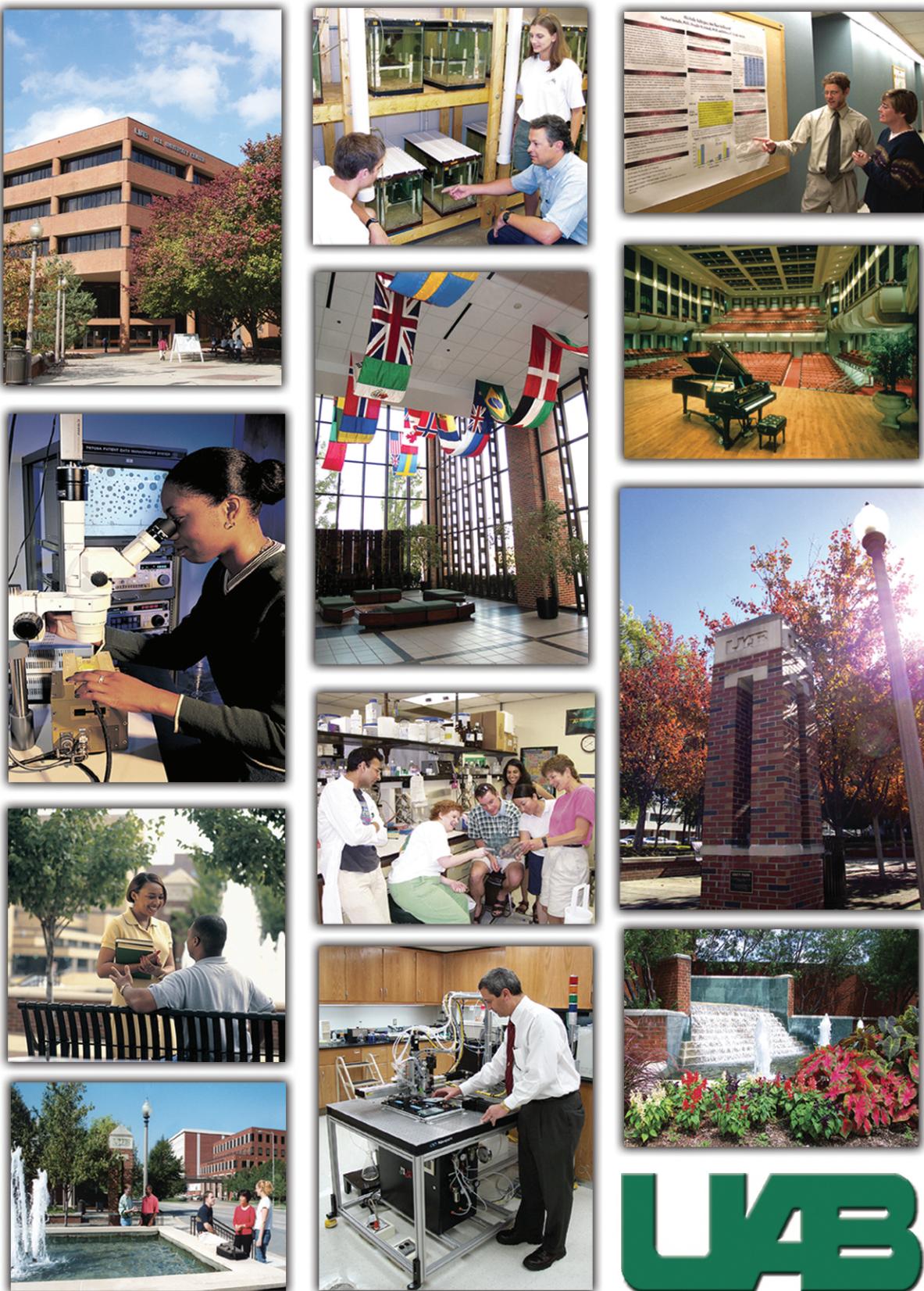


www.uab.edu/graduate



UAB

The University of Alabama at Birmingham
Graduate Catalog 2010-2012

2010-2012 GRADUATE CATALOG ONLINE

The online Graduate Catalog always reflects the most recent requirements and information pertaining to UAB's graduate programs as provided by each program.

