcomes, writing for publication, and professional presentations to design, implement, analyze and, document student final projects.

OT 647. Leadership in Occupational Therapy. 3 Hours.

To develop leadership competencies for the occupational therapist to enable understanding of personal development and organizational change dynamics.

OT 653. Using the Literature for Evidence Based Practice. 3 Hours.

History of and rationale for evidence-based practice, introduction to typologies of evidence levels, search of data bases, developing clinical questions, critiquing evidence, analyzing bodies of evidence developed in response to research questions, and integrating evidence into clinical practice.

OT 655. Qualitative Research Methods for Health Profession. 2 Hours.

Explores the paradigm of qualitative research including the role it has in the development of a deeper understanding of client populations and the development of theory in occupational therapy. Research design, data collection strategies, and methods of analysis will be discussed.

OT 658. Foundations of Professional Education. 4 Hours.

Introduction to occupational therapy post-professional education. Concepts introduced include the World Health Organization International Classification of Function, OT Practice Framework, aspects of continuing competency, American Psychological Association writing framework, and the American Occupational Therapy Association Professional Development Tool.

OT 660. Seminar: Interdisciplinary Svcs/Devel Disabilities. 1-2 Hour.

Synthesis of team-based approaches to intervention for infants, children, and youth with known or suspected disabilities.

OT 661. Well-being and Health Through Occupation. 3 Hours.

Evaluate and critique the evidence which supports the relationship between occupation, health promotion, lifestyle choices, and prevention of injury and disease, utilizing occupational therapy models and approaches to practice while considering contexts. Includes learning experience to practice concepts of health and wellness.

OT 662. Upper Extremity Function in Occupation. 4 Hours.

This course will provide the opportunity to consider the occupational therapy process related to the design, fabrication, application, fitting, and training in the use of orthotics, prosthetics, and other modalities. Students will consider and apply the foundational knowledge, underlying principles, indications, contraindications, and precautions necessary for evidence-based practice.

OT 665. Occupations of Adults and Older Adults II. 4-5 Hours.

This course addresses aspects of evaluation, intervention planning, implementation and specific intervention strategies across diagnostic categories in adult and elder rehabilitation. Occupational therapy addresses client needs using a holistic approach that incorporates all aspects of an individual's lifestyle. This course will focus on occupational areas of work, play, and leisure addressing components of occupational performance and contexts and how these areas affect occupational performance.

OT 667. Research Methods. 3-4 Hours.

Research ethics, descriptive, exploratory and experimental design, basic statistical concepts, and discussion of various types of research to enable students to critically analyze and use scientific literature to improve practice. Emphasis on understanding components of the research report and concepts associated with judging of internal and external validity.

OT 668. Mental Health Practice in Adulthood. 4 Hours.

Examines psychiatric conditions that result from disease, congenital, traumatic, environmental or social processes. Relationships among impairments, activity limitations, and participation restrictions are emphasized in terms of the impact upon occupational performance. Evaluation, intervention planning, and intervention are studied.

OT 670. Occupation and Low Vision. 3 Hours.

Knowledge and skills to address issues related to vision loss across the lifespan referred for OT treatment in all practice settings.

OT 673. Engagement in Occupation Thru Technology I. 3 Hours.

Introduction to the relationship between occupation, health promotion, lifestyle, and health within communities, using occupational therapy models of practice to frame this critique. Evaluation and critique of the evidence base for current and emerging areas of occupational therapy practice and identification of potential service gaps.

OT 674. Engagement in Occupation thru Technology II. 3 Hours.

Designed to acquaint the student with assessments used in evaluation of clients for assistive technology, specific intervention strategies, elements of safety related to assistive technology, the education of clients and families and other key people in the context of the user.

OT 677. Foundations in Low Vision Rehabilitation I. 3 Hours.

Information on the topics of low vision rehabilitation including demographics and characteristics, settings and provider systems, anatomy and physiology of the eye and visual system, medical conditions causing low vision and common co-occurring secondary health conditions, low vision evaluation and screening, contribution of low vision on occupational performance and environmental interaction, and intervention strategies used by the occupational therapy generalist working in low vision.

OT 679. Foundations in Low Vision Rehabilitation II. 3 Hours.

Techniques for selecting, developing, and applying interventions to enhance occupational performance. Topics covered include optical devices, assistive technology and computer modifications, reading, and writing.

Prerequisites: OT 677 [Min Grade: C]

OT 685. Advanced Fieldwork Experience I. 10 Hours.

Full time supervised practice experience designed to develop entry level professional skills consisting of a 3-month experience.

OT 686. Advanced Fieldwork Experience II. 10 Hours.

Full time supervised practice experience designed to develop entry level professional skills consisting of a 3-month experience.

OT 689. Foundations in Treatment of Visual Impairment from Brain Injury. 3 Hours.

Evaluation and intervention for adults experiencing occupational limitations due to visual processing impairment from acquired brain injury. Topics include neuroanatomy of the visual processing system, evaluation and intervention for deficits in visual acuity, visual field oculomotor function, and visual attention and cognitive processing.

Prerequisites: OT 679 [Min Grade: C]

OT 690. Foundations in Low Vision Rehabilitation III. 3 Hours.

Techniques for selecting, developing, and applying interventions to enhance occupational performance. Topics covered include activities of daily living with and without vision, functional mobility, diabetes self-management, and driving and transportation.

Prerequisites: OT 679 [Min Grade: C]

OT 691. Foundations in Low Vision Rehabilitation IV. 3 Hours.

Students demonstrate ability to apply knowledge gained in the previous foundation courses to select and interpret evaluations and design interventions for adults with vision impairment. Format includes: a three-day on-campus intensive to provide review and synthesis of key evaluation and intervention principles for working with persons with age-related vision impairment and brain injury; practicum in diabetes self-management, prescribed optical devices and assistive technology; influence of policy and regulation on practice; ethical reasoning and advocacy; professional development and continuing professional competence.

Prerequisites: OT 677 [Min Grade: C] and OT 679 [Min Grade: C] and OT 689 [Min Grade: C] and OT 690 [Min Grade: C]

OT 692. Special Topics in OT. 1-4 Hour.

Readings for in depth study of specialized topics.

OT 698. Master's Level Non-Thesis Research. 1-6 Hour.

Implementation of project activities with data collection, analysis, and preparation of scholarly activity project.

OT 699. Master's Level Thesis Research. 1-6 Hour.

Elements of proposal and development of thesis/project; thesis and institutional review board procedures; student presentation, group discussion, recommendations, and critique.

Prerequisites: GAC M

OT 701. Theoretical Foundations for Occupational Therapy Practice. 3 Hours.

Occupational therapy frameworks, theory, philosophy, conceptual models, and practice models as guides to clinical reasoning; integration into clinical practice.

OT 702. Leadership for OT Practice Excellence. 2 Hours.

Leadership competencies for the occupational therapist; leadership and management theories to guide and enhance professional practice.

OT 703. Advocacy and Healthcare Policy in Population Health. 3 Hours.

Broad overview and challenges of the current U.S. healthcare system; impact of regulation on health care access, delivery, cost, and quality for disability populations; advocacy role for OTs working with these populations.

OT 704. Research Design for Occupational Therapy Practice. 3 Hours.

Research designs and advanced statistical concepts; internal and external validity; confounding variables; extrapolation of research findings; critique of the professional literature.

OT 705. Evidenced-based Occupational Therapy Practice Design and Application. 3 Hours.

Strategies for evidence-based service delivery; critical analysis of the literature to support clinical practice. Includes applied project.

OT 706. Management for Occupational Therapy Practice. 3 Hours.

Managing people and resources in a practice environment changing due to political, regulatory, economic, and social drivers.

OT 707. Occupational Therapists as Educators. 2 Hours.

Role of the occupational therapist as educator; teaching and learning styles; effective organization of educational experiences.

OT 710. Introduction to Occupational Science. 3 Hours.

Conceptual foundations and methodological orientations for occupational science; human drive to remain occupied; creation of identity through meaningful activity; enhancing health and wellness through occupation.

OT 711. Adaptation and Disability in Occupational Therapy Practice. 3 Hours.

Process of social and cultural adaptation to disabilities and stigmatized medical conditions using examples from different cultures and disabilities.

OT 712. Environment and Context in Occupational Therapy Practice. 3 Hours.

Relationship between environments and context from the micro (home) to the macro level (country view); impact of these constructs on disability over the lifespan.

OT 713. Professional Writing. 3 Hours.

Advanced writing course designed to teach professional writing styles commonly used in academia and professional practice.

OT 714. Program Evaluation in Occupational Therapy. 3 Hours.

Designs and methods in formative and summative program evaluation; quantitative and qualitative strategies; communicating information to stakeholders.

OT 775. Independent Study in Occupational Therapy. 1-4 Hour.

Faculty-led exploration of a specific topic/issue related to occupational therapy.

OT 792. Special Topics in Occupational Therapy. 1-4 Hour.

Exploration of current issues in occupational therapy.

OT 798. Occupational Therapy Capstone Experience/Non-Thesis Project. 1-6 Hour.

Focused investigation of an occupational therapy problem in a professional practice setting; application of concepts and tools presented in the program courses. Written project report required.

PA-Physician Assistant

PA 601. Human Gross Anatomy. 4 Hours.

Course provides a comprehensive survey of the gross anatomy of the human along with functional and applied anatomy as it relates to common clinical findings. It utilizes a lecture format and cadaver dissection laboratory sessions.

PA 601L. Human Gross Anatomy Lab. 0 Hours.

Human cadaver dissection laboratory for PA 601.

PA 602. Medical Physiology. 4 Hours.

Course emphasizes the normal function and control of various systems within the human body. The principles taught will serve as a foundation for understanding the etiology, management and prevention of disease processes.

PA 603. Pharmacology I. 3 Hours.

Course provides students with the pharmacologic knowledge needed to begin practice as primary care physician assistants. Delivery is via classroom lecture and supplemented with intermittent case studies requiring students to critically evaluate medical conditions and choose safe and effective medications in treating those conditions.

PA 604. Pharmacology II. 3 Hours.

Second and final course in a series that provides students with the pharmacologic knowledge needed to begin practice as primary care physician assistants. Delivered via classroom lecture and supplemented with intermittent case studies requiring students to critically evaluate medical conditions and choose safe and effective medications in treating those conditions.

Prerequisites: PA 603 [Min Grade: C]

PA 605. Pathology. 3 Hours.

Course is designed to describe the pathologic processes involved in common disorders and diseases; introduce students to the principals of clinical medicine and clinical problem solving; and provide students with the background needed for the clinical courses taught later in the curriculum.

PA 606. Clinical Medicine I. 6 Hours.

Introductory course in human disease designed to describe the pathologic processes involved in common disorders and diseases; introduces students to the principles of clinical medicine and clinical problem solving; provides background needed for medical courses taught later in the curriculum.

Prerequisites: PA 601 [Min Grade: C] and PA 602 [Min Grade: C] and PA 605 [Min Grade: C] and PA 610 [Min Grade: C]

PA 607. Clinical Medicine II. 6 Hours.

Overview of the diagnosis and management of the most common clinical problems seen by primary care practitioners; employs an organ systems approach incorporating relevant anatomy, physiology, pharmacology, pathology, radiology and nutrition.

Prerequisites: PA 606 [Min Grade: C]

PA 608. Surgical Disease I. 3 Hours.

Course introduces students to common surgical disorders with early emphasis on physiologic changes, medical requirements and evaluation of patients before, during, and after surgery. It also provides basic instruction in the diagnosis, management, and complications associated with common surgical gastrointestinal and urogenital disorders.

Prerequisites: PA 601 [Min Grade: C]

PA 609. Surgical Disease II. 3 Hours.

Course delivered via didactic instruction and focuses on the pre-operative evaluation and diagnosis, and post-operative management and treatment of common disorders of the heart, lungs, and vascular systems.

Prerequisites: PA 608 [Min Grade: C]

PA 610. Clinical Lab Medicine. 3 Hours.

An introduction to laboratory diagnostics with an emphasis on pathology, microbiology, hematology, and clinical chemistry. Course utilizes lecture format, specimen handling in a clinical laboratory as well as cost effective diagnostic algorithms in problem-based case scenarios.

PA 610L. Clinical Laboratory Medicine Lab. 0 Hours.

Lab for PA 610 Clinical Laboratory Medicine.

PA 611. History and Physical Examination I. 3 Hours.

First course in a series of two that provides students with the skills necessary to elicit a comprehensive medical history, perform a complete physical examination and systematically report their findings. A variety of teaching formats are utilized including: lectures, small group activities, video productions, and simulated patients.

PA 611L. History and Physical Examination I Lab. 0 Hours.

Laboratory required for PA 611 History and Physical Examination I.

PA 613. Surgical Techniques. 3 Hours.

Provides didactic instruction and applied technical skills in surgical techniques and various invasive medical procedures. An animal surgery laboratory, using live pigs is an essential component.

Prerequisites: PA 601 [Min Grade: C]

PA 614. Operating Room Techniques. 2 Hours.

Final course in a series providing didactic instruction and applied technical skills in surgical techniques and various invasive medical procedures. Experiences in operating rooms in Birmingham area hospitals observing the basics in surgical first assisting.

Prerequisites: PA 613 [Min Grade: C]

PA 615. Intro to the Profession. 1 Hour.

Course is designed to introduce students to the Physician Assistant profession and to prepare them to practice as professionals in a physician/PA/patient team. It will cover roles and responsibilities of the PA including their expected legal and moral behavior, their understanding of laws governing their practice and their ethical responsibilities in being health care professionals. The course will also teach students to respect the health, safety, welfare, and dignity of all human beings and to assess their own personal capabilities and limitations, striving always to improve their medical practice.

PA 616. Electrocardiography. 1 Hour.

Course presents the basic concepts needed to interpret the electrocardiogram and will provide opportunities to develop interpretive skills through analysis of rhythm strips and 12-lead electrocardiograms. Upon completion of the course, students will be able to systematically interpret basic rhythm strips and 12-lead electrocardiograms.

PA 617. Applied Behavioral Medicine. 3 Hours.

Course introduces students to human behavior, strategies and issues surrounding health education and theoretical models of how to change human behavior. This knowledge will enable students to incorporate health promotion and disease prevention strategies in their daily clinical practice to the benefit of their patients.

PA 618. Risk Management. 1 Hour.

Course provides an introduction to the legal, political and professional issues affecting physician assistant practice.

PA 619. Fundamentals of Clinical Research. 3 Hours.

Course provides students with the foundation of epidemiologic measures—the reason for patterns of disease occurrence, the principles of medical surveillance, the methods for investigating disease outbreaks and the principles of diagnostic tests. Students will review study designs, the roles of variability and bias in the interpretation of scientific literature and the principles of clinical decision-making based on the medical literature.

PA 620. Analysis of Professional Literature. 2 Hours.

This course is designed to prepare students to critically evaluate medical literature and use as basis for making medical decisions.

PA 621. Clinical Services I. 4 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 622. Clinical Services II. 4 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 623. Clinical Service III. 4 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 624. Clinical Services IV. 4 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 625. Clinical Services V. 4 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 626. Clinical Service VI. 4 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 627. Clinical Service VII. 4 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 629. Clinical Service IX. 4 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 630. Clinical Service X. 4 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 631. Clinical Service XI. 4 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 632. Clinical Services XII. 4 Hours.

Supervised clinical practice experience in an assigned healthcare organization.

PA 634. Simulated Clinical Concepts. 1 Hour.

Laboratory simulated clinical experience to provide supervised practice in clinical skills, practical procedures, teamwork, patient management, and decision making in preparation for the students clinical year.

PA 635. Special Populations in Medicine. 2 Hours.

Exploration of the medical needs, challenges, and health disparities of specific patient groups including geriatrics, LGBTQ, ethnic minorities, and others.

PA 637. Special Topics in Physician Assistant Studies. 1-4 Hour.

Selected advanced topics of current scientific, clinical and professional importance; specific topics designed to meet student need and interest.

PA 641. Senior Seminar. 5 Hours.

Didactic instruction to prepare students for the Physician Assistant National Certification Exam (PANCE) and reinforce the student's clinical rotation experiences. The course content reflects areas identified as important by the Examination Content Blueprint prepared by the National Commission on Certification of Physician Assistants.

PA 642. Clinical Medicine III. 4 Hours.

Continuation of Clinical Medicine II; overview of the diagnosis and management of the most common clinical problems seen by primary care practitioners; employs an organ systems approach incorporating relevant anatomy, physiology, pharmacology, pathology, radiology and nutrition.

Prerequisites: PA 607 [Min Grade: C]

PA 698. Presentation of Res Project. 1 Hour.

Oral and visual presentations and structured discussion of research papers developed in PA 620.

Prerequisites: PA 619 [Min Grade: C] and PA 620 [Min Grade: C]

PH-Physics

PH 502. Instructional Physical Science. 4 Hours.

Modern Physics for Teachers.

PH 502L. Instructional Physical Science Laboratory. 0 Hours.

Design of Physical Science Labs and Detailed Instructional Plans.

PH 505. Studies in Physics Teaching II. 3 Hours.

Development of new curricula, apparatus, and techniques of presentation of concepts in physics. Prerequisite: Permission of instructor.

PH 507. Physical Science for Teachers I. 3 Hours.

Concepts of physical science. Laboratory includes evaluation of experiments and equipment for lecture demonstrations. Prerequisite: Permission of instructor.

PH 508. Physical Science for Teachers II. 3 Hours.

Concepts of physical science. Laboratory includes evaluation of experiments and equipment for lecture demonstrations. Prerequisite: Permission of instructor.

PH 510. Physics of Fluids and Polymer Solutions. 3 Hours.

This course provides an overview of fluid mechanics and polymer physics appropriate for physics, engineering, chemistry, and biology majors. Topics include the concept of a fluid, the fluid as a continuum, properties of the velocity field, thermodynamic properties of a fluid, viscosity, pressure distribution in a fluid, basic physical laws of fluid mechanics, the Reynolds transport theorem, differential relations for a fluid particle, viscous flow, polymer solutions and thermodynamics, Brownian motion, diffusion equation, Fick's law, Stokes-Einstein equation and hydrodynamic radius of a polymer chain, and viscosity of polymer solutions.

Prerequisites: PH 221 [Min Grade: C] and MA 252 [Min Grade: C]

PH 518. Computational Solid State Physics. 3 Hours.

This course covers interdisciplinary topics in material physics, computer science, and data science, with a focus on introducing first-principles software based on density-functional theory and data-driven machine-learning discoveries for applications in materials science and other physics domains.

PH 520. Introduction to Methods in Theoretical Physics I. 3 Hours.

Vector calculus. Curvilinear coordinate systems; commonly encountered ordinary differential equations and special functions; complex variables and contour integration partial differential equations, including solutions by Green function methods. Prerequisite: Permission of instructor.

Prerequisites: PH 222 [Min Grade: C] and MA 252 [Min Grade: C]

PH 524. Biomedical Optics. 3 Hours.

The objective of this class is to present an overview of applied optics, with an emphasis on biomedical optics.

Prerequisites: PH 222 [Min Grade: C]

PH 525. Applications of Contemporary Optics I. 3 Hours.

Applied geometrical optics. Refraction and reflection, paraxial optics, thick lens, matrix theory, optical aberrations, optical systems, and optical design using computer simulations.

Prerequisites: PH 222 [Min Grade: C]

PH 526. Applications of Contemporary Optics II. 3 Hours.

Applied wave optics. Fresnel equations, optical interference, optical interferometry, coherence, diffraction, lasers, and Gaussian beam propagation.

Prerequisites: PH 525 [Min Grade: C]

PH 527. Geometrical Optics. 4 Hours.

Properties of optical systems. Lenses, mirrors, and stops; aberrations; rays and wave fronts, optical instruments; aspheric components.

Prerequisites: PH 222 [Min Grade: C]

PH 527L. Geometrical Optics Lab. 0 Hours.

Geometrical Optics Lab.

PH 528. Physical Optics. 4 Hours.

Interference and diffraction phenomena; emission, propagation, and absorption of radiation; polarization and dispersion; stimulated emission.

Prerequisites: PH 527 [Min Grade: C]

PH 528L. Physical Optics Lab. 0 Hours.

Physical Optics Lab.

PH 529. Applications of Contemporary Optics III. 3 Hours.

Applied optical interactions with materials linear and nonlinear polarization phenomena, optical properties of materials, anisotropic optics, electro-optics, and nonlinear optics.

Prerequisites: PH 526 [Min Grade: C]

PH 532. Statistical Thermodynamics I. 3 Hours.

Statistical basis of laws of thermodynamics; ensembles and partition functions; quantum statistics of ideal gases, including photons and electrons; applications to solids, real gases, liquids, and magnetic systems; transport theory.

Prerequisites: PH 351 [Min Grade: C]

PH 533. Statistical Thermodynamics II. 3 Hours.

Statistical basis of laws of thermodynamics; ensembles and partition functions; quantum statistics of ideal gases, including photons and electrons; applications to solids, real gases, liquids, and magnetic systems; transport theory.

Prerequisites: PH 532 [Min Grade: C]

PH 545. Electromagnetic Theory I. 3 Hours.

Electromagnetic theory approached from standpoint of fields and using Maxwell's equations.

Prerequisites: PH 420 [Min Grade: C] or MA 444 [Min Grade: C]

PH 546. Electromagnetic Theory II. 3 Hours.

Electromagnetic theory approached from standpoint of fields and using Maxwell's equations.

Prerequisites: PH 545 [Min Grade: C]

PH 550. Introduction to Quantum Mechanics I. 3 Hours.

Principles of quantum mechanics; their application to particle waves, angular momentum, tunneling, radiation, and selection rules; perturbation and variational methods.

Prerequisites: PH 351 [Min Grade: C] and PH 562 [Min Grade: C]

PH 551. Introductory Quantum Mechanics II. 3 Hours.

Principles of quantum mechanics; their application to particle waves, angular momentum, tunneling, radiation, and selection rules; perturbation and variational methods.

Prerequisites: PH 550 [Min Grade: C]

PH 552. Introduction to Quantum Mechanics III. 2 Hours.**PH 553. Solid State Physics I. 3 Hours.**

Properties of crystal lattices, lattice dynamics, lattice imperfections, and bonding energies; electronic properties of dielectrics, semiconductors, and metals; ferroelectric, magnetic, and optical properties of solids.

Prerequisites: PH 551 [Min Grade: C]

PH 554. Solid State Physics II. 3 Hours.

Properties of crystal lattices, lattice dynamics, lattice imperfections, and bonding energies; electronic properties of dielectrics, semiconductors, and metals; ferroelectric, magnetic, and optical properties of solids.

Prerequisites: PH 553 [Min Grade: C]

PH 557. Directed Reading in Quantum Physics. 3 Hours.

Tutorial studies in quantum physics offered by special arrangement.

Prerequisites: PH 351 [Min Grade: C] and PH 562 [Min Grade: C]

PH 558. Directed Reading in Physics. 3 Hours.

Directed Reading in Physics I. Tutorial studies in physics offered by special arrangement.

PH 561. Classical Mechanics I. 3 Hours.

Kinematics and dynamics, including central forces, rotating coordinate systems, and generalized coordinates; Lagrangian and Hamiltonian.

Prerequisites: PH 222 [Min Grade: C] and MA 252 [Min Grade: C]

PH 562. Classical Mechanics II. 3 Hours.

Kinematics and dynamics, including central forces, rotating coordinate systems, and generalized coordinates; Lagrangian and Hamiltonian.

Prerequisites: PH 561 [Min Grade: C]

PH 571. Atomic and Molecular Physics. 3 Hours.

Applications of quantum mechanics to structure and spectra of atoms and small molecules; use of symmetry in understanding and describing molecular vibrations and bonding.

Prerequisites: PH 551 [Min Grade: C]

PH 575. Intro to Biophysics I. 3 Hours.

Application of physical techniques and analytical methods of selected biological problems. Permission of instructor.

Prerequisites: PH 352 [Min Grade: C]

PH 576. Intro to Biophysics II. 3 Hours.

Application of physical techniques and analytical methods of selected biological problems. Permission of instructor.

Prerequisites: PH 575 [Min Grade: C]

PH 580. Directed Reading in Classical Physics. 3 Hours.

Tutorial studies in classical physics offered by special arrangement.

Prerequisites: PH 222 [Min Grade: C] and MA 252 [Min Grade: C]

PH 581. Laser Physics I. 3 Hours.

Physical principles of laser operation and design. Spontaneous and stimulated emission, population inversion, light amplification, laser resonators, Q-switching, mode-locking, pulse shortening techniques, spectral narrowing, and tunable lasers. Individual types of lasers will be considered. Practical applications of lasers will be treated in detail.

Prerequisites: PH 222 [Min Grade: C]

PH 582. Laser Physics II. 3 Hours.

Physical principles of laser operation and design. Spontaneous and stimulated emission, population inversion, light amplification, laser resonators, Q-switching, mode-locking, pulse shortening techniques, spectral narrowing, and tunable lasers. Individual types of lasers will be considered. Practical applications of lasers will be treated in detail.

Prerequisites: PH 581 [Min Grade: C]

PH 583. Atomic and Nuclear Physics. 3 Hours.

Prerequisites: PH 352 [Min Grade: C]

PH 584. Atomic and Nuclear Physics. 3 Hours.

Prerequisites: PH 583 [Min Grade: C]

PH 585. Laser Spectroscopy. 3 Hours.

Practical applications of lasers and modern techniques and instrumentation in laser spectroscopy.

Prerequisites: PH 222 [Min Grade: D]

PH 586. Semiconductor Materials in Modern Technology. 3 Hours.

Brief review of electronic materials with emphasis on traditional and cutting edge Si technology. Competing and complementary semiconductors covered in standard lecture and seminar style. Materials: compound and tertiary semiconductors, organic semiconductors, wide bandgap semiconductors. Applications: optical and chemical sensors, microwave electronics, high power electronics, lasers. Specific applications/ materials determined by student interest.

Prerequisites: PH 352 [Min Grade: C] or EE 351 [Min Grade: C] or CH 326 [Min Grade: C]

PH 587. Nanoscale Science and Applications. 3 Hours.

Nanoscale Science and Applications. Physics of electronic, mechanical, and biological properties of materials at the nanoscale level approaching one billionth of a meter. The applications of nanoscale materials in electronic, mechanical, and biomedical systems will be emphasized. Special tools in synthesis and characterization of nanomaterials will be discussed.

PH 589. Applications of Modern Physics. 3 Hours.**PH 590. Preparations for Teaching. 1-3 Hour.**

This class is intended to help teaching assistants prepare for successful teaching experiences. The course will emphasize a foundation of practical knowledge related to expectations and duties shared by teachers in higher education, as well as an opportunity to read, reflect, and discuss current research related to teaching and learning at the university level.

PH 591. Advanced Physics Laboratory I. 1-4 Hour.

Laboratory investigation of topics of modern physics. Permission of instructor.

PH 592. Advanced Physics Laboratory II. 1-4 Hour.

Laboratory investigation of topics of modern physics. Permission of instructor.

PH 593. Advanced Physics Laboratory III. 1-4 Hour.

Laboratory investigation of topics of modern physics. Permission of instructor.

PH 594. Computers in Physics. 3 Hours.**PH 595. Computers in Physics. 3 Hours.****PH 597. Special Topics in Physics. 1-3 Hour.****PH 610. Classical Mechanics I. 3 Hours.**

Applications of methods of LaGrange, Hamilton, Poisson, and Hamilton-Jacobi to such classical problems as central force, small oscillation, and rigid body motions.

Prerequisites: PH 562 [Min Grade: C]

PH 618. Computational Solid State Physics. 3 Hours.

This course covers interdisciplinary topics in material physics, computer science, and data science, with a focus on introducing first-principles software based on density-functional theory and data-driven machine-learning discoveries for applications in materials science and other physics domains.

PH 635. Advanced Statistical Mechanics. 3 Hours.

Applications of statistical laws to modern topics such as quantum fluids, critical phenomena, and nonequilibrium systems.

Prerequisites: PH 551 [Min Grade: B]

PH 650. Electromagnetic Theory I. 3 Hours.

Boundary value and Green function methods for solving potential problems; fields in dielectric, magnetic media, and radiation fields.

Prerequisites: PH 546 [Min Grade: B]

PH 651. Electromagnetic Theory II. 3 Hours.

Boundary value and Green function methods for solving potential problems; fields in dielectric, magnetic media, and radiation fields.

Prerequisites: PH 650 [Min Grade: C]

PH 652. Electromagnetic Theory III. 3 Hours.

Electromagnetic Theory.

PH 653. Solid State Physics I. 3 Hours.

Structure and dynamics of solids; optical, magnetic, and transport properties.

Prerequisites: PH 551 [Min Grade: C]

PH 654. Solid State Physics II. 3 Hours.

Structure and dynamics of solids; optical, magnetic, and transport properties.

Prerequisites: PH 653 [Min Grade: C]

PH 655. Advanced Solid State Laboratory. 1-3 Hour.

Thin film X-ray diffraction, Raman spectroscopy in materials characterization, electron paramagnetic resonance, and thin film deposition.

Prerequisites: PH 653 [Min Grade: C] and PH 654 [Min Grade: C]

PH 660. Methods of Mathematical Physics. 3 Hours.

Vector and tensor analysis; differential and integral equations; Green functions; variational techniques; linear operator theory; Fourier and Laplace transforms.

Prerequisites: PH 520 [Min Grade: B]

PH 671. Quantum Mechanics I. 3 Hours.

Discrete and continuous spectra; central force problems; angular momentum and spin; systems of identical particles; perturbation theory; scattering theory.

Prerequisites: PH 546 [Min Grade: B] and PH 551 [Min Grade: B]

PH 672. Quantum Mechanics II. 3 Hours.

Discrete and continuous spectra; central force problems; angular momentum and spin; systems of identical particles; perturbation theory; scattering theory.

Prerequisites: PH 671 [Min Grade: C]

PH 673. Applications of Quantum Mechanics. 3 Hours.

Scattering theory, density matrix, and polarization; applications to atomic and nuclear reactions.

Prerequisites: PH 671 [Min Grade: C] and PH 672 [Min Grade: C]

PH 695. Directed Reading. 2-3 Hours.

Tutorial studies in physics offered by special arrangement. Permission of instructor.

PH 696. Directed Reading in Classical Physics. 3 Hours.

Tutorial studies in classical physics offered by special arrangement.

Prerequisites: PH 562 [Min Grade: C]

PH 697. Special Topics in Physics. 1-12 Hour.

Topics of current interest, such as theoretical physics, computational physics, experimental techniques. May be repeated for credit. 1-12 hours.

PH 698. Nonthesis Research. 1-12 Hour.

May be repeated for credit.

PH 699. Research for Thesis. 1-12 Hour.

May be repeated for credit. Prerequisite: Admission to candidacy. 1-12 hours.

Prerequisites: GAC M

PH 710. Advanced Classical Mechanics I. 3 Hours.

Analysis of dynamics, including rigid body motion, featuring the LaGrange formulation, introduction to the Hamiltonian, formulation, Poisson brackets, analyses in nonrelativistic applications.

Prerequisites: PH 562 [Min Grade: C]

PH 711. Advanced Classical Mechanics II. 3 Hours.

Analysis of dynamics, including rigid body motion, featuring the LaGrange formulation, introduction to the Hamiltonian, formulation, Poisson brackets, analyses in nonrelativistic applications.

Prerequisites: PH 710 [Min Grade: C]

PH 715. Advanced Statistical Mechanics. 3 Hours.

Applications of statistical laws to modern topics such as quantum fluids, critical phenomena, and nonequilibrium systems.

Prerequisites: PH 532 [Min Grade: B] and PH 551 [Min Grade: B]

PH 716. Advanced Statistical Mechanics. 3 Hours.

Applications of statistical laws to modern topics such as quantum fluids, critical phenomena, and nonequilibrium systems.

Prerequisites: PH 715 [Min Grade: C]

PH 718. Computational Solid State Physics. 3 Hours.

This course covers interdisciplinary topics in material physics, computer science, and data science, with a focus on introducing first-principles software based on density-functional theory and data-driven machine-learning discoveries for applications in materials science and other physics domains.

PH 732. Growth and Characterization of Thin Films I. 3 Hours.

Basics of vacuum science. Methods of thin film deposition. Nucleation, evolution of microstructure and surface morphology of thin films.

Simulation of growth processes. Thin film characterization techniques (SEM/SIM, TEM, SPM, SPS/AES, XRD, optical and mechanical measurements). Demonstrations on thin-film deposition and basic characterization of film microstructure and properties. Prerequisites: PH 553/653 and PH554/654 or permission of instructor. Lecture and demonstration. 3 semester hours.

Prerequisites: (PH 453 [Min Grade: C] or PH 553 [Min Grade: C]) and (PH 454 [Min Grade: C] or PH 554 [Min Grade: C])

PH 733. Growth and Characterization of Thin Films II. 3 Hours.

Basics of vacuum science. Methods of thin film deposition. Nucleation, evolution of microstructure and surface morphology of thin films. Simulation of growth processes. Thin film characterization techniques (SEM/SIM, TEM, SPM, XPS/AES, XRD, optical and mechanical measurements). Demonstrations on thin-film deposition and basic characterization of film microstructure and properties. Prerequisites: PH553/653 and PH554/654 or permission of instructor. Lecture and demonstrations. 3 semester hours.

Prerequisites: (PH 453 [Min Grade: C] or PH 553 [Min Grade: C]) and (PH 454 [Min Grade: C] or PH 554 [Min Grade: C])

PH 745. Molecular Spectroscopy. 3 Hours.

Infrared, Raman, and ultraviolet techniques applied to study of molecular properties, including rotation-vibration spectra and spectra of crystalline solids.

PH 746. Applied Physics Internship. 3 Hours.

Practical research outside UAB or, upon approval of the graduate program director, at a UAB laboratory other than that of the student's advisor. The internship is intended to supplement proposed or ongoing dissertation research.

PH 747. Theoretical Nuclear Physics. 3 Hours.**PH 750. Classical Electrodynamics I. 3 Hours.**

Static and time-varying fields in vacuum and in matter, radiation fields, solutions and implications of Maxwell's equation utilizing advanced mathematical methods.

Prerequisites: PH 546 [Min Grade: B]

PH 751. Classical Electrodynamics II. 3 Hours.

Static and time-varying fields in vacuum and in matter, radiation fields, solutions and implications of Maxwell's equation utilizing advanced mathematical methods.

Prerequisites: PH 750 [Min Grade: C]

PH 752. Light-Matter Interactions. 3 Hours.

Quantized Electromagnetic Fields; Photons; Quantum Optics; Coherence; Nonlinear optics; Quantum excitations in solids.

Prerequisites: PH 750 [Min Grade: B] and PH 771 [Min Grade: B]

PH 753. Solid State Physics I. 3 Hours.

Properties of electrons and photons in crystal lattices; electromagnetic interactions with solids; lattice defects.

PH 754. Solid State Physics II. 3 Hours.

Properties of electrons and photons in crystal lattices; electromagnetic interactions with solids; lattice defects.

Prerequisites: PH 753 [Min Grade: C]

PH 755. Advanced Solid State Physics III. 2 Hours.

Advanced Solid State Physics II.

Prerequisites: PH 753 [Min Grade: C] and PH 754 [Min Grade: C]

PH 760. Methods of Mathematical Physics I. 3 Hours.

Vector and tensor analysis; differential and integral equations; Green functions; variational techniques; linear operator theory; Fourier and Laplace transforms.

Prerequisites: PH 520 [Min Grade: B]

PH 761. Methods of Mathematical Physics II. 3 Hours.

Vector and tensor analysis; differential and integral equations; Green functions; variational techniques; linear operator theory; Fourier and Laplace transforms.

PH 762. Computational Physics I. 3 Hours.

Numerical techniques for solution of differential, integral, and matrix equations of physics; computer simulations of physical phenomena; optimization problems.

Prerequisites: PH 545 [Min Grade: C] and PH 551 [Min Grade: C] and PH 561 [Min Grade: C]

PH 771. Quantum Mechanics I. 3 Hours.

Discrete and continuous spectra; central force problems; angular momentum and spin; systems of identical particles; perturbation theory; scattering theory.

Prerequisites: PH 546 [Min Grade: B] and PH 551 [Min Grade: B]

PH 772. Quantum Mechanics II. 3 Hours.

Discrete and continuous spectra; central force problems; angular momentum and spin; systems of identical particles; perturbation theory; scattering theory.

Prerequisites: PH 771 [Min Grade: C]

PH 773. Applications of Quantum Mechanics. 3 Hours.

Scattering theory, density matrix, and polarization; applications to atomic and nuclear reactions.

Prerequisites: PH 771 [Min Grade: C] and PH 772 [Min Grade: C]

PH 791. Physics Seminar I. 1 Hour.

Topics of current interest in physics, presented by graduate students, faculty, and visitors. Required each term of all full-time graduate students.

PH 792. Physics Seminar II. 1 Hour.

Topics of current interest in physics, presented by graduate students, faculty, and visitors. Required each term of all full-time graduate students.

PH 793. Scientific Communications I. 1 Hour.

Scientific writing exercises and recent topics in physics presented by graduate students in order to provide experience in written and oral scientific communication.

PH 794. Scientific Communications II. 1 Hour.

Scientific writing exercises and recent topics in physics presented by graduate students in order to provide experience in written and oral scientific communication.

Prerequisites: PH 793 [Min Grade: C]

PH 795. Directed Reading. 2-3 Hours.

Tutorial studies in physics offered by special arrangement. Permission of instructor.

PH 797. Special Topics in Physics. 1-12 Hour.

Topics of current interest, such as group theory, medical physics, computational methods, biological physics, materials physics, optics, and space physics. May be repeated for credit.

PH 798. Non-Dissertation Research. 1-12 Hour.

Permission of instructor.

PH 799. Research for Dissertation. 1-12 Hour.

Admission to candidacy.

Prerequisites: GAC Z

PHR-Pharmacology

PHR 701. Adv Prin Pharm-Sys&Pharmacok 1. 3 Hours.**PHR 702. Adv Prin Pharm-Sys&Pharmacok 2. 3 Hours.****PHR 720. Laboratory Rotation in Pharmacology. 1-12 Hour.****PHR 735. Nucleotide Metabolism and Chemotherapy. 3 Hours.**

Principles, characteristics and therapeutics of nucleotide metabolism.

This course is designed for second year and above graduate students.

PHR 744. Protein Mass Spectrometry. 3 Hours.**PHR 752. Pharmacokinetic Analysis. 1 Hour.**

The course will provide a detailed introduction to the analysis of pharmacokinetic data preferably generated as part of the student's research. Descriptions of the use of appropriate analytical programs and the interpretation of pharmacokinetic data will be the major focus of this course.

PHR 754. Model Sys for Drug Discovery. 2 Hours.

This course will focus on the use of different genetically tractable model systems and their roles in drug discovery and drug development. The course will discuss the properties, benefits and deficiencies of major model systems used in drug discovery including yeast, zebrafish, xenographs, and genetically modified mouse strains.

PHR 790. Pharmacology Journal Club. 1 Hour.

Pharmacology Journal Club.

PHR 798. Doctoral Level Non-Dissertation Research. 1-12 Hour.**PHR 799. Doctoral Level Dissertation Research. 1-12 Hour.**

Prerequisites: GAC Z

PSDO-Physician Scientist Development

PSDO 698. Master's Level Non-Thesis Research. 1-8 Hour.

Students may perform independent study in a research laboratory setting. This work may contribute toward the concentration credits subject to program director approval.

PSDO 699. Master's Level Thesis Research. 1-8 Hour.

Students perform independent study in a research laboratory setting. This work contributes directly to the completion of the degree and meets the degree requirements for graduation.

PSDO 720. Critical Approaches & Clinical Evaluation of Kidney Disease. 1 Hour.

Enhance knowledge of kidney disease physiology to include expansion of the themes from the Mount Desert Island Biologic Laboratory (MDIBL) course on the "Origins of Renal Physiology" Promote structured critical thinking skills focused on kidney disease. Enhance experimental design skills for the development and testing of new hypotheses. Enhance constructive reviewing skills. Engage in the culture and language of medicine through exposure to a range of clinical experiences. Provide opportunities for PROMoTE scholars and clinical faculty to discuss areas where basic science and clinical medicine intersect and where new information could be beneficial. Expose PROMoTE scholars to clinical problems and a variety of team-based investigation.

PSDO 798. PSDO Non-Dissertation Research. 1-8 Hour.

Non-Dissertation research. Only open to ARISE-MD students.

PSDO 799. PSDO Dissertation Research. 1-8 Hour.

Dissertation research. Only open to ARISE-MD students.

Prerequisites: GAC Z

PT-Physical Therapy

PT 700. Human Gross Anatomy. 3 Hours.

A study of the anatomical structure of the human body includes limbs, back, abdominal wall and cavity. Specific emphasis includes regional study of the relationships between musculoskeletal, nervous, and vascular systems, joint structure, cardiovascular and pulmonary systems, and surveys of selected viscera. Includes surface anatomy.

PT 701. Human Gross Anatomy II. 2 Hours.

A study of the anatomical structure of the human body includes limbs, back, abdominal wall and cavity. Specific emphasis includes regional study of the relationships between musculoskeletal, nervous, and vascular systems, joint structure, cardiovascular and pulmonary systems, and surveys of selected viscera.

Prerequisites: PT 700 [Min Grade: C]

PT 701L. Human Gross Anatomy II Lab. 0 Hours.

Prerequisites: PT 700 [Min Grade: C]

PT 702. Functional Anatomy. 4 Hours.

Integrated study of anatomy, kinesiology, muscle biology, and biomechanics to develop an understanding of and ability to analyze normal and pathologic human movement. Includes palpation and surface anatomy.

PT 704. Analysis of Human Movement. 3 Hours.

Study of human movement through an examination of the movement patterns during common motor skills (eg: walking). The kinematics and kinetics related to movement will be studied across the lifespan.

Prerequisites: PT 706 [Min Grade: C](Can be taken Concurrently)

PT 705. Human Movement Dysfunction. 3 Hours.

Study of human movement dysfunction including recovery processes related to injury, impairments associated with pathology and behavior and kinematic/kinetic descriptions of movement dysfunction related to cardiopulmonary, musculoskeletal, and neuromuscular pathology across the lifespan.

Prerequisites: PT 704 [Min Grade: C]

PT 706. Neuroscience I. 3-4 Hours.

A study of structures and functions of the human nervous system with emphasis on sensory/motor function.

Prerequisites: PT 730 [Min Grade: C]

PT 707. Neuroscience II. 3 Hours.

Study of the theories of motor control and motor learning will serve as a foundation for the understanding how the CNS is organized in relation to human movement.

Prerequisites: PT 706 [Min Grade: C]

PT 711. PT Examination I. 2 Hours.

Introduction to the physical therapy examination process. Emphasis on exploring the human movement system as the foundation of patient/client management.

PT 712. Physical Therapy Examination II. 3 Hours.

Continuation of Physical Therapy I with focus on knowledge and skills needed to test and measure strength, range of motion, and posture.

PT 713. Physical Therapy Intervention I. 3 Hours.

Introduction to the components and process of physical therapy intervention. Emphasis on beginning communication & documentation skills and basic procedural interventions of patient transfers, gait with assistive devices, superficial physical agents, massage, and passive range of motion. Overview of major categories of procedural interventions utilized by physical therapists.

PT 714. Physical Therapy Intervention II. 3 Hours.

Procedures and techniques for the design and implementation of fundamental therapeutic exercise; recognizing impairments in body function and structure and activity limitations amenable to physical therapy; students will utilize therapeutic exercise interventions for prevention and rehabilitation of movement dysfunction and disability.

Prerequisites: PT 713 [Min Grade: C]

PT 715. Physical Therapy Intervention III. 3 Hours.

The study and use of knowledge and skills needed to select and use both electrodiagnostic and electrotherapeutic modality interventions for various impairments and functional limitations. Emphasis will be placed on integrating electrical evaluation, electrical and deep heat therapy with previously learned examination, evaluation, and intervention skills. An overview of integument system repair and the management of chronic wounds will be discussed with an emphasis on examination, clinical decision making, and intervention.

Prerequisites: PT 712 [Min Grade: C]

PT 720. Pathology and Pharmacology for Movement Disorders I. 3 Hours.

Overview of clinical medicine related to management of movement disorders. Basic principles of pathology and pharmacology. Explores physical therapy implications associated with medical and surgical management of disorders with emphasis on clinical manifestations, management, and physical therapy implications.

Prerequisites: PT 730 [Min Grade: C]

PT 721. Pathology and Pharmacology for Movement Disorders II. 3 Hours.

Exploration of medical and surgical disorders with emphasis on clinical manifestations, management, and physical therapy implications.

Prerequisites: PT 720 [Min Grade: C]

PT 730. Essentials of Human Physiology. 3 Hours.

Fundamental principles and concepts of human physiology are covered regarding cell physiology, the cardiovascular, endocrine, gastrointestinal, pulmonary, renal, and skeletal muscle systems as well as thermo-regulation of the body. Both cellular and systemic issues are addressed with an emphasis on a mechanistic and integrative approach to understanding function.

PT 731. Human Performance Physiology. 3 Hours.

Course provides fundamental knowledge about the adaptability of human physiological systems in meeting a range of exercise demands. Areas covered include energy transfer during rest and exercise, physiologic and performance adaptations, exercise prescription for healthy adults, and body composition. Research evidence regarding how exercise and physical activity impact health, wellness, and disease is included.

Prerequisites: PT 730 [Min Grade: C]

PT 740. PT Management of Musculoskeletal Dysfunction I. 5 Hours.

Application of biological and physical sciences in understanding musculoskeletal disorders. Diagnosis of common musculoskeletal dysfunctions; clinical decision making concerning treatment and prevention of musculoskeletal disorders. Medical and surgical diagnostic and treatment procedures with implications for rehabilitation. Focus for one course is on the lower quarter and the thoracic spine; focus of the other course is on the upper quarter.

Prerequisites: PT 704 [Min Grade: C]

PT 741. PT Management of Musculoskeletal Dysfunction II. 5 Hours.

Application of biological and physical sciences in understanding musculoskeletal disorders. Diagnosis of common musculoskeletal dysfunctions; clinical decision making concerning treatment and prevention of musculoskeletal disorders. Medical and surgical diagnostic and treatment procedures with implications for rehabilitation. Focus for one course is on the lower quarter and the thoracic spine; focus of the other course is on the upper quarter.

Prerequisites: PT 740 [Min Grade: C]

PT 743. PT Management of Cardiopulmonary Dysfunction. 4 Hours.

Physical therapy examination, evaluation, diagnosis, prognosis, and intervention for patients with primary and secondary disorders involving the cardiovascular/pulmonary system.

Prerequisites: PT 731 [Min Grade: C]

PT 744. PT Management of Neuromuscular Dysfunction I. 3-4 Hours.

Application, analysis, and synthesis of principles of neuromuscular rehabilitation in physical therapy examination, evaluation, diagnosis, and intervention.

Prerequisites: PT 721 [Min Grade: C]

PT 746. PT Management of Neuromuscular Dysfunction II. 4-5 Hours.

Continuation of PT 744 Application, analysis and synthesis of principles of neuromuscular rehabilitation in physical therapy examination, evaluation, diagnosis, prognosis and intervention.

Prerequisites: PT 744 [Min Grade: C]

PT 760. PT Professional Practice I. 2 Hours.

Introduction to the profession of physical therapy, including history, APTA, and scope of practice. Introduction to legal, ethical and other regulatory mechanisms that guide the practice of physical therapy. Presentation of cultural diversity issues related to physical therapy practice.

PT 761. PT Professional Practice II. 3 Hours.

Synthesis and application of regulatory mechanisms, legal mandates and ethical principles and theories to issues facing the physical therapy student and the physical therapist functioning in a multifaceted role; values clarification and decision making related to current professional issues. Strategies for dealing with diverse cultures and conflict. Utilization of documentation strategies to promote effective physical therapy practice and payment.

Prerequisites: PT 760 [Min Grade: C]

PT 762. PT Professional Practice III. 3 Hours.

Forces contributing to the health care environment and the effects of this environment on physical therapy practice, research and education. Concepts of health promotion (including wellness and patient education) and the role of the physical therapist in promoting healthy lifestyles in the health care and community settings. Theoretical basis for health behaviors and application of theories to physical therapy practice. Concepts of consultation, program planning, implementation, and evaluation applied to health promotion-oriented physical therapy programs.

Prerequisites: PT 761 [Min Grade: C]

PT 763. PT Professional Practice IV. 2 Hours.

Study of management and supervisory principles and current issues related to physical therapy practice: Practical concepts of marketing, organizational structure, fiscal management, facility planning, design and entrepreneurship.

Prerequisites: PT 762 [Min Grade: C]

PT 764. Professional Practice V - Capstone Experience. 2 Hours.

Integration of all previous coursework applied to reflection of the scope of physical therapy practice: direct patient care, professional growth/development, professional issues, education, consultation, evidence based practice (EBP), communication, cultural competency, and promotion of the profession in achieving Vision 2020. Development and presentation of an individual portfolio that reflects core values, personal and professional growth and accomplishments, and appropriate plans for future professional development.

PT 770. Clinical Education. 1-9 Hour.

Supervised clinical education in patient care skills and practice issues related to physical therapy.

PT 771. Clinical Education II. 2 Hours.

Supervised clinical education in patient care skills and practice issues related to physical therapy.

Prerequisites: PT 770 [Min Grade: C]

PT 772. Clinical Education III. 2 Hours.

Supervised clinical education in patient care skills and practice issues related to physical therapy.

Prerequisites: PT 771 [Min Grade: C]

PT 773. Clinical Education IV. 8 Hours.

Supervised clinical education providing client care in supervision, consultation, research, management and teaching. Emphasis is on examination and evaluation skills; intervention techniques and treatment planning (including care of problems related to musculoskeletal, neuromuscular, cardiovascular/pulmonary and integumentary systems).

Prerequisites: PT 772 [Min Grade: C]

PT 774. Clinical Education V. 9 Hours.

Supervised clinical education providing client care in supervision, consultation, research, management and teaching. Emphasis is on examination and evaluation skills; intervention techniques and treatment planning (including care of problems related to musculoskeletal, neuromuscular, cardiovascular/pulmonary and integumentary systems).

Prerequisites: PT 773 [Min Grade: C]

PT 775. Clinical Education VI. 9 Hours.

Supervised clinical education providing client care in supervision, consultation, research, management and teaching. Emphasis is on examination and evaluation skills; intervention techniques and treatment planning (including care of problems related to musculoskeletal, neuromuscular, cardiovascular/pulmonary and integumentary systems).

PT 778. Special Topics in Physical Therapy. 1-9 Hour.

Exploration of current issues in Physical Therapy.

PT 790. Scientific Inquiry I. 2 Hours.

Introduction to sources of evidence; measurement principles, experimental design, and basic statistical concepts are combined to build analytical skills required for evidence-based practice.

PT 791. Scientific Inquiry II. 2 Hours.

This course combines concepts of measurement principles, experimental design, qualitative, survey outcomes research and a review of basic statistical concepts that will prepare the graduate to critically analyze and use the scientific literature to improve clinical practice. Emphases will be placed on understanding the components of a research report and the concepts associated with judging quality of research design as applied to clinical practice.

Prerequisites: PT 790 [Min Grade: C](Can be taken Concurrently)

PT 792. Scientific Inquiry III. 2 Hours.

Emphasis on the assessment of research literature in physical therapy and the application of research findings to clinical practice.

Prerequisites: PT 791 [Min Grade: C]

PT 798. Doctoral Level Non-Thesis Research. 1-9 Hour.

Implementation of project activities with data collection, analysis, and preparation of manuscript of scholarly activity project. Student and mentor work together to identify specific project components to be completed during each specific term the course is taken.

Prerequisites: PT 792 [Min Grade: C]

PT 799. Scholarly Activity Project. 1 Hour.

Implementation of project activities with data collection, analysis, and preparation of manuscript of scholarly activity project. Student and mentor work together to identify specific project components to be completed during each specific term the course is taken.

Prerequisites: PT 793 [Min Grade: C](Can be taken Concurrently) and GAC Z

PTC-Health Focused Patient/Client Management

PTC 780. Hlth Focused Care in PT & OT. 3 Hours.

Overview of health promotion principles and health behavior theories as applied in contemporary health care, especially in rehabilitation services. Evidence is presented for the most prevalent preventable chronic diseases/conditions and the health behaviors that contribute to these conditions.

PTC 781. Health Focused Patient/Client Communication and Advocacy. 3 Hours.

Communication and advocacy strategies to effect behavior change at the individual and community level; application of evidence-based and best practice methods/techniques that empower individuals and community to change health-related behaviors.

PTC 782. Health Focused Patient/Client Management I. 3 Hours.

Application of evidence-based and best practice methods/techniques for physical activity/fitness, weight management, and nutrition optimization using a health focused care model.

PTC 783. Health Focused Patient/Client Management II. 3 Hours.

Examines how occupational and physical therapists address smoking cessation, alcohol moderation, sleep health, and stress management using a health focused care model for individuals and community groups. Issues addressed include screening, best practices for interventions, patient education resources, and consultation/referral sources to optimize health outcomes.

PTC 784. Health Focused Care - Synthesis Project. 3 Hours.

Synthesis of content from previous certificate courses to develop a health focused program in the clinical or community setting.

PUH-Public Health

PUH 101. Transitioning to College, Exploring Public Health. 1 Hour.

This First Year Experience (FYE) course is for students majoring in or interested in Public Health. It is designed to introduce freshmen to the tools and techniques that will enhance their transition to college and improve their academic success. Goal setting, time management, faculty/peer interaction, and other relevant academic skills will be addressed. Students will also gain an understanding of the various educational opportunities and career options associated with Public Health.

PUH 201. Introduction to Public Health. 3 Hours.

Public health protects and promotes the health of people and communities. This course reviews the history and philosophy underlying public health, introduces core concepts and values in public health, and highlights the essential functions of public health in society. Offered each semester.

PUH 202. Introduction to Global Health. 3 Hours.

This course introduces concepts and considerations relevant to public health in resource-constrained international settings while critically assessing historic, current, and projected efforts to improve population health globally. Topics include global burden of disease, measuring population health, global epidemiologic trends, health of vulnerable populations, comparative health systems, and governmental and non-governmental efforts to address health. This course meets the Core Curriculum requirements for Area IV: Social and Behavioral Sciences. Offered each semester.

PUH 204. Social and Behavioral Determinants of Health. 3 Hours.

This course examines the social and behavioral factors that impact human health at the individual, community, and population levels. The role of social and behavioral factors and the conceptual tools used by public health to understand their influence on health behaviors and resulting health disparities will be a central focus of the course. Offered each semester.

PUH 205. Adolescent Health. 3 Hours.

This undergraduate course will provide an overview of critical health issues in adolescence and review the potential of emerging perspectives to advance adolescent health and promote positive youth development. This course is designed to provide students with the most current knowledge of issues influencing the health and well-being of adolescents. Theoretical frameworks that draw on an ecological perspective will provide a better understanding of how families, peers, schools, neighborhoods, and the larger community influence risk and protective factors in youth. Adolescence is a time of growth and experimentation, a period marked by establishing autonomy and confronting new challenges. Emphasis will be placed on the promotion of positive youth development, and the relevance of adolescent health issues for the science of health behavior and the broader public health arena.

PUH 210. Agent, Host, Environment. 3 Hours.

This course provides the scientific basis for the study of public health. It will examine how various agents (viruses, bacteria, toxins, carcinogens) affect the biology of human hosts. Particular emphasis will be placed on the role of environmental factors in shaping the interaction between agents and hosts, leading to human disease. Offered each semester.

Prerequisites: BY 115 [Min Grade: C] or (BY 101 [Min Grade: C] and BY 102 [Min Grade: C]) or BY 123 [Min Grade: C]

PUH 220. Environmental Factors in Public Health. 3 Hours.

This course examines the sources, exposure routes, and health outcomes associated with biological, chemical, and physical agents in the environment (both naturally occurring and man-made). The course will focus on how these agents impact air, water, and food quality to cause disease, along with regulations and policies designed to protect the public's health from their harmful effects.

PUH 230. Public Health Data and Methods. 3 Hours.

This course provides a hands-on introduction to the concepts and tools related to collecting and analyzing public health data. A substantial portion of the course will focus on communicating public health data to a variety of audiences to illustrate the critical role that evidence plays in public health research and practice. Offered each semester.

PUH 250. Biostatistics. 3 Hours.

This course introduces the statistical approaches most commonly used in public health, medicine, and other health-related fields. The critical role of probability in inference and estimation will be examined, along with key univariate and bivariate statistics (e.g., t-tests, correlation, regression, etc.).

Prerequisites: MA 102 [Min Grade: C] or MA 105 [Min Grade: C] or MA 106 [Min Grade: C] or MA 107 [Min Grade: C] or MA 110 [Min Grade: C] or MA 125 [Min Grade: C]

PUH 292. Seminars in Public Health. 1-3 Hour.

Seminar will explore current public health issues and topics locally, regionally, nationally and globally; case studies in epidemiology, issues and causes of chronic and infectious diseases, how the environment interacts with health, and how social and behavioral factors affect personal health.

PUH 299. Special Topics in Public Health. 1-6 Hour.

This special topics course will be used in the undergraduate program to cover emerging issues or specialized content not represented in the main curriculum.

PUH 302. Epidemiology. 3 Hours.

This course introduces the central role of epidemiology in public health research and practice. Students will learn to use the basic tools of epidemiology (e.g., prevalence and incidence, measures of association) and epidemiologic study designs to understand how epidemiologists study patterns of disease in populations and identify outbreaks. Offered once a year.

Prerequisites: (MA 102 [Min Grade: C] or MA 105 [Min Grade: C] or MA 106 [Min Grade: C] or MA 107 [Min Grade: C] or MA 110 [Min Grade: C] or MA 125 [Min Grade: C] or MA 225 [Min Grade: C])

PUH 305. Public Health Practice. 3 Hours.

This course provides an overview of how public health practitioners work with communities to improve health outcomes. It will focus on the stages of public health project implementation, from planning to needs assessment and evaluation. Students will gain hands-on experience with public health advocacy, navigating community dynamics and cultural contexts, and professionalism/ethics. Offered fall and spring.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 204 [Min Grade: C] and PUH 210 [Min Grade: C]

PUH 307. Public Health Systems. 3 Hours.

This course provides a comprehensive overview of the characteristics and structures of the US Health System, focusing on the legal, ethical, economic, and regulatory aspects of health care and public health policy. The course will also examine the contributions of federal agencies (Centers for Disease Control, Department of Health and Human Services), state/county health departments, and public and private health care providers (hospitals, long-term care facilities, physicians and nurses) to protecting and promoting health at the population level. Offered fall and spring.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 204 [Min Grade: C] and PUH 210 [Min Grade: C]

PUH 321. Workplace Environment. 3 Hours.

This course will explore known physical and chemical hazards found in the workplace. We will begin with the importance of key events and milestones in the history of worker safety and health and explore the ethical, legal, and social implications associated with the workplace environment. We will review the roles and responsibilities of government, non-government agencies, private organizations, businesses, and industry in worker safety and health. Offered once a year.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 204 [Min Grade: C] and PUH 210 [Min Grade: C] and PUH 220 [Min Grade: C]

PUH 322. Environmental Justice and Ethics. 3 Hours.

In this course, students will investigate the disproportionate burdens of environmental contamination and the resulting health disparities affecting communities of color across the U.S. and internationally. Using a broad range of examples we will look at the incidents that led to the emergence of environmental justice as a grass roots movement, much of which came from towns and peoples of the Deep South. Offered once a year.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 204 [Min Grade: C] and PUH 210 [Min Grade: C] and PUH 220 [Min Grade: C]

PUH 331. The Rise of Noncommunicable Diseases Globally. 3 Hours.

This course provides an introduction to selected key topics in chronic diseases burden endured globally. We will address the following questions: How is it that people in some countries live twice as long as in others? Why is there a rising epidemic of NCDs such as cancer, heart and lung disease, obesity, and diabetes spreading globally? What are the burdens posed by these diseases? What steps are being taken to control it? What key tools are at our disposal? Who are the global actors and stakeholders addressing this global health epidemic? What is the link between globalization and the rise of NCDs? Offered once a year.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 204 [Min Grade: C] and PUH 210 [Min Grade: C]

PUH 333. Food, Water, and Air. 3 Hours.

The service learning course will examine food, water, air, with a focus on complex role they play in sustainable human development. While learning about food, water, and air in the classroom, students will gain further understanding of these topics by working with non-profit organizations in Birmingham that address food security, clean water, and clean air. Topics include issues of availability, access, and use of food in the local, domestic and global context, as well as current responses and potential solutions; water resources and sustainability, as well as water use, pollution, and treatment, and; outdoor and indoor air quality issues. The course will also focus on helping students develop a skill set for global citizenship that includes opportunities for advocacy, leadership, and critical thinking. Offered once a year.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 204 [Min Grade: C] and PUH 210 [Min Grade: C]

PUH 340. Profession of Public Health. 3 Hours.

The purpose of this course is to assist students in planning and pursuit of their career goals. Students will interface with public health professionals to identify the skills needed for specific career paths and map out action items needed to gain those skills. The course will provide students the opportunity to gain tangible skills including, but not limited to: Ethics of Public Health, Oral and Written Communication, Personal Presentation Skills, Leadership Styles and Working in Teams and Project Management while addressing a current public health challenge.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 204 [Min Grade: C] and PUH 210 [Min Grade: C]

PUH 341. Public Health Preparedness and Emergency Management. 3 Hours.

This course will provide participants with an understanding of Public Health Emergency Preparedness (PHEP), exercise development, and evaluation. During this course you will learn how to identify threats within your community, determine what capabilities are most needed to prepare for and meet these threats, and how to develop and evaluate exercises to test knowledge, skills and abilities.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 220 [Min Grade: C]

PUH 342. Public Health Disasters. 3 Hours.

This will be a hybrid of environmental disasters and history and consequences of world disasters.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 204 [Min Grade: C] and PUH 210 [Min Grade: C]

PUH 350. Intermediate Biostatistics. 3 Hours.

This intermediate-level course will provide students with hands-on experience conducting analyses using statistical software. Selecting appropriate statistical tests and testing model assumptions will be a key focus, along with developing clear interpretations of results.

Prerequisites: (MA 102 [Min Grade: C] or MA 105 [Min Grade: C] or MA 106 [Min Grade: C] or MA 107 [Min Grade: C] or MA 110 [Min Grade: C] or MA 125 [Min Grade: C] or MA 225 [Min Grade: C]) and PUH 250 [Min Grade: B]

PUH 352. Risk Reporting: Interpreting and Writing Medical News. 3 Hours.

The main tool that scientists use to describe their work is the peer-reviewed research article. These articles are written for a specialist audience of other scientists and clinicians. However, human research is of interest to patients, policies makers, and other non-scientists. Accurate and appropriate interpretation and evaluation of scientific findings is vitally important to their implementation. In this course students will learn how to read and interpret scientific publications, to critically evaluate scientific publications and media coverage of the publications, and to write articles describing scientific findings in ways that are accessible for a general audience. The first part of the semester will consist of lectures and class discussions including guest lectures by science writers. The later part of the semester will include student-lead discussions of scientific and mass-market articles. Evaluation will be based on reading quizzes, class participation and submission of discussion questions before class periods, written assignments interpreting and evaluating scientific and mass-market articles, and a midterm and final exam.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 220 [Min Grade: C] and PUH 302 [Min Grade: C]

PUH 353. The Domestic Hot Zone: Major Diseases Affecting the U.S.. 3 Hours.

Though infectious diseases still contribute greatly to morbidity in the United States, in the 20th century the causes of mortality in the United States began to shift—known as the epidemiologic transition—from infectious diseases to chronic diseases such as heart disease, cancer, stroke, and diabetes. These four diseases alone account for nearly three-quarters of a trillion dollars in medical expenditure and cause over 1.3 million deaths annually. The purpose of this class is to provide students with detailed knowledge regarding the major diseases that affect the United States, covering both major chronic and infectious diseases. Each week will focus on a disease or family of diseases, and will cover the epidemiology of the disease as well as looking at historical trends in disease incidence and mortality and how the trends have changed in recent years. Students will be graded through the use of take-home assignments, a mid-term examination, and a final examination.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 204 [Min Grade: C] and PUH 210 [Min Grade: C]

PUH 354. Scratching the Itch: Introduction to Infection Control and Hospital Epidemiology. 3 Hours.

This course is designed to focus specifically on concepts involved with performing epidemiological surveillance and research within a hospital setting. With the recent advent of policies set forth by the Affordable Care Act, emphasis has been placed on surveillance and prevention of nosocomial infections in hospitals throughout the country. The course will introduce students to the methodology of infection control in a hospital setting, including how patients are tested for infectious diseases, surveillance methodology, and how an outbreak investigation in a hospital is performed. The course will involve guest lecturers from different departments of the hospital, including but not limited to Infection Control, Patient Safety and Quality, Clinical Laboratory, and Environmental Control. Each week will cover a given topic (e.g., bloodstream and catheter-associated infections, multi-drug resistant pathogens, respiratory diseases). The students will be graded through the use of take-home assignments, a mid-term examination, two case studies, and a group project involving a nosocomial outbreak investigation of an infectious disease of the course master's choice.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 220 [Min Grade: C] and PUH 302 [Min Grade: C]

PUH 391. Directed Study in Public Health. 1-6 Hour.

This experiential learning opportunity is open to undergraduate students interested in conducting an in-depth exploration of an approved Public Health topic under the supervision of an SOPH faculty mentor. Students must complete the SOPH agreement form for independent academic work at least two weeks prior to the start of the designated semester. This form specifies the scope of work, regular assignments, and final product that must be completed to receive academic credit.

PUH 392. Seminar in Public Health. 1-3 Hour.

Seminar will explore current public health issues and topics locally, regionally, nationally and globally; case studies in epidemiology, issues and causes of chronic and infectious diseases, how the environment interacts with health, and how social and behavioral factors affect personal health.

PUH 398. Undergraduate Research in Public Health. 1-6 Hour.

This experiential learning opportunity involves participation in a research project under the supervision of an SOPH faculty mentor; this could involve a student-initiated project or collaboration on existing research. Students must complete the SOPH agreement form for independent academic work at least two weeks prior to the start of the designated semester. This form specifies the scope of work, regular assignments, and final product that must be completed to receive academic credit.

PUH 399. Special Topics in Public Health. 1-6 Hour.

This special topics course will be used in the undergraduate program to cover emerging issues or specialized content not represented in the main curriculum.

PUH 405. Managing Public Health Programs. 3 Hours.

This course is designed to prepare future managers and leaders in the public health arena. The course will provide students with knowledge relevant to managing public health organizations, non-profits, or NGOs, while identifying functions and concepts of management, leadership, and governance.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 204 [Min Grade: C] and PUH 210 [Min Grade: C]

PUH 421. Nature vs. Nurture: Genes, Environment and Health. 3 Hours.

This didactic lecture course will examine how components of the world around us impact our lives and health. The classic battle of nature (genes) vs. nurture (environment) is being replaced with the understanding of how our exposure to our environment impacts gene expression, which can increase (or decrease) our own likelihood of disease. Using everyday, real-world examples we will study the environment-gene interaction and how this helps determine why some people are more disease prone than others. Each example will focus on the underlying science and the medical consequence of exposure, and will also examine exposure prevention strategies for individuals and practical legislation to reduce environmental contamination. Examples will vary from year to year, but damaging examples may include nanoparticles, smog, medical radiation, drugs and alcohol, pesticides, noise, indoor air pollution, toxic metals, plastics, food and water contamination, and sexually transmitted infections. We will also discuss how the environment can positively impact gene expression, and will include discussions of functional foods (i.e. nutraceuticals such as soy, green tea and garlic) and other alternative medicinal therapies. BY 116 or equivalent; completion of or registration in BY210 or BY330 is recommended.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 210 [Min Grade: C] and PUH 220 [Min Grade: C]

PUH 422. Fundamentals of Toxicology. 3 Hours.

Basic principles in toxicology will be covered including: dose-response relationships; absorption, distribution, storage, biotransformation and elimination of toxicants; target organ toxicity; mutagenesis and carcinogenesis; and an overview of fate and transport of contaminants in the environment. The course will focus on contaminants of environmental and public health interest and will include the fascinating roles toxins have played in human history.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 210 [Min Grade: C] and PUH 220 [Min Grade: C]

PUH 432. Global Health Cases. 3 Hours.

This course uses case studies to examine the impact of health conditions that transcend national borders. The focus will be on the political and economic impact of public health crises.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 204 [Min Grade: C] and PUH 210 [Min Grade: C]

PUH 434. Global Communicable Disease Challenges. 3 Hours.

This course is designed to introduce students to the major infectious diseases of public health importance globally. Since we cannot cover all infections in depth in the time allowed, we will highlight major categories of infections as well as focus on a few major infections that together cause the greatest morbidity and mortality in children or adults worldwide. The purpose of this course is to equip participants with up-to-date knowledge of resources on major infections of global importance, and their prevention and control strategies.

Prerequisites: (BY 101 [Min Grade: C] and BY 102 [Min Grade: C]) or (BY 123 [Min Grade: C] and BY 123L [Min Grade: C]) and PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 220 [Min Grade: C]

PUH 436. Maternal and Child Health in Africa and Asia. 3 Hours.

Despite significant advances in global health over the last fifty years, the burden of disease among the maternal and child health (MCH) population in certain areas of the world remains alarmingly high. While child mortality has declined over the last fifty years, maternal and neonatal mortality has seen relatively little improvement, especially in Sub Saharan Africa and South Asia, which bears a disproportionate share of the global burden of maternal and child health disease. Maternal health is especially critical due to the far ranging impact of a maternal death on the family, community, and society. Fortunately, high impact, cost-effective solutions exist to address these highly preventable maternal and child deaths. In this course we will discuss those successful MCH interventions and policies in addition to identifying different barriers and challenges to the implementation and scale up of MCH services in Africa and Asia.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 204 [Min Grade: C] and PUH 210 [Min Grade: C]

PUH 441. Public Health Law and Policy. 3 Hours.

PUH 441 will be an introductory course in public health law and policy designed for undergraduate students in public health. There are no prerequisites for this course. The purpose of the course is to introduce non-lawyers to the United States legal system and to the basic principles of law relevant to public health practitioners. It is intended to provide students with basic legal knowledge to assist them in communicating with attorneys about potential legal issues that may arise in formulating policy and exercising leadership in health care organizations. An overarching theme of the course is the tension between community interests and individual rights.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 220 [Min Grade: C]

PUH 442. Children and Families: Issues in Health, Poverty, and Policies. 3 Hours.

This interdisciplinary course will provide students with basic knowledge about current issues in health and society, both globally and domestically that impact the Maternal and Child Health (MCH) population, which broadly includes women of reproductive age, infants, children, and families. The course will include a specific focus on the role of poverty in the health issues of this population.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 204 [Min Grade: C] and PUH 210 [Min Grade: C]

PUH 450. Statistical Programming and Database Analysis. 3 Hours.

This class provides an introduction into the commonly used statistical programs and teaches the fundamentals of database design. By the end of the class, students will be able to design and build research databases. Students will also be taught how to conduct statistical analyses using EXCEL and SAS.

Prerequisites: PUH 250 [Min Grade: C]

PUH 491. Directed Study in Public Health. 1-6 Hour.

This experiential learning opportunity is open to junior and senior level undergraduate students interested in conducting an in-depth exploration of an approved Public Health topic under the supervision of an SOPH faculty mentor. Students must complete the SOPH agreement form for independent academic work at least two weeks prior to the start of the designated semester. This form specifies the scope of work, regular assignments, and final product that must be completed to receive academic credit.

PUH 492. Seminar in Public Health. 1-6 Hour.

Seminar will explore current public health issues and topics locally, regionally, nationally and globally; case studies in epidemiology, issues and causes of chronic and infectious diseases, how the environment interacts with health, and how social and behavioral factors affect personal health.

PUH 494. Internship/Fieldwork in Public Health. 3 Hours.

Students who meet eligibility requirements may take three hours of academic credit per semester for participating in an advisor approved internship experience.

PUH 495. Public Health Capstone Experience. 3 Hours.

Through completion of an individually-designed service learning project, this course provides students with the opportunity to apply public health competencies through engagement, study, and reflection. Students will apply their public health knowledge and skills to assist a community partner and present a final report on their experience. This course should be taken within the last two semesters of graduation; students must have completed at least 27 hours of PUH coursework prior to enrolling.

Prerequisites: PUH 201 [Min Grade: C] and PUH 202 [Min Grade: C] and PUH 204 [Min Grade: C] and PUH 210 [Min Grade: C] and PUH 230 [Min Grade: C] and PUH 305 [Min Grade: C] and PUH 307 [Min Grade: C]

PUH 496. Exploring Population Health. 6 Hours.

Public health is what we do together as a society to ensure the conditions in which everyone can be healthy. This course will provide students an opportunity to learn about both historical and contemporary public health issues, their effects on population health, and how public health systems are working to solve the health issues affecting our communities today. This course will focus on the Southeast United States. Students will tour historically significant sites, visit communities and community-based organizations, attend featured presentations around both contemporary and historical public health issues, as well as visit local, state, tribal and federal public health agencies to learn about their structure, programs, service delivery models, and approaches to addressing issues of public health. The sum of this experience will illustrate the interdisciplinary nature of public health practice and the need to add attention to the social determinants of health – the conditions in the social, physical, and economic environment in which people are born, live, work and age – in order to achieve health equity. Travel is required for this course. Undergraduate students must have completed their sophomore year before registering for PUH 496.

PUH 498. Undergraduate Research in Public Health. 1-6 Hour.

This experiential learning opportunity involves participation in a research project under the supervision of an SOPH faculty mentor; this could involve a student-initiated project or collaboration on existing research. Students must complete the SOPH agreement form for independent academic work at least two weeks prior to the start of the designated semester. This form specifies the scope of work, regular assignments, and final product that must be completed to receive academic credit.

PUH 499. Special Topics in Public Health. 1-6 Hour.

This special topics course will be used in the undergraduate program to cover emerging issues or specialized content not represented in the main curriculum.

PUH 600. Overview of Public Health. 3 Hours.

The Overview of Public Health (OPH) course is intended to provide professional degree students in the School of Public Health (SOPH) a broad overview of the core areas of public health. This course was designed to address the foundational public health learning objectives.

PUH 600Q. Overview of Public Health. 3 Hours.

The Overview of Public Health (OPH) course is intended to provide professional degree students a broad overview of the core areas of public health. This course was designed to address the foundational public health learning objectives.

PUH 602. Narrative in Public Health. 3 Hours.

The purpose of this course is to develop communication skills primarily through written exercises directly relevant to public health. Each exercise will explore and teach students different formats and techniques for communicating complex public health information to different audiences, such as colleagues, the lay public, public officials, or potential future public health students. NOTE: This course is only available to Public Health degree-seeking students.

PUH 609Q. Climate Change and Global Health Online. 3 Hours.

This course will provide students an overview of the driving forces and mechanics of climate change and a comprehensive analysis of the implications on Earth's natural/human ecosystems and health in a local, regional and global scale. The concepts, approaches and uncertainties of methods applied to assess and monitor the health impacts of climate change will be presented and specific disease cases will be discussed. Lastly, ongoing efforts to cope/adapt, mitigate or reduce the impacts and the mechanisms to develop these tools will be examined.

PUH 627. Writing & Reviewing Research for MPH Candidates. 3 Hours.

PUH 627 is a course that meets for ten three-hour sessions over the course of 10 weeks. Class time will be filled with discussion, group activities, tasks, writing, peer review, and presentations. By the end of this 10-week course, PUH 627 student writers will demonstrate a working grasp of academic research writing best practices, including ethics for authors, and gain knowledge and confidence as writers after completing weekly non-graded reading/writing activities, 3 rigorous graded writing assignments, and a final (a research proposal presentation) as measured by: 1) an average of grades on writing rubrics and 2) instructor evaluation.

PUH 627Q. Writing & Reviewing Research for MPH Candidates. 3 Hours.

PUH 627 is a course that meets for ten three-hour sessions over the course of 10 weeks. Class time will be filled with discussion, group activities, tasks, writing, peer review, and presentations. By the end of this 10-week course, PUH 627 student writers will demonstrate a working grasp of academic research writing best practices, including ethics for authors, and gain knowledge and confidence as writers after completing weekly non-graded reading/writing activities, 3 rigorous graded writing assignments, and a final (a research proposal presentation) as measured by: 1) an average of grades on writing rubrics and 2) instructor evaluation.

PUH 690. Special Topics in Public Health. 1-6 Hour.

This is a general course that may be used for special topic lectures or directed readings.

PUH 695. The Public Health Integrative Experience. 1-3 Hour.

This course fulfills the requirement that all Master of Public Health degree candidates have the opportunity, as defined by the Council for Education on Public Health (CEPH), "to synthesize and integrate knowledge acquired in course work and other learning experiences and to apply theory and principles in a situation that approximates some aspect of professional practice". All MPH students, regardless of program affiliation, must complete this course to graduate. This is an opportunity for you to demonstrate your knowledge. This course must be completed during the final term of enrollment.

Prerequisites: BST 601 [Min Grade: C] or (BST 611 [Min Grade: C] and BST 612 [Min Grade: C]) and ENH 600 [Min Grade: C] and (EPI 600 [Min Grade: C] or EPI 610 [Min Grade: C]) and HB 600 [Min Grade: C] and HCO 600 [Min Grade: C]

PUH 695Q. The Public Health Integrative Experience Online. 1-3 Hour.

This course fulfills the requirement that all Master of Public Health degree candidates have the opportunity, as defined by the Council for Education on Public Health (CEPH), "to synthesize and integrate knowledge acquired in course work and other learning experiences and to apply theory and principles in a situation that approximates some aspect of professional practice". All MPH students, regardless of program affiliation, must complete this course to graduate. This is an opportunity for you to demonstrate your knowledge. This course must be completed during the final term of enrollment.

Prerequisites: (BST 601 [Min Grade: C] or BST 612 [Min Grade: C] or BST 601Q [Min Grade: C] or BST 612Q [Min Grade: C]) and (ENH 600 [Min Grade: C] or ENH 600Q [Min Grade: C]) and (EPI 600 [Min Grade: C] or EPI 600Q [Min Grade: C] or EPI 610 [Min Grade: C] or EPI 610Q [Min Grade: C]) and (HB 600 [Min Grade: C] or HB 600Q [Min Grade: C]) and (HCO 600 [Min Grade: C] or HCO 600Q [Min Grade: C])

PUH 696. Exploring Population Health. 6 Hours.

Public health is what we do together as a society to ensure the conditions in which everyone can be healthy. This course will provide students an opportunity to learn about both historical and contemporary public health issues, their effects on population health, and how public health systems are working to solve the health issues affecting our communities today. This course will focus on the Southeast United States. Students will tour historically significant sites, visit communities and community-based organizations, attend featured presentations around both contemporary and historical public health issues, as well as visit local, state, tribal and federal public health agencies to learn about their structure, programs, service delivery models, and approaches to addressing issues of public health. The sum of this experience will illustrate the interdisciplinary nature of public health practice and the need to add attention to the social determinants of health – the conditions in the social, physical, and economic environment in which people are born, live, work and age – in order to achieve health equity. Travel is required for this course.

PUH 697. Practice Placement / Internship. 3 Hours.

This course is for students in the MPH/MD and MPH/DVM programs. It will be used to satisfy the internship degree requirement.

Prerequisites: (BST 601 [Min Grade: C] or BST 601Q [Min Grade: C] or BST 611 [Min Grade: C] or BST 611Q [Min Grade: C]) and (BST 612 [Min Grade: C] or BST 612Q [Min Grade: C]) and (ENH 600 [Min Grade: C] or ENH 600Q [Min Grade: C]) and (EPI 600 [Min Grade: C] or EPI 600Q [Min Grade: C]) and (HB 600 [Min Grade: C] or HB 600Q [Min Grade: C]) and (HCO 600 [Min Grade: C] or HCO 600Q [Min Grade: C])

PUH 697Q. Practice Placement / Internship. 3 Hours.

This course is for students in the school-wide dual degree programs. It will be used to satisfy the internship degree requirement.

Prerequisites: (BST 601 [Min Grade: C] or BST 601Q [Min Grade: C]) or (BST 611 [Min Grade: C] or BST 611Q [Min Grade: C] and BST 612 [Min Grade: C]) and (ENH 600 [Min Grade: C] or ENH 600Q [Min Grade: C]) and (EPI 600 [Min Grade: C] or EPI 600Q [Min Grade: C]) and (HB 600 [Min Grade: C] or HB 600Q [Min Grade: C]) and (HCO 600 [Min Grade: C] or HCO 600Q [Min Grade: C])

PY-Psychology

PY 653. Foundations of Behavioral Neuroscience. 4 Hours.

Neural systems which control behavior will be studied, incorporating knowledge gained from neurobiological and psychological research. Topics will include synaptic communication, sensation and perception, movement, genetic influences on behavior, motivation, emotions, psychopathology, brain plasticity, and an extended module on learning.

PY 663. Language: Mind, Brain and Society. 3 Hours.

Combines cognitive and behavioral perspectives with what is known about brain systems that support language and how those systems are impaired in developmental and neurological disorders. Topics include: speech perception, word comprehension, semantics, bilingualism, speech production, sentence processing, reading, and the social aspects of language.

PY 687. The Dynamics of Pain. 3 Hours.

This course provides a comprehensive study of pain, from basic anatomy through clinical treatment and measurement.

PY 693. Cognitive Neuroscience. 3 Hours.

How cognitive processing originates from brains. Focus on synthetic approaches to sensory-input guided behavior implemented in a biologically realistic manner; neurobiological wetware underlying cognition; study and construction of synthetic approaches that emulate biological behavior and psychological processes.

PY 698. Premaster's Degree Graduate Research. 1-12 Hour.

Premaster's Degree Graduate Research.

PY 699. Master's Level Thesis Research. 1-12 Hour.

Master's Level Thesis Research.

Prerequisites: GAC M

PY 700. Foundations of Research Design. 1 Hour.

Presentation and discussion of the nature of scientific evidence, design of research programs and individual studies, and manipulation and measurement of study variables.

PY 701. Professional Issues and Ethics in Psychology. 1 Hour.

APA ethical code, manual for service providers in psychology, state and national mental health codes and trends for service providers, ethical practices in research with human subjects, and forensic issues. APA organizational structure.

PY 704. Social Psychology. 3 Hours.

Interpersonal relationships and effects of social environment on social perception and human behavior.

PY 705. Learning Processes. 3 Hours.

Phenomena and mechanisms of learning; information processing, attention, and major issues of learning theory.

PY 706. Sensory and Perceptual Processes. 3 Hours.

Sensory physiology; diagnostic techniques for pathophysiology of sensory systems; human psychophysics and principles of perception.

PY 707. Brain and Cognition. 3 Hours.

Integration of cognitive, behavioral, biological, and computational perspectives on perception, attention, learning and memory, language, problem-solving and creativity, and judgment and decision-making.

PY 708. Developmental Psychology. 3 Hours.

Human development from prenatal period to old age. Genetic and environmental determinants of behavior; linguistic, cognitive, intellectual, personality, social, and emotional development.

PY 710. Seminar in Lifespan Developmental Psychology. 1 Hour.

Discussion of scientific and professional development issues related to developmental psychology.

PY 711. Seminar in Cognitive Development. 3 Hours.

Seminar in the development of and changes in memory, perception, learning, and thinking throughout the lifespan.

PY 712. Seminar in Social Development. 3 Hours.

Theory and research related to attachment, origins of the self and self-esteem, family relationships, peer relationships, morality, and aggression.

PY 713. Seminar in Language Development. 3 Hours.

Research and theory related to normal and deviant language development.

PY 716. Introduction to Statistics and Measurement. 3 Hours.

Probability, measurement, descriptive statistics, sampling distributions, null hypothesis significance testing, means comparisons, correlation, regression, reliability, validity, categorical data analysis, and nonparametric methods.

PY 716L. Lab for Introduction to Statistics and Measurement. 1 Hour.

Computer laboratory for PY 716 Introduction to Statistics and Measurement.

PY 717. Applied Statistical Methods. 3 Hours.

Statistical hypothesis testing in the context of the univariate general linear model: 1-way and factorial analysis of variance, multiple comparison procedures, multiple regression and repeated measures.

Prerequisites: PY 716 [Min Grade: C]

PY 717L. Lab for Applied Statistical Methods. 1 Hour.

Computer laboratory for PY 717 Applied Statistical Methods.

Prerequisites: PY 716L [Min Grade: C]

PY 718. Advanced Research Design. 2 Hours.

Presentation and discussion of advanced topics in research design, such as statistical and experimental control, adaptive and other between-groups experimental designs, and program evaluation. The class culminates in preparation of a research grant application.

PY 719. Multivariate Statistical Methods. 3 Hours.

Multiple regression, mediation and moderation, multivariate analysis of variance, logistic regression, principal components and factor analysis, and introduction to structural equation modeling.

Prerequisites: PY 717 [Min Grade: C]

PY 719L. Lab for Multivariate Statistical Methods. 1 Hour.

Laboratory for PY 719 Multivariate Statistical Methods.

Prerequisites: PY 717L [Min Grade: C]

PY 720. Human Neuropsychology. 3 Hours.

Structure and function of human brain; effects of neurological impairment on cognitive, affective, and personality functions.

Prerequisites: PY 707 [Min Grade: C](Can be taken Concurrently) or PY 753 [Min Grade: C](Can be taken Concurrently) or PY 793 [Min Grade: C] (Can be taken Concurrently)

PY 721. Neuropsychological Assessment. 3 Hours.

Assessment of various types of neuropsychological disorders, including interpretation of test results and communication of findings via oral presentations and written reports. Emphasis is on analytical thinking, ethical considerations, practical applications of neuroscientific research and incorporating knowledge of ethnic and cultural factors.

Prerequisites: PY 720 [Min Grade: C]

PY 723. Seminar in Abnormal Child Development. 3 Hours.**PY 726. Seminar in Advanced Developmental Psychology. 3 Hours.**

Advanced issues in developmental research and theory.

PY 727. Longitudinal Data Analysis Laboratory. 3 Hours.

Hands-on advanced statistics class focusing on analyses of longitudinal data. Topics include multilevel (hierarchical) models, latent growth curve models, Generalized Estimating Equations, and group-based longitudinal models.

Prerequisites: PY 719 [Min Grade: C]

PY 729. Seminar in Adolescent Development. 3 Hours.

Seminar in Adolescent Development. Theoretical models and empirical findings related to biological, psychological, and socio-historical changes in adolescent development.

Prerequisites: PY 719 [Min Grade: C]

PY 731. Health Psychology. 3 Hours.

Prevention, health enhancement and intervention. Environmental, interpersonal and marketplace factors in health and disease. Basic concepts, methods and instruments in health psychology assessment.

PY 734. Applied Developmental Psychology. 1-3 Hour.

Creating programs and policies to apply developmental science in order to improve human development. Establishing partnerships for developing and sustaining the applied scientific research on which such programs and policies are based.

PY 735. Psychology of Addiction. 3 Hours.

Causative and developmental factors and treatment approaches for all types of addictions (nicotine, alcohol, drugs, etc.).

PY 737. Psychology of Eating Disorders & Obesity. 3 Hours.

History, epidemiology, genetic, environmental, and behavioral correlates and prevention and treatment strategies of eating disorders and obesity; mechanisms of normal feeding and weight control and research methods used to understand other psychiatric disorders.

PY 740. Adult Personality and Psychopathology. 3 Hours.

Fundamental theories, concepts, issues, and methodologies of adult psychopathology and its relationship to normal personality and personality disorders. Focuses on the major syndromes of mental disorder from both biological and psychosocial perspectives.

PY 741. Child and Adolescent Psychopathology and Treatment. 3 Hours.

Development, etiology, diagnosis and treatment of emotional and behavioral disorders affecting children and adolescents. Incorporates historical and contemporary issues pertaining to their phenomenology, comorbidity, and epidemiology along with cultural, ethical and professional issues germane to clinical care.

Prerequisites: PY 708 [Min Grade: C]

PY 742. Sport Psychology. 3 Hours.

Psychological factors in athletic performance. Psychological characteristics of successful athletes; anxiety arousal, motivation, attention, concentration, attribution, cognition, and imagery.

PY 744. Neuroanatomy for Neuropsychologists. 3 Hours.

Overview of the anatomy of the brain from a clinical perspective, with emphasis on a three-dimensional understanding of the brain (both in terms of structure and functional organization). General principles of functional organization are examined at various levels of the neuraxis, as are the functional networks that underly behavior, cognition, and emotion. General classes of neuropathology commonly seen in medical settings are reviewed, along with implications for clinical assessment.

PY 745. Neurobiology of Learning. 3 Hours.

Introduction to data, phenomena, and theory related to associative learning of behaviors. Discussion of issues related to the neurobiology of non-associative learning, stimulus encoding, and memory.

PY 746. Structural Equation Modeling. 3 Hours.

Basic steps in structural equation modeling - model identification, estimation, evaluation and modification - as well as advanced topics such as confirmatory factor analysis, latent variables, multi-group modeling, analysis of non-normally-distributed and categorical data, missing data, and sample size estimation.

Prerequisites: PY 719 [Min Grade: C]

PY 749. Social Psychophysiology. 3 Hours.

Current research on the effects of the social world on hormonal responses (cortisol, testosterone etc.). Several research articles will be discussed every week in a seminar format.

PY 751. Human Psychopharmacology. 2 Hours.

Neurophysiological underpinnings and clinical use of drugs for the treatment of mental disorders and pain.

PY 753. Foundations of Behavioral Neuroscience. 4 Hours.

Neural systems which control behavior will be studied, incorporating knowledge gained from neurobiological and psychological research. Topics will include synaptic communication, sensation and perception, movement, genetic influences on behavior, motivation, emotions, psychopathology, brain plasticity, and an extended module on learning.

PY 754. Advanced Topics in Behavioral Neuroscience. 3 Hours.

Methods and discoveries in the neuroscience of behavior, such as brain imaging, human and animal learning, perception, neurophysiology, neuropharmacology and psychiatric disorders. Most students will have taken 753/453 as a prerequisite, but other high level neuroscience courses may also suffice with permission of the instructor.

Prerequisites: PY 753 [Min Grade: C]

PY 755. Human Psychophysiology. 3 Hours.

Basic and applied research topics.

PY 756. Research Seminar in Behavioral Neuroscience. 1 Hour.

Scientific and professional development including scientific writing and communication skills, discussion of current literature, and presentation of ongoing research from students in the Behavioral Neuroscience doctoral program.

PY 760. Interviewing and Behavioral Observation. 2 Hours.

Theory and practice of interviewing and behavioral assessment with adult and child populations.

PY 761. Behavioral Assessment. 2 Hours.

Psychometric and observational procedures, relying largely on behavioral theory, to observe, analyze, and assess human clinical behaviors; development of intervention activities.

PY 763. Language: Mind, Brain and Society. 3 Hours.

Combines cognitive and behavioral perspectives with what is known about brain systems that support language and how those systems are impaired in developmental and neurological disorders. Topics include: speech perception, word comprehension, semantics, bilingualism, speech production, sentence processing, reading, and the social aspects of language.

PY 764. Cognitive Assessment: Child and Adult. 3 Hours.

Cognitive assessment of children and adults focusing on issues related to assessment, Bayley Scales of Infant/Toddler Assessment, Differential Ability Scales, Wechsler scales and additional cognitive, academic, memory, and learning tests.

PY 765. Personality Assessment. 2 Hours.

Objective personality assessment, primarily focusing on Minnesota Multiphasic Personality Inventory.

PY 769. Cognitive Behavior Therapy. 3 Hours.

Review of cognitive behavioral theory and methods with emphasis on empirically validated individual and group, including brief, interventions.

PY 770. Survey of Psychotherapeutic Methods. 3 Hours.

Procedures for changing maladaptive behavior. Research and methodological issues, factors common to most therapy, and major therapeutic techniques.

PY 772. Behavior Therapy. 2 Hours.

Cognitive and more traditional behavioral approaches to intervention in mental health and medical environment.

PY 774. Family Therapy. 2 Hours.

Traditional systems theory, intervention strategies, and family dynamics; case examples and group participation.

PY 776. Child and Adolescent Psychotherapy. 2 Hours.

Application of child psychopathology knowledge and intervention with child and adolescent population; theoretical and applied issues.

Prerequisites: PY 708 [Min Grade: C]

PY 777. Psychotherapy Practice Shadowing. 1 Hour.

Introduction to psychotherapy practice by sitting in on therapy (consented) with a practicing psychologist.

PY 779. Foundations of Clinical Supervision and Consultation. 1 Hour.

Methods, models, and ethical considerations related to clinical supervision and interprofessional consultation in diverse cultural and professional contexts.

PY 780. Rehabilitation Psychology. 2 Hours.

Rehabilitation of chronic physical disorders; neurological disorders such as cerebrovascular disease, head trauma, and spinal cord injury.

PY 781. Forensic Psychology. 2 Hours.

Interface between psychology and law; civil and criminal procedure; expert witness; insanity, competency, commitment, and malpractice. Experience in criminal justice settings.

PY 783. Developmental Disabilities. 3 Hours.

Mental retardation, learning disabilities, and other developmental disorders. Research on nature of disabilities and major intervention techniques.

Prerequisites: PY 708 [Min Grade: C]

PY 785. Psychology of Aging. 3 Hours.

The relationship between aging and health, cognitive function, intelligence, personality, relationships, and psychopathology. Other topics covered in this course include assessment and treatment of psychological disorders in older adults, end-of-life issues, caregiving and dementia.

PY 786. Aging Seminar. 1 Hour.

Contemporary topics in aging including basic science, clinical, and psychosocial issues.

PY 787. The Dynamics of Pain. 3 Hours.

This course provides a comprehensive study of pain, from basic anatomy through clinical treatment and measurement.

PY 788. Pediatric Psychology. 3 Hours.

Behavioral influences on health and illness; impact of health problems and illness on behavior and development of children and adolescents; family issues related to these interactions.

PY 789. Social/Ethnic Issues in Therapy. 3 Hours.

Psychotherapeutic issues pertinent to the counseling of the culturally diverse; examination of the effects of various cultural histories, values, morals and intrafamilial relationships. Groups emphasized: Hispanic, African-American, Asian and American Indian populations. Issues concerning therapist from a different cultural background than the treatment population.

PY 790. Internship in Clinical Psychology. 0-9 Hours.

Completion of an APA-accredited internship in clinical psychology.

PY 791. Special Topics in Psychology. 1-3 Hour.

Topics and prerequisites vary.

PY 792. Introduction to Neurobiology. 6 Hours.

Introduction to the neurobiological bases of neuronal communication and behavior. Topics include invertebrate and vertebrate neuroanatomy, neurons and glia, resting potentials, action potentials, synaptic transmission, neurotransmitters and receptors, sensory transduction, and sensorimotor integration. The course is taught at Dauphin Island Sea Lab Facilities, Dauphin Island, Alabama.

PY 793. Cognitive Neuroscience. 3 Hours.

How cognitive processing originates from brains. Focus on synthetic approaches to sensory-input guided behavior implemented in a biologically realistic manner; neurobiological wetware underlying cognition; study and construction of synthetic approaches that emulate biological behavior and psychological processes.

PY 796. Practicum in the Teaching of Psychology. 1-9 Hour.

Practicum in the teaching of psychology.

PY 797. Clinical Practicum in Medical Psychology. 1-9 Hour.

Practicum training in clinical and medical psychology, supervised by a licensed mental health professional.

PY 798. Predoctoral Degree Graduate Research. 1-12 Hour.

Predoctoral degree graduate research.

PY 799. Doctoral Dissertation Research. 1-12 Hour.

Doctoral dissertation research.

Prerequisites: GAC Z

RHB-Rehabilitation Science

RHB 500. Introduction to Rehabilitation Science. 3 Hours.

Encapsulating science from the level of the cell and body structure to the person, family, community and society level, rehabilitation science serves as a foundation and the body of knowledge by which individuals may develop and evaluate current and emerging approaches to enhancing enablement and minimizing disability.

RHB 575. Special Topics in Rehabilitation Science. 1-4 Hour.

Exploration of current topics in Rehabilitation Sciences.

RHB 590. Quantitative Biomechanics of Injury and Rehabilitation. 3 Hours.

Material, mechanical, electrophysiological and energetic principles of human movement. Comparison of non-impaired versus impaired systems in relation to injury/disability.

RHB 740. Teaching Practicum. 1-3 Hour.

Individually designed, directed teaching experience in focus area appropriate to student's background, needs, and goals under guidance of faculty preceptor.

Prerequisites: RHB 780 [Min Grade: C] and RHB 781 [Min Grade: C] and RHB 782 [Min Grade: C] and RHB 783 [Min Grade: C] and RHB 784 [Min Grade: C]

RHB 746. Rehabilitation Science Journal Club. 1 Hour.

Student-led, facilitated discussion of current, impactful published research in rehabilitation science. Interaction with scientists and clinicians from multiple disciplines contributing to the rehabilitation science.

RHB 775. Special Topics in Rehabilitation Sciences. 1-4 Hour.

Exploration of current issues in Rehabilitation Sciences.

RHB 780. Principles of Rehabilitation Science: Movement Science. 3 Hours.

Interdisciplinary discussion of concepts, theories, principles, and research literature underlying the understanding of neural control, biomechanics, motor learning, and motor development and how purposeful and functional body movements are accomplished under a variety of health conditions and disease processes.

RHB 781. Principles of Rehabilitation Science: Exercise Science. 3 Hours.

Interdisciplinary discussion of concepts, theories, principles, and research literature underlying the understanding of cardiac and pulmonary physiology, exercise physiology, and health behaviors and how important activities are accomplished under a variety of health conditions and disease processes.

RHB 782. Principles of Rehabilitation Science: Occupation Science. 3 Hours.

Interdisciplinary discussion of concepts, theories, principles, and research literature underlying the understanding of occupation science and how work and play activities are accomplished under a variety of health conditions and disease processes.

RHB 783. Research Design/Measurement in Rehab Sci. 3 Hours.

A detailed overview of research design and methodologies used in rehabilitation science, including quantitative and qualitative methods.

RHB 784. Res Design/Measure Rehab Sc II. 3 Hours.

A detailed overview of research design and methodologies used in rehabilitation science, including quantitative and qualitative methods. A continuation of Research Design and Measurement in Rehabilitation Science I.

RHB 785. Principles of Behavior Change in Rehabilitation Science. 3 Hours.

Scientific and theoretical principles underlying health behavior change in the context of rehabilitation science; health behavior from an ecological perspective; seminal behavior change theories; key elements required for design, implementation, and analysis of rigorous health behavior change research.

RHB 789. Rehab Science Seminar. 2 Hours.

Varied discussion of rehabilitation science topics to help students explore research questions in preparation for their dissertation.

RHB 790. Rehabilitation Science Research Project. 1 Hour.

Research experience where the student rotates through a variety of clinical research areas related to Rehabilitation Science.

RHB 791. Rehabilitation Sciences Clinical Project. 1 Hour.

Working with clinicians in a variety of clinical settings, the student develops a project to help solve a Rehabilitation Science-related problem.

RHB 798. Non Dissertation Research. 1-9 Hour.

Development of research proposal.

RHB 799. Dissertation Research. 1-9 Hour.

Dissertation Research.

Prerequisites: GAC Z

SOC-Sociology

SOC 503. Regression Analysis. 3 Hours.

Multivariate Statistical Analysis.

Prerequisites: SOC 410 [Min Grade: A]

SOC 601. Data Management and Analysis. 3 Hours.

An introduction to statistical theory and univariate and bivariate statistics.

SOC 620. Public Sociology. 3 Hours.

Explores the role and potential of sociologists and social research as instruments of social change and policy; examines techniques for communicating with the public about concepts and advances in sociology as well as the importance of doing so.

SOC 698. MR Level Non-Thesis Research. 1-12 Hour.

Integration of theory and research methods: synthesis of data into well-written report derived from research activities.

Prerequisites: GAC M

SOC 699. Thesis Research. 1-12 Hour.

Prerequisites: GAC M

SOC 702. Proseminar: The Profession of Sociology. 1 Hour.

The culture and organization of sociology; norms and values of the graduate student culture and the profession; the sociological imagination; sociological careers; the practice of sociology; thesis development.

Designed to orient the student to the perspective and practice of sociology. Required of all beginning graduate students.

SOC 703. Regression Analysis. 3 Hours.

Bivariate and multivariate statistical analysis.

Prerequisites: SOC 601 [Min Grade: C]

SOC 704. Categorical Data Analysis. 3 Hours.

Analysis with dichotomous, ordinal, and multinomial dependent variables. Includes contingency table analysis, loglinear, logistic, probit, Poisson and negative binomial models.

Prerequisites: SOC 703 [Min Grade: C]

SOC 705. Advanced Research Methods. 3 Hours.

Developing sociologically important research questions and identifying appropriate strategies to answer these questions in ways that are scientifically valid.

Prerequisites: SOC 703 [Min Grade: C]

SOC 706. Advanced Longitudinal and Multi-level Data Analysis. 3 Hours.

Advanced longitudinal analysis, including repeated cross-sections, time series regression, event history, and growth curve modeling.

SOC 711. Qualitative Methods. 3 Hours.

Gaining access to research settings; ethnographic field strategies; developing and analyzing field notes; in-depth interviewing and focus groups; the interrelationships between research and thinking theoretically; writing research reports.

SOC 712. Theory Construction. 3 Hours.

Logic of constructing theories; issues in the philosophy of science.

SOC 713. Intro to Applied Sociology Research Methods. 3 Hours.

Overview of methodologies used in applied social science research; major emphasis includes components of the research process, problem conceptualization, research design, measurement, sampling, questionnaire development, modes of data collection, and ethical issues in both quantitative and qualitative research.

SOC 714. Survey Research Methods. 3 Hours.

Survey design, sampling, instrumentation, data collection and analysis, and report writing.

Prerequisites: SOC 713 [Min Grade: C]

SOC 715. Program Evaluation. 3 Hours.

Topics associated with the use of social sciences to evaluate programs, including appropriate measures of quality; selection of evaluation methodology; accuracy, reliability, and validity of measures.

SOC 716. Social Stratification. 3 Hours.

Theories of inequality; race and ethnic inequality, gender inequality, and international inequality.

SOC 718. Social Capital and Social Networks. 3 Hours.

Interrelationship between social capital and social networks; how social structure arises from interdependence of actors and then affects individual actors; important research findings; research methods used to study social networks and social capital; and critiques of social capital theory.

SOC 720. Classical Theory. 3 Hours.

The major works of classical sociological theorists, including Durkheim, Marx, Weber, and Simmel.

SOC 722. Contemporary Sociological Theory. 3 Hours.

Review of late 20th century and early 21st century sociological theories and issues.

SOC 723. Applied Sociological Theory. 3 Hours.

Overview of classical and selected contemporary social theorists with an emphasis on the relevance of their work to applied sociology.

SOC 724. Body and Health. 3 Hours.

Research in the Body and Health.

SOC 726. Applied Sociology. 3 Hours.

An overview of the field of applied sociology with special attention to current trends and issues in the application of social science in both for-profit- and not-for-profit sectors.

SOC 727. Applied Social Psychology. 3 Hours.

Examination of how social psychological theory and evidence are applied to understanding and addressing social and practical problems on such topics as health, education, criminal justice, community, environment, and diversity.

SOC 728. Teaching Sociology. 3 Hours.

Using current knowledge about cognitive and learning styles and other advances to improve classroom techniques for teaching sociology.

SOC 729. Consumer Culture. 3 Hours.

An exploration of theoretical understandings of consumer culture from Georg Simmel to Jean Baudrillard and their application to consumer research.

SOC 730. Sociology of Education. 3 Hours.

Survey of sociological insights into - and influences upon - education, including topics such as social historical development of education; theories on how education reproduces or changes one's social status; evidence of inequality in educational outcomes; debates on contemporary education policy; and effects of education over the life course.

SOC 731. Health Disparities among Children and Adolescents. 3 Hours.

Seminar focusing on socioeconomic and race/ethnic differentials in the health and well-being of infants, children, and adolescents, as well as the policies and programs aimed at improving children's health and reducing disparities. This class will draw on the scholarly literature in the interrelated fields of demography, public health, health policy, and sociology.

SOC 734. Global Health. 3 Hours.

Cross-cultural, comparative analysis of health and health care delivery systems in both industrialized and developing countries.

SOC 735. Special Topics in Global Health. 3 Hours.

Analysis of selected topics in the field of global health and medical sociology.

SOC 737. Practicum in Innovation, Creativity, and Applied Sociology. 3 Hours.

Directed activities that emphasize research is a creative endeavor and allow students to develop innovative ways to apply social sciences to challenges faced by society, business, and government.

Prerequisites: SOC 713 [Min Grade: C] or SOC 714 [Min Grade: C]

SOC 740. Deviant Behavior. 3 Hours.

Contemporary sociopsychological theories of deviant behavior; recent empirical findings.

SOC 743. Religion and Health. 3 Hours.

The effects of religion, spirituality and religious life on mental and physical health.

SOC 745. Sociological Practice. 3 Hours.

Advancing sociologically-informed research and practice, to further public discussion of sociological issues and promote the use of sociology to inform public policy.

Prerequisites: SOC 723 [Min Grade: C] and SOC 726 [Min Grade: C]

SOC 755. Race/Ethnicity and Health. 3 Hours.

Social and behavioral aspects of physical and mental health that center on the intersection of race/ethnicity and socioeconomic status.

SOC 756. Gender and Health. 3 Hours.

Theories of inequality, applicability to gender stratification; macro and micro research.

SOC 759. Social Gerontology. 3 Hours.

Structural and behavioral implications of older adulthood. How early life experiences affect later life outcomes.

SOC 760. Sociology of Death and Dying. 3 Hours.

Sociological, social psychological and existential perspectives on death and dying; recent trends in definition, distribution, and practices surrounding death and dying.

SOC 761. Sociology and Neuroscience. 3 Hours.

Sociological perspectives on neurosciences; neuroscience as culture; social neuroscience: brain, mind, and society.

SOC 770. Techniques of Population Analysis. 3 Hours.

Composition of population; constructing life tables; population estimation and projection; migration.

SOC 772. Medical Demography. 3 Hours.

Quantitative assessment of health status of populations in clinical, epidemiological, and sociological studies; interrelationships of health with population structure and dynamics. Modeling preventive health strategies.

SOC 775. Place and Health. 3 Hours.

Population distributions and spatial patterns in cities, effects on behavior and social structure.

SOC 776. Capstone Project. 6 Hours.

A faculty-directed research project, undertaken at the conclusion of the M.A. in Applied Sociology program, that provides an opportunity to synthesize all previous course materials.

SOC 777. Demography of Health and Aging. 3 Hours.

Focus on demographic processes, such as mortality, morbidity, migration, and fertility; how each influences number and proportion of elderly; how such processes shape age/sex structure; other demographic characteristics of older people.

SOC 778. Demography. 3 Hours.

Effect of population processes such as birth, death, migration, and marriage on growth, decline, composition, and distribution of population.

SOC 780. Advanced Medical Sociology. 3 Hours.

Theory and research in medical sociology; systematic overview of relevant literature.

SOC 781. Sociology of Health and Illness. 3 Hours.

Subjective experience of illness; predictions of health behavior; social networks and health.

SOC 783. Health Care Delivery Systems. 3 Hours.

Sociological study of the ways that healthcare is organized and delivered in the U.S. and around the world.

SOC 785. Family and Health. 3 Hours.

How family structure and family process affect health outcomes.

SOC 786. Health Disparities. 3 Hours.

Prevalence, causes, and consequences of health and mental health problems for special populations, such as homeless, poor, African-Americans, and others; service delivery systems.

SOC 787. Sociology of Mental Health. 3 Hours.

Detailed examination of the mental health of various subpopulations including racial minorities, women, elderly, homeless, children.

SOC 788. Sociology in Medicine. 3 Hours.

Socioenvironmental factors in etiology of disease, social movements in health and health policy, broad ethical issues, and the place of social science in medicine.

SOC 789. Patient Care Relations/Ethics. 3 Hours.

Issues shaping content and quality of patient care; special significance of practitioner-patient-family triad; broad sociocultural and political economic forces affecting medical practice, and creating moral dilemmas.

SOC 791. Seminar in Substantive Sociological Areas. 1-3 Hour.**SOC 792. Seminar in Substantive Sociological Areas. 1-3 Hour.****SOC 793. Seminar in Substantive Sociological Areas. 1-3 Hour.****SOC 794. Special Topics. 3 Hours.**

Special Topics.

SOC 798. Non-Dissertation Research. 1-12 Hour.**SOC 799. Dissertation Research. 1-12 Hour.**

Research for Graduate Student.

Prerequisites: GAC Z

SPA-Spanish

SPA 501. Voices of Imperial Spain. 3 Hours.

Culture and civilization of Imperial Spain from the age of the Catholic Monarchs to the close of the Hapsburg Dynasty (1469-1716). Includes a study of the art, historical documents and literature from both the center and periphery of the Empire. Selected works by representative authors will vary according to instructor. Conducted in Spanish.

SPA 502. Voices of Colonial Latin America. 3 Hours.

Culture and civilization of Colonial Latin America from the advent of European dominance to the decades following the Spanish American War (1492-1920). Emphasis on the blending of Spanish, Amerindian, and African cultural forms and their diverse literary expressions. Selected works by representative authors will vary according to instructor. Conducted in Spanish.

SPA 503. Contemporary Spanish Literature and Film. 3 Hours.

Cultural and literary trends of Spain from the transformation of Spanish Society in the late-nineteenth century to the post-Franco era. Focus on impact of the Spanish Civil War.

SPA 504. Medicine and Literature in the Spanish-Speaking World. 3 Hours.

How does literature help us to understand the relationship between medicine, culture, and politics? This class, which seeks answers and related questions, focuses on the role of medical science in literary and cultural texts from Latin American countries, Spain, and the United States. Students will read short stories, poems, novel excerpts, and essays, and they will interpret films and visual art to discuss how science and the humanities supplement one another to create a richer understanding of the human body and its role in the historical development of Europe and the Americas. Graduate Students will have assignments beyond undergraduates and projects tailored to high school teaching. Offered in Spanish.

SPA 505. US Latino Writers. 3 Hours.

Literary trends of Spanish-speaking cultures within the borders of the United States. Focuses on discourse of exile, migration, bilingualism, and hybridity.

SPA 507. Indigenous and Indigenist Latin America. 3 Hours.

Cultural and literary forms of Amerindian, Hispanic or mixed decent writers of Latin America. Focus on the concepts of hybridity, syncretism and mestizaje.

SPA 509. Spanish-Speaking Nobel Laureates. 3 Hours.

This course offers a survey of the Hispanic authors who have been awarded the Nobel Prize in Literature since the award's founding in 1901, including Gabriela Mistral (1945), Pablo Neruda (1971), Gabriel García Márquez (1982), Camilo José Cela (1989), and Octavio Paz (1990). The panorama includes critical discussions and reflections on the writing of these authors. Conducted in Spanish.

SPA 511. Cervantes and the Quixote. 3 Hours.

This course will review the major episodes of *Don Quixote de La Mancha*, one of the most influential works of Spanish and World literature, as well as other selected works written by Cervantes. Emphasis will be given to the author's unique contribution to the birth of the modern novel and his ingenuity to create stories that transformed all literary genres. These readings will be analyzed within the civilization of the Golden Age of Spain, while exploring a diverse array of topics, such as: love and marriage, religion, race, class, magic, madness, and honor. Conducted in Spanish.

SPA 512. Voices of Contemporary Latin America, 1920-Present. 3 Hours.

Cultural and literary trends of Latin America from *la nueva narrativa* through the Boom and post-Boom periods. Focus on Mexico, Northern Latin America, and the Southern Cone.

SPA 514. Afro-Latin American Literature and Culture. 3 Hours.

The diverse cultures of many Latin American nations will be discussed with a focus on the descendants of Africa in the Americas. Slavery will be discussed during the colonial and independence periods. Black identity and cultural forms will be discussed through the writers, musicians, and filmmakers of the twentieth and twenty-first centuries. Parallels and connections will be drawn to race and history in the United States. Conducted in Spanish.

SPA 516. Special Topics in Spanish. 3 Hours.

Seminar on specific Spanish-speaking regions, individual authors, specific genres, literary movements, music, films, the arts, or transatlantic cultural studies. May be repeated for credit. Course conducted in Spanish.

SPA 520. Introduction to Hispanic Linguistics. 3 Hours.

This advanced Spanish linguistics course is intended to analyze, clarify and expand upon critical aspects of the Spanish language. The course will provide a general understanding of the Spanish sound system (phonetics and phonology), morphology and syntax, as well as an introduction of relevant topics within the field of Hispanic linguistics.

SPA 530. Spanish Sociolinguistics. 3 Hours.

This advanced Spanish linguistics course provides a general overview of sociolinguistics and the pragmatics of oral communication in Spanish. This course studies the Spanish language in its social context. In addition to specific regional linguistic features, social factors such as geography, social class, politics, race, gender, economics, education and history are discussed as determiners of the linguistic landscape.

SPA 540. History of Spanish Language. 3 Hours.

This advanced Spanish linguistics course provides a general overview of the evolution of Spanish language, while relating it to relevant historical events. It pays special attention to diachronic change in order to understand the phenomenon of language variation in a multicultural society.

SPA 550. Spanish Second Language Acquisition. 3 Hours.

This course describes the cognitive, developmental and linguistic processes involved in the acquisition of Spanish as a second language while exploring the basic research techniques used in the field.

SPA 560. Globalization in the Hispanic World. 3 Hours.

This graduate-level course develops a constructivist framework for the study of contemporary globalization issues in the Hispanic world by engaging students in higher-level discussions and critical thinking. Through films, music and literature, and guided research, course explores history, politics, economics and sociocultural issues of the recent Spanish-speaking world. Conducted in Spanish.

SPA 561. Contemporary Spain. 3 Hours.

This graduate-level course develops a constructivist framework for the study of contemporary Spain by engaging students in higher-level discussions and critical thinking. Through films, music and literature, and guided research, course explores recent Spanish history, politics, economics and sociocultural issues. Conducted in Spanish.

SPA 562. Contemporary Latin America. 3 Hours.

This course develops a constructivist framework for the study of contemporary Latin America by engaging students in higher-level discussions, critical thinking, and active learning. Through films, music and literature, and guided research, course explores recent Latin American history (late 20th and 21st centuries), politics, economics and sociocultural issues and their global impact. Course conducted in Spanish.

SPA 590. Study Abroad. 1-6 Hour.

Fifth-year level of approved program in a Spanish speaking country.

SPA 599. Independent Studies. 3 Hours.

Individual studies in Spanish.

SW-Social Work

SW 510. Social Work Practice with Individuals, Groups & Organizations. 3 Hours.

The primary goal of this course is to introduce students to the profession's change process that facilitates change and improves social functioning. Students will learn about the advanced generalist model application of social work practice with individuals, families, groups, communities and organizations. Students will be introduced to the principles of evidence-based practice. The course also explores theories, concepts, and knowledge about human development and behavior. In addition content includes discussion of how factors such as social class, sexual orientation, gender, physical ability, age, race, ethnicity, and culture influence human development and behavior. The course also focuses on adherence to NASW Code of Ethics and ethical practice.

SW 520. Social Work Policy. 3 Hours.

This course provides the foundation for social welfare policy and policy practice for social workers. It helps understand what social welfare is, its historical background, and values and beliefs that have shaped social welfare policy and analysis of social welfare policies. Issues around poverty and economic inequality, key social welfare policies and programs, and policy making processes will be discussed to help evaluate status-quo policies and advocate for vulnerable populations.

SW 530. Research I. 3 Hours.

This is the foundation research course that covers basic research methods, provides the foundation to conduct evidence-based practice and evaluation of practice. Students will be introduced to basic types and methods of research and evaluation, with a focus on deductive methods. Students will be introduced to statistical analyses and learn descriptive statistics as part of their quantitative data education. Students will learn ethics related to research and evaluation.

SW 590. Field Practicum I. 3 Hours.

Practicum I is a foundational level practicum experience. Students participate in a 115 hour clinical placement in an approved social service agency under supervision of master's-level social workers. This course has a weekly one-hour seminar/lab. This course includes both classroom learning and simulation and service learning opportunities in health and behavioral settings. SW 590 is developed to provide students who do not enter with any direct practice experience initial skills that allow them to succeed as they move into the later Field Practicum classes. Educational experiences will include simulation and service learning experiences in community health and mental health.

SW 591. Field Practicum Seminar I. 1 Hour.

Practicum I is a foundational level practicum experience. Students participate in a 115 hour clinical placement in an approved social service agency under supervision of master's-level social workers. This course has a weekly one-hour seminar/lab. This course includes both classroom learning and simulation and service learning opportunities in health and behavioral settings. SW 590 is developed to provide students who do not enter with any direct practice experience initial skills that allow them to succeed as they move into the later Field Practicum classes. Educational experiences will include simulation and service learning experiences in community health and mental health.

SW 599. Special Topics in Social Work. 3 Hours.

Special topics in social work.

SW 610. Diagnosis and Assessment for Health and Behavioral Health. 3 Hours.

The purpose of this course is to educate the student in formal assessment processes using standardized diagnostic tools. Specifically, students will learn to conduct multidimensional assessments using the Diagnostic and Statistical Manual (DSM) and International Statistical Classification of Diseases and Related Health Problems (ICD). Students will learn differential diagnosis for both mental disorders and specific health conditions, including HIV/AIDS. Training in assessment of diagnosis will include interview skills engaging the client or family system to elicit accurate information around specific symptoms and diagnostic rule-outs, explore the effect of culture and diversity on reporting symptoms, understand how socioeconomic factors can impact on both the reporting and severity of specific symptoms, conduct assessments in a professional and ethical manner, and how to write up diagnostic statements for both mental health and health conditions. Students will be trained on how to use this information as Social Workers on a multidisciplinary team to advocate for appropriate use of the diagnosis in designing interventions.

SW 615. Evidence-informed Interventions in Health and Behavioral Health I. 3 Hours.

The purpose of this course is to train students on providing evidence-based interventions for children and families addressing health and behavioral health conditions. Students will be trained in skills in identifying appropriate evidence-based practices, then translating and implementing these practices at appropriate individual and families. Identifying appropriate evidence-based practices will include the ability to ask answerable questions, identify relevant available material, assess the evidence-supporting material, and make evidence-driven decisions based on available information. Translating and implementing practices includes awareness of individual-level information as well as available resources in the various practice settings. In translating and implementing practices, particular attention is paid to diversity and culture, including race, ethnicity and culture, gender, sexual orientation, age and family structure. Students will receive information and training relative to advanced intervention processes, including engagement, assessment, conducting the specific intervention and evaluation. As part of training in the evidence-based intervention process, students will learn about practice ethics related to working with children and families (e.g., mandated reporting of abuse). This course will focus primarily on conditions that occur first in childhood, including both acute and chronic conditions, and interventions with children and families.

SW 616. Evidence-informed Interventions in Health and Behavioral Health II (Groups, Organizations, Comm). 3 Hours.

The purpose of this course is to train students on providing evidence-based interventions for adults addressing health and behavioral health conditions. Students will be trained in skills in identifying appropriate evidence-based practices, then translating and implementing these practices at appropriate individual, group, family, organization and community levels. Identifying appropriate evidence-based practices will include the ability to ask answerable questions, identify relevant available material, assess the evidence-supporting material, and make evidence-driven decisions based on available information. Translating and implementing practices includes awareness of individual-level information as well as available resources in the various practice settings. In translating and implementing practices, particular attention is paid to diversity and culture, including race, ethnicity and culture, gender, sexual orientation, age and family structure. Students will receive information and training relative to advanced intervention processes, including engagement, assessment, conducting the specific intervention and evaluation. This course will focus primarily on chronic conditions, often with onset in early adulthood (e.g., severe mental illness, substance use disorders, diabetes, HIV) and severe health conditions (e.g., cancer). As part of training in the evidence-based intervention process, students will learn about practice ethics related to working with adults, specifically concentrating on ethics related to older populations (e.g., mandated reporting of abuse). The course will pay considerable attention to interventions with older populations including illnesses associated with aging populations (e.g., Alzheimer's disease) and those associated with normative aging processes (e.g., mourning).

SW 620. Policy Analysis and Advocacy Practice for Health and Behavioral Health. 3 Hours.

This course provides students with necessary knowledge and skills to identify policies at the local, state and federal level relevant to health and behavioral health settings and to analyze the impact of policy on clients and constituent groups. Policy issues are examined in the context of their impact on diverse populations and, particularly, socioeconomic oppression. This course teaches advanced advocacy skills and policy formulation.

SW 630. Research with Health and Behavioral Health Populations I. 3 Hours.

This course provides students with necessary skills to begin to assess, generate, evaluate, translate and implement evidence in clinical and policy practice. Students will become familiar with the evidence-based practice and learn how to implement EBP in health and behavioral health settings. This course introduces students to evaluation methodologies such as single system designs, quasi-experimental and experimental group designs, as well as protection of human subjects and research ethic. Students will also learn how to generate and interpret descriptive and inferential statistics applicable to those designs.

SW 631. Research with Health and Behavioral Health Populations II. 3 Hours.

This course introduces students to evaluation methodologies that include qualitative and mixed-methods designs for implementing and testing clinical and policy practice. Students will learn how to generate and evaluate data including qualitative and quantitative analysis, as well as protection of human subjects and research ethics for these methodologies. This course teaches students how to apply such evaluation to clinical practice in health and behavioral health settings.

SW 640. Human Behavior in the Social Environment for Health and Behavioral Health. 3 Hours.

Students will learn conceptualizations of health and mental health, including historical constructs and current conceptualizations. Students will learn human biology, including brain functions and genetics and epigenetics. Students will be introduced to pharmacology related to health and mental health conditions. Students will be exposed to various constructs of types of diversity, and how they relate to both health and behavioral health. Students will learn about social, economic and environmental justice, and how it relates to both practice and policy. This course will examine how human behavior in the social environment effects the intervention process, including engagement, assessment, intervention and evaluation.

SW 650. Evidence-Based Practice in Mental Health. 3 Hours.

This course will provide students with skills for working with populations coping with mental illness. The course teaches students to move from specific diagnoses, to identifying and implementing evidence-based practices at a variety of levels—including individual, groups, families and organizations. As part of the implementation process, students will learn about the interaction of multiple psychiatric and medical diagnoses, as well as how diversity effects treatment. The course will teach specific skills related to evidence-based practices, such as cognitive behavioral therapy and dialectical behavior therapy.

SW 651. Evidence-Based Practice in Addictions. 3 Hours.

The purpose of this course is to provide advanced skills in treatment of addictions. Evidence-based models will be presented, including motivational interviewing, cognitive behavioral therapy, and psychopharmacologic approaches. Students will receive in-depth training in implementation of evidence-based models, including a specific focus on the skills necessary to identifying and translating the approach for individual clients. Specific attention will be paid to issues around working with diverse populations.

SW 653. Social Work Practice along the HIV Continuum of Care. 3 Hours.

This course is designed to examine the field of HIV/AIDS and will acquaint students with the basic and most advanced facts about HIV/AIDS. It will take different approaches of the impact of HIV infection and AIDS on the individual, family, society, and institutions that provide care and will sensitize students to the challenges that HIV/AIDS has generated in public health, social policy, and social service delivery. The course is especially framed by the HIV Continuum of Care which illustrates related social work HIV practice from prevention and testing to linkage to primary medical care, retention in care, and viral suppression. Social work students will have an opportunity to explore their own beliefs, values and approaches to the issues regarding HIV/AIDS, in addition to the cultural, political, social, legal, ethical, spiritual, and public health issues and the perspectives of people living with HIV infection and AIDS that are needed to inform practice and policy.

SW 690. Field Practicum II. 6 Hours.

The first experience of a 1080-hour field practicum experience over three semesters in approved social service agencies under the supervision of an MSW with three or more years of experience. As the students' progress through Practicum II-IV they will be expected to function at increasing levels of difficulty, independence, autonomy, initiative, resourcefulness and diligence in the performance of assigned tasks. This course has a weekly one-hour seminar/lab. Students will participate in activities in approved agencies that will allow them to develop advanced generalist practice skills with populations coping with health and behavior health issues. Students will demonstrate knowledge in evidence-based interventions for individuals addressing health and behavioral health conditions and apply that knowledge in conducting interviews and assessments, development of treatment plans, and evaluating their practice. Students will manage personal and professional values and use their understanding of human behavior and diversity to advocate for clients at all systems levels. Course assignments are designed to encourage students to utilize critical thinking to analyze data and formulate plans that will improve practice, policy and service delivery. Seminar/lab sessions will utilize lectures, focused discussion questions and interactive activities to help students integrate classroom knowledge and practice experience.

SW 691. Field Practicum III. 6 Hours.

SW 691 Field Practicum (6 hours) and Seminar III (1 hour) is the second experience of a 1080-hour field practicum experience over three semesters in approved social service agencies under the supervision of an MSW with three or more years of experience. The practicum experience provides the opportunity for social work majors to strengthen and augment knowledge, values and skill bases acquired in the classroom through applying evidence-based theory and other theory-based methods to situations found in actual professional practice. This course has a weekly one-hour seminar/lab. Students will participate in activities in approved agencies that will allow them to develop advanced generalist practice skills with populations coping with health and behavior health issues. Students will demonstrate knowledge in evidence-based interventions for individuals addressing health and behavioral health conditions and apply that knowledge in conducting interviews and assessments, development of treatment plans and evaluating their practice. Students will manage personal and professional values and use their understanding of human behavior and diversity to advocate for clients at all systems levels. Course assignments are designed to encourage students to utilize critical thinking to analyze data and formulate plans that will improve practice, policy and service delivery. Seminar/lab sessions will utilize lectures, focused discussion questions and interactive activities to help students integrate classroom knowledge and practice experience.

SW 692. Field Practicum IV. 6 Hours.

SW 692 Field Practicum (7 hours) and Seminar IV (1 hour) is the last experience of a 1080-hour field practicum experience over three semesters in an approved social service agencies under the supervision of an MSW with three or more years of experience. Each field practicum experience will include a concurrent integrative seminar/lab. The course also provides the opportunity for students to examine the principles of social work practice and to develop critical thinking skills. The practicum experience provides the opportunity for social work majors to strengthen and augment knowledge, values and skill bases acquired in the classroom through applying evidence-based theory and other theory-based methods to situations found in actual professional practice. This course has a weekly one-hour seminar/lab. Students will participate in activities in approved agencies that will allow them to develop advanced generalist practice skills with populations coping with health and behavior health issues. As students progress through Practicum II-IV, they will be expected to function at increasing levels of difficulty, independence, autonomy, initiative, resourcefulness and diligence in the performance of assigned tasks. Students will demonstrate knowledge in evidence-based interventions for individuals addressing health and behavioral health conditions and apply that knowledge in conducting interviews and assessments, development of treatment plans, and evaluating their practice. Students will manage personal and professional values and use their understanding of human behavior and diversity to advocate for clients at all systems levels. Course assignments are designed to encourage students to utilize critical thinking to analyze data and formulate plans that will improve practice, policy and service delivery. Seminar/lab sessions will utilize lectures, focused discussion questions and interactive activities to help students integrate classroom knowledge and practice experience.

SW 693. Field Practicum Seminar II. 1 Hour.

The first experience of a 1080-hour field practicum experience over three semesters in approved social service agencies under the supervision of an MSW with three or more years of experience. As the students progress through Practicum II-IV they will be expected to function at increasing levels of difficulty, independence, autonomy, initiative, resourcefulness and diligence in the performance of assigned tasks. This course has a weekly one-hour seminar/lab. Students will participate in activities in approved agencies that will allow them to develop advanced generalist practice skills with populations coping with health and behavior health issues. Students will demonstrate knowledge in evidence-based interventions for individuals addressing health and behavioral health conditions and apply that knowledge in conducting interviews and assessments, development of treatment plans, and evaluating their practice. Students will manage personal and professional values and use their understanding of human behavior and diversity to advocate for clients at all systems levels. Course assignments are designed to encourage students to utilize critical thinking to analyze data and formulate plans that will improve practice, policy and service delivery. Seminar/lab sessions will utilize lectures, focused discussion questions and interactive activities to help students integrate classroom knowledge and practice experience.

SW 694. Field Practicum Seminar III. 1 Hour.

SW 691 Field Practicum (6 hours) and Seminar III (1 hour) is the second experience of a 1080-hour field practicum experience over three semesters in approved social service agencies under the supervision of an MSW with three or more years of experience. The practicum experience provides the opportunity for social work majors to strengthen and augment knowledge, values and skill bases acquired in the classroom through applying evidence-based theory and other theory-based methods to situations found in actual professional practice. This course has a weekly one-hour seminar/lab. Students will participate in activities in approved agencies that will allow them to develop advanced generalist practice skills with populations coping with health and behavior health issues. Students will demonstrate knowledge in evidence-based interventions for individuals addressing health and behavioral health conditions and apply that knowledge in conducting interviews and assessments, development of treatment plans and evaluating their practice. Students will manage personal and professional values and use their understanding of human behavior and diversity to advocate for clients at all systems levels. Course assignments are designed to encourage students to utilize critical thinking to analyze data and formulate plans that will improve practice, policy and service delivery. Seminar/lab sessions will utilize lectures, focused discussion questions and interactive activities to help students integrate classroom knowledge and practice experience.

SW 695. Field Practicum Seminar IV. 1 Hour.

SW 692 Field Practicum (7 hours) and Seminar IV (1 hour) is the last experience of a 1080-hour field practicum experience over three semesters in an approved social service agencies under the supervision of an MSW with three or more years of experience. Each field practicum experience will include a concurrent integrative seminar/lab. The course also provides the opportunity for students to examine the principles of social work practice and to develop critical thinking skills. The practicum experience provides the opportunity for social work majors to strengthen and augment knowledge, values and skill bases acquired in the classroom through applying evidence-based theory and other theory-based methods to situations found in actual professional practice. This course has a weekly one-hour seminar/lab. Students will participate in activities in approved agencies that will allow them to develop advanced generalist practice skills with populations coping with health and behavior health issues. As students progress through Practicum II-IV, they will be expected to function at increasing levels of difficulty, independence, autonomy, initiative, resourcefulness and diligence in the performance of assigned tasks. Students will demonstrate knowledge in evidence-based interventions for individuals addressing health and behavioral health conditions and apply that knowledge in conducting interviews and assessments, development of treatment plans, and evaluating their practice. Students will manage personal and professional values and use their understanding of human behavior and diversity to advocate for clients at all systems levels. Course assignments are designed to encourage students to utilize critical thinking to analyze data and formulate plans that will improve practice, policy and service delivery. Seminar/lab sessions will utilize lectures, focused discussion questions and interactive activities to help students integrate classroom knowledge and practice experience.

TMS-Translational & Molecular Science

TMS 702. Phenotyping Human Disease. 2 Hours.

Introduction to the study of human disease and translational research. The course will consist of several 2-week modules, each covering a different disease. Each module will consist of two types of lectures. During the first week of each module, a physician scientist will discuss human patients and case studies of the disease. In the second week of each module, a basic science researcher will discuss the animal models used to study the same disease.

TMS 704. Modeling Human Disease. 2 Hours.

Open to all students and required for students in the Translational Medicine certificate program. Introduction to the study of disease-based research. The format will consist of clinical-pathobiological conference-style experience where students will present patient cases and researchers will discuss molecular basis of each disease. 3rd year students are expected to provide more of a leadership role (coordinate faculty/patient presentations). Contact course masters for more information on meeting dates/days/times/location.

TMS 707. Vocabulary in Clinical Research. 1 Hour.

Students will be exposed to basic topics in clinical research and learn the details involved in designing clinical trials. Students will also sit in as ad-hoc members of the Scientific Advisory Committee of the UAB General Clinical Research Center and learn about the review process for human/clinical research trials.

TMS 714. Modeling Human Disease II. 2 Hours.

Open to all students and required for students in the Translational Medicine certificate program. Introduction to the study of disease-based research. The format will consist of clinical-pathobiological conference-style experience where students will present patient cases and researchers will discuss molecular basis of each disease. 3rd year students are expected to provide more of a leadership role (coordinate faculty/patient presentations).

TMS 724. Modeling Human Disease III. 2 Hours.

Open to all students and required for students in the Translational Medicine certificate program. Introduction to the study of disease-based research. The format will consist of clinical-pathobiological conference-style experience where students will present patient cases and researchers will discuss molecular basis of each disease. 3rd year students are expected to provide more of a leadership role (coordinate faculty/patient presentations).

TOX-Toxicology

TOX 720. Lab Rotation in Toxicology. 1-12 Hour.**TOX 795. Advanced Toxicology Seminar. 1 Hour.**

To facilitate the critical review of recent refereed publications in the field of toxicology. This will expose students to advanced knowledge and diversified subjects.

TOX 798. Non-Dissertation Research. 1-12 Hour.

VIS-Vision Science

VIS 600. Clinical Vision Science Literature Review. 1 Hour.

Review, critical analysis and discussion of foundational literature and current topics in clinical vision science and evidence-based practice.

VIS 601. Fundamentals of Clinical Research. 2 Hours.

Introduction to fundamental principles of clinical research including: framing research questions, structured literature reviews, study design, sources of bias and their control, presentation and publication of research findings.

VIS 610. Ocular Anatomy and Biology. 4 Hours.

Anatomy, biochemistry, physiology, cellular and molecular biology of ocular tissues.

VIS 611. Biology and Pathology of Ocular Disease. 4 Hours.

Overview of ocular disease and pathology of the visual system including disease mechanisms and treatments.

VIS 612. Optics for Vision Science. 4 Hours.

Advanced topics in optics related to the eye and vision including paraxial, wave, and quantum optics, light safety, refraction, reflection, aberrations, interference, diffraction, polarization, Fourier optics, lasers, and fluorescence. The course will include applications for optical system design, biomedical imaging, microscopy, and clinical assessment of the eye and visual system.

VIS 613. Visual Neuroscience. 4 Hours.

Vision begins with photons and ends in the brain. How does it all work? This course introduces the student to the anatomical and physiological underpinnings of visual perception, stepping from single photoreceptors in the retina on through the cortical neural circuits devoted to capturing every facet of seeing the world. Lectures are supplemented with hands-on sessions where students can test their own vision.

VIS 615. The Body Electric: Electronics for Biologists. 3 Hours.

This course provides an overview of the fundamental concepts of electronics that are relevant to a biologist. The material is aimed at non-engineers who require a background in the circuit concepts needed for studying ion channels, electrophysiology, proper use of amplifiers and filters, and the use of computers to acquire and analyze data. There will be a mix of formal lectures and problem sets with practical hands-on experience.

VIS 670. Intermediate Orientation and Mobility Skills. 3 Hours.

Development of teaching skills in orientation and mobility in semi-independent settings with multihandicapped and blind students.

VIS 671. Intermediate Orientation and Mobility Seminar. 3 Hours.

Recent research practices and problem areas in special education. Focus on intermediate orientation and mobility for multihandicapped and blind students.

VIS 672. Advanced Orientation and Mobility Skills. 3 Hours.

Advanced orientation and mobility teaching techniques for travel in independent settings for multihandicapped and blind students.

VIS 673. Advanced Orientation and Mobility Seminar. 3 Hours.

Recent research practices and problem areas in special education. Focus on advanced orientation and mobility for people with multiple handicaps and blindness.

VIS 674. Orientation and Mobility Internship. 3-6 Hours.

Demonstrate skills in applying principles of special methods of teaching, designing instruction, conducting skills assessments, and in preparing written reports, and consulting and collaborating with professionals and parents to assure orientation and mobility programming for students with visual impairments.

VIS 698. Master's Level Non-Thesis Research. 1-15 Hour.

Lab/research hours for master's students who have not entered into candidacy.

VIS 699. Master's Level Thesis Research. 1-15 Hour.

Lab/research hours for master's students who have entered into candidacy.

Prerequisites: GAC M

VIS 700. Vision Research Literature Review. 1 Hour.

Review, analysis, and discussion of foundational literature and current topics in basic and translational vision science.

VIS 701. Principles of Research. 2 Hours.

Principles and fundamentals of scientific thinking and practice including: framing the research question, critical thinking, literature review, use of modern information resources, experimental design, sources of bias and their control, reproducibility, presentation and publication of research findings, and case studies in failures of the scientific method.

VIS 702. Fundamental Techniques in Vision Science. 4 Hours.

This course is designed to provide graduate students with an overview of common laboratory techniques, both basic science techniques and clinical techniques, used in vision research.

VIS 703. Matlab: Imaging and Image Processing. 3 Hours.

This course is designed to provide graduate students with an introduction to the use of Matlab and its capabilities for analysis and quantification of image data. Students will learn the fundamentals of Matlab and the unique challenges of working with image data types.

VIS 704. Visual Communication for the Sciences. 3 Hours.

A workshop to develop visual communication skills using commonly encountered data in the quantitative sciences. Emphasis will be on the creation of clear figures that aim to appear in the professional literature.

VIS 705. Microscopic Anatomy of the Retina and Central Visu. 3 Hours.**VIS 710. Ocular Biochemistry and Molecular Biology. 3 Hours.**

Ocular Biochemistry.

VIS 714. Ocular Biomechanics. 3 Hours.

This interdisciplinary course provides upper-division graduate students exposure to scientific principles and practices related to the biomechanics of soft-tissues and the eye. Knowledge of basic histology and ocular anatomy is assumed. The course will include lecture and laboratory exercises.

VIS 717. Research Ethics for the Clinician Scientists. 3 Hours.

Training in the principles of scientific integrity and research ethics with specific emphasis on issues encountered by clinician scientists engaged in clinical research (e.g. human subjects research, clinical trials, data safety monitoring, etc.).

VIS 729. Introduction to Neurobiology/Marine Biology. 4 Hours.**VIS 743. Optics and Imaging. 3 Hours.**

Optical properties of the eye. Transparency, aberrations, modulation transfer functions of the eye. Use of coherent optics (lasers) in vision research. MRI in vision research.

VIS 744. Ocular Anatomy, Physiology and Biochemistry of Anterior Segment. 3 Hours.

Anatomy of the eye. Biochemistry and physiology of ocular tissues, including tears, cornea, aqueous humor, lens, vitreous and sclera.

VIS 745. Ocular Anatomy-Physiology and Biochemistry II. 3 Hours.

Continued examination of ocular anatomy, biochemistry and physiology.

VIS 755. Electronic for Biologists. 3 Hours.

This course provides an overview of the fundamental concepts of electronics that are relevance to a biologist. The material is aimed at non-engineers who need a background in the circuit concepts needed for studying ion channels, electrophysiology, the basic s of the proper use of amplifier and filter, and the use of computers to acquire and analyse data. There will be a mix of formal lectures and problem set with practical hands-on experience.

VIS 756. Visual Neuroscience. 4 Hours.

Vision begins with photons and ends in the brain. How does it all work? This course introduces the student to the anatomical and physiological underpinnings of visual perception, stepping from single photoreceptors in the retina on through the cortical neural circuits devoted to capturing every facet of seeing the world. Lectures are supplemented with hands-on sessions where students can test their own vision.

VIS 757. Functional MRI. 3 Hours.

In this course, we will explore the history of fMRI, design of fMRI experiments, and the analysis of fMRI data. We will also discuss several related techniques that are used in neuroimaging research. When designing fMRI experiments, it is important to know what techniques and statistical methods are available. It is also important to understand the kinds of hypotheses that can be tested with fMRI. By the end of this class, students will understand what led to the development of fMRI, when to use fMRI or related methods, limitations of experiments involving this technology, and different techniques for analyzing fMRI data. This class will be 'hands-on'; each student will be required to design and execute an fMRI experiment.

VIS 760. Sensory Impairment Lit Review. 1 Hour.

Sensory Impairment and Deafblind literature review and presentation.

VIS 770. Advanced Graduate Seminar in Ocular Biology. 1-3 Hour.

Advanced graduate seminar in biology of the eye and visual system that will include critical review analysis, and discussion of fundamental literature and current topics.

VIS 771. Advanced Graduate Seminar in Ocular Surface. 1-3 Hour.

Review, analysis and discussion of current literature topics of ocular surface physiology and disease.

VIS 772. Advanced Graduate Seminar in Cornea and Anterior Segment. 1-3 Hour.

Advanced graduate seminar on topics related to the cornea and anterior segment that will include critical review and discussion of fundamental literature and current topics.

VIS 773. Advanced Graduate Seminar in Retinal Research. 1-3 Hour.

Advanced graduate seminar on topics related to retinal research that will include critical review, and discussion of fundamental literature and current topics.

VIS 774. Advanced Graduate Seminar in Visual Neurobiology. 1-3 Hour.

Advanced graduate seminar in visual neurobiology that will include critical review and discussion of fundamental literature and current topics.

VIS 775. Advanced Graduate Seminar in Ocular Motor Systems. 1-3 Hour.

Advanced graduate seminar in ocular motor systems that will include critical review analysis ,and discussion of fundamental literature and current topics.

VIS 776. Advanced Graduate Seminar on Refractive Error. 1-3 Hour.

Advanced graduate seminar on topics related to refractive error, ocular growth, and development that will include critical review, and discussion of fundamental literature and current topics.

VIS 777. Advanced Graduate Seminar in Public Health and Vision. 1-3 Hour.

Advanced graduate seminar on topics in public health issues with a focus on visual disorders that will include critical review and discussion of fundamental literature and current topics.

VIS 778. Advanced Graduate Seminar on Vision Rehabilitation. 1-3 Hour.

Advanced graduate seminar on topics in visual rehabilitation, orientation and mobility that will include critical review and discussion of fundamental literature and current topics.

VIS 779. Advanced Graduate Seminar in Interdisciplinary Sciences. 1-3 Hour.

Advanced graduate seminar on topics related to research that spans faculty and student interests across traditional academic disciplines or boundaries. The course will include critical review, and discussion of fundamental literature and current topics relevant to the participants.

VIS 790. Individual Topics and Advanced Topics. 1-3 Hour.

VIS 798. Doctoral Level Non-Dissertation Research. 1-15 Hour.

Lab/research hours for doctoral students who have not entered into candidacy.

VIS 799. Doctoral Level Dissertation Research. 1-15 Hour.

Lab/research hours for doctoral students who have entered into candidacy.

Prerequisites: GAC Z

Addenda

Index

A

About UAB	5
AC-Accounting	235
Academic and Student Services	11
Academic Progress	14
Accounting	38
Addenda	484
Administration Health Services	153
Admissions	11
Advanced Safety Engineering and Management	122
AH-Administration Health Services	236
AH-Health Administration	238
AHD-Administration Health Services DSc	239
Anatomical Science	78
ANSC-Anatomical Science	240
ANTH-Anthropology	241
Anthropology	46
ARH-Art History	245
ARISE MD	183
Art History	49
Arts Education	94
ASEM-Advanced Safety Engineering & Management	247

B

Behavioral Neuroscience	71
BHS-Biomedical & Health Sciences	249
Biochemistry, Structural, and Stem Cell Biology Theme	79
Biology	51
Biomedical and Health Sciences	141
Biomedical Engineering	126
Biostatistics	212
Biotechnology	142
Biotechnology Regulatory Affairs Certificate	143
BME-Biomedical Engineering	249
BST-Biostatistics	251
BT-Biotechnology	255
BTR-Biotechnology & Regulatory Affairs	255
Business Administration	40
BY-Biology	256

C

Cancer Biology Theme	80
CB-Cell Biology	260
CD-Clinical Dentistry	261
CDS-Clinical & Diagnostic Science	263
CE-Civil Engineering	264
CECM-Construction Engineering Management	269
Cell, Molecular, and Developmental Biology Theme	81
CESC-Sustainable Smart Cities	270
CESE-Structural Engineering	272
CH-Chemistry	272
Chemistry	52
CHHS-Community Health & Human Services	277
Civil, Construction and Environmental Engineering	127
Civil Engineering	127
CJ-Criminal Justice	280
Clinical and Diagnostic Sciences	140
Clinical Laboratory Sciences	144
Clinical Pathology Assistant	145
CLS-Clinical Laboratory Science	285
CM-Communication Management	286
Collat School of Business	37
College of Arts & Sciences	45
Communication Studies	54
Community Health and Human Services	113
Completion of a Degree	20
Computer Engineering	133
Computer Science	55
Construction Engineering Management	123
Counseling	109
Course Index	234
CPA-Clinical Pathologist Assistant	287
Criminal Justice	57
Criminal Justice	57
CRM-Nursing-Clinical Research Management	288
CS-Computer Science	288
Curriculum and Instruction	93
Cyber Security	45

D

Dentistry	88
DMD/PhD Program	90
Doctor of Dental Medicine / Master of Public Health Program	201

Doctor of Medicine / Master of Public Health Program	204
Doctor of Medicine / Master of Science in Public Health Program	204
Doctor of Optometry/Master of Public Health Program	207
Doctor of Philosophy (Psychology) and Masters of Science in Public Health	210
Doctor of Veterinary Medicine (Auburn) / Master of Public Health Program	202

E

Early Childhood Education	96
Early Childhood Education	296
ECG-Counseling, Human Service	298
ECT-Collaborative Teacher Education	301
ECY-Special Education	306
EDA-Art Education	309
EDC-Curriculum Education	309
EDF-Foundations of Education	310
EDL-Educational Leadership	311
EDR-Reading Education	317
Educational Leadership	112
Educational Studies	98
EE-Electrical & Computer Engineering	318
EEC-Elementary and Early Childhood Education	322
EESL-English as a Second Language	324
EGR-Engineering	327
EH-English	330
EHS-High School Education	333
ELE-Elementary Education	334
Electrical and Computer Engineering	132
Electrical Engineering	132
Elementary Education	99
EMS-Middle School Education	335
Engineering Management	125
English	60
English as a Second Language	100
ENH-Environmental Health	335
Enrollment	13
Environmental Health Sciences	214
EPI-Epidemiology	341
Epidemiology	218
EPR-Educational Psychology	345
ESP-Education School Psychometry	346

F

Financial Information	25
FLL-Foreign Language & Literatures	347
Foreign Languages and Literature	61
Forensic Science	59
FR-French	347
FS-Forensic Science	347

G

GBS-Graduate Biomedical Science	348
GC-Genetic Counseling	356
General Information	5
Genetic Counseling	146
Genetics, Genomics and Bioinformatics Graduate Program (GGB)	82
GER-Gerontology	357
Gerontology	178
GHS-Global Health Studies	358
Graduate	5
Graduate Assistantships and Fellowships	27
Graduate Biomedical Science	78
Graduate School Professional Development	231
GRD-Graduate School	359

H

HB-Health Behaviour	362
HCO-Health Care Organization	368
HCS-Healthcare Simulation	379
Health Administration	156
Health Behavior	222
Health Care Organization and Policy	224
Health Focused Patient/Client management for Physical and Occupational Therapists	139
Health Informatics	158
Health Physics	147
Health Services Administration	152
Healthcare Leadership	160
Healthcare Quality and Safety	161
Healthcare Simulation	163
HI-Health Informatics	379
High School Education	101
History	61
HQS-Healthcare Quality & Safety	380
HRP-Health Professions	381
Human Studies	109

HY-History 381

I

IEM-Information Engineering Management382
 Immunology Theme 82
 INFO-Bioinformatics 383
 Information Engineering Management 124
 Instructional Design & Development 104
 Interdisciplinary Engineering 120
 Interdisciplinary Programs91
 Interdisciplinary Programs45
 Interdisciplinary Programs 138
 Interdisciplinary Programs 178
 Interdisciplinary Programs200
 IS-Information Systems 387

J

Joint Health Sciences 78
 Juris Doctor / Master of Public Health Program203

K

KIN-Kinesiology 388
 Kinesiology 118

L

LEAD-Leadership 390
 Lifespan Developmental Psychology 72

M

MA-Mathematics391
 Management Information Systems 44
 Master of Business Administration / Master of Public Health Program .. 203
 Master of Public Administration/Master of Public Health Program 205
 Master of Science in Health Administration/Master of Public Health Program205
 Master of Science in Nursing / Master of Public Health in Maternal & Child Health Policy 206
 Master of Science in Nursing and MPH in Health Behavior Program206
 Master of Science in Nutrition Sciences, Dietetic Internship / Clinical Track/ Master of Public Health 207
 Master of Science in Physician Assistant Studies / Master of Public Health Program209
 Materials Science and Engineering 134
 Mathematics 62
 MBA-Master of Business Administration 396
 MBS-Multidisciplinary Biomedical Science398
 ME-Mechanical Engineering 399

Mechanical Engineering 136
 Medical Scientist Training Program 178
 Medical Sociology 75
 Medical/Clinical Psychology 73
 MHP-Health Physics 403
 MIC-Microbiology404
 Microbiology 83
 MPA-Master of Public Administration 404
 MSE-Materials Science & Engineering 405
 MSEM-Engineering Management 409
 MSTP-Medical Science Training Program409
 MSW/MPH in Maternal & Child Health Policy & Leadership 210
 Multidisciplinary Biomedical Science 86
 Music 94

N

NA-Nursing-Nurse Anesthesia 410
 NAH-Nursing-Adult Health 412
 NBB-Nursing-Biobehavioral413
 NBL-Neurobiology 413
 NCA-Nursing-Critical Care 416
 NCC-Nursing-Child/Adolescent 418
 NCH-Nursing-Child Health 419
 NCL-Nursing-Clinical Nurse Leader419
 NCS-Nursing-Clinical Specialty419
 NCV-Nursing-Cardiovascular 420
 NDP-Nursing-Dual Pediatric 420
 Neuroscience Theme 84
 NFA-Nursing-RN First Assist 422
 NFH-Nursing-Family 423
 NGN-Nursing-Gerontological425
 NHSA-Nursing-Health Administration 426
 NMD-Nursing-Diabetes Management 428
 NMT-Nuclear Medicine Technology 429
 NNE-Nursing-Neonatal430
 NNI-Nursing-Informatics 431
 NOH-Nursing-Occupational Health 433
 Non Academic Policies 8
 NPA-Nursing-Palliative Care 433
 NPE-Nursing-Pediatrics434
 NPN-Nursing-Psychiatric/Mental Health435
 NPR-Nursing-Promotion/Protection/Restorative Health 437
 NRM-Nursing-Research Methods 437

NST-Nursing Statistical Methods	439	School of Medicine	177
NTC-Nursing-Teaching	440	School of Nursing	187
NTR-Nutrition Science	441	School of Optometry	196
Nuclear Medicine Technology	148	School of Public Health	198
NUR-Nursing	444	School Psychometry	106
Nutrition Sciences	164	SOC-Sociology	475
NWH-Nursing-Women's Health	454	Social Work	74
O		Sociology	75
Occupational Therapy	168	Sociology	78
OT-Occupational Therapy	455	SPA-Spanish	477
P		Special Education	106
PA-Physician Assistant	458	Student Life	28
Pathobiology and Molecular Medicine Theme	85	Student Services and Facilities	29
PH-Physics	460	SW-Social Work	478
Pharm D (Auburn University Harrison School of Pharmacy) / Master of Public Health	211	T	
PhD in Biomedical Science / Master of Public Health Program	208	Teaching English to Speakers of Other Languages	108
PhD in Psychology (HBPY) or Sociology (HSOC) and MPH Program	211	The Graduate School	231
PhD Industrial and Systems Engineering(Auburn) / Master of Public Health Program	208	TMS-Translational & Molecular Science	482
PHR-Pharmacology	463	TOX-Toxicology	482
Physical Therapy	175	Trustees & Administration	9
Physician Assistant Studies	150	V	
Physics	64	VIS-Vision Science	482
Political Science and Public Administration	67	Vision Sciences	197
Professional Degree Programs	122	Visual Arts	95
Program Index	232		
PSDO-Physician Scientist Development	464		
Psychology	69		
PT-Physical Therapy	464		
PTC-Health Focused Patient/Client Management	466		
PUH-Public Health	466		
PY-Psychology	472		
R			
Reading	105		
Rehabilitation Science	139		
RHB-Rehabilitation Science	474		
S			
School of Dentistry	88		
School of Education	91		
School of Engineering	120		
School of Health Professions	138		