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

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Arts and Sciences

Anthropology (M.A.*)

You must apply for admissions through The University of Alabama (Tuscaloosa) at www.as.ua.edu/ant/. In order for a student to enroll in courses at UAB (after applying for admission through UA Tuscaloosa), this process must be followed:

1. Student completes the Cooperative Admission form at <http://www.uab.edu/graduate/apply/acrobat/cooperativeadmission.pdf>.
2. Student submits the Cooperative Admission form to the University of Alabama's Graduate Registrar, Beth Yarbrough. Ms. Yarbrough's contact information is beth.yarbrough@ua.edu or (205) 348-8285 or (205) 348-5921.
3. The UA Graduate Registrar then faxes a copy of the approved Cooperative Admission form and a copy of the student's UA admission letter to the UAB Graduate Admission Office to the attention of Susan Banks at (205) 996-5852. Mrs. Banks may be contacted at (205) 934-8227 or snoblett@uab.edu.
4. After UAB receives the approved Cooperative Admission form from UA, the student will be added to UAB's record system and will then be allowed to register for UAB courses online after obtaining a Blazer ID and creating a strong password.

*Degree awarded by the University of Alabama, UAB's partner in the cooperative degree program

Degree Offered:

M.A.*

Director:

Cormier

Phone:

(205) 975-6526

E-mail:

lcormier@uab.edu

Web site:

www.sbs.uab.edu/Depts/Anthro/Anthropology/Anthrohome.html

Primary Faculty

Loretta A. Cormier, Associate Professor; Cultural Anthropology, Ecological, Ethnoprimatology, Lowland South America

Sharyn Jones, Assistant Professor; Ethnoarchaeology, Zooarchaeology, Foodways, Polynesia, Fiji, Caribbean

Chris Kyle, Associate Professor; Political Anthropology, Cultural Ecology, Historical Anthropology, Latin America, Mesoamerica

Gregory Mumford, Assistant Professor; Archaeology, Complex Societies, Ancient Trade Networks, Egypt, Eastern Mediterranean

Sarah Parcak, Assistant Professor; Remote Sensing/GIS, Landscape Archaeology, Egyptology, Mediterranean, Egypt

Bruce P. Wheatley, Professor; Physical Anthropology, Primatology, Forensic Anthropology, Indonesia

Affiliated Faculty

Steven Becker, Associate Professor (Environmental Health Sciences); Public Health

Scott Brande, Associate Professor (Geology); Geoarchaeology

Akhlaque Haque, Associate Professor (Government and Public Services); GIS

Millard, Andre, Professor (History); Popular Culture, Documentary Film, History of Technology, US, Europe

Degree Requirements

The M.A. degree program includes the basic course requirements, a foreign language or research skill requirement, and fulfillment of either Plan I (Thesis) or Plan II (Nonthesis).

Basic Course Requirements

Course Work: Each student must complete a minimum of 30 credit hours of courses numbered 500 or above. Without special prior approval of the student's advisor, committee, and the director of graduate studies neither ANTH 691, 692, 693, or 694 (Special Problems Courses) nor ANTH 699 (Thesis Research) will count towards the minimum 30 hours. (Note that there are additional course requirements for two of the three options).

Core Curriculum: All students are required to complete satisfactorily a core curriculum composed of one graduate course in at least three of the four fields of anthropology. These three should be chosen from among: 1) linguistics - ANTH 608 (Advanced Linguistic Anthropology), 2) archaeology - ANTH 609 (Advanced Archaeological Anthropology), 3) socio-cultural anthropology - ANTH 605 (Advanced Cultural Anthropology), and 4) physical anthropology - ANTH 610 (Advanced Physical Anthropology). Additionally, a course in research methodology (e.g., ANT 600 at UA or ANTH 615 at UAB) is required.

Entering students must provide evidence of having passed introductory level courses in each of the four fields before taking the graduate courses. A student who has not had an introductory course may be required to take or audit the appropriate undergraduate course before enrolling in the graduate course. Credits earned from such preparatory course work may not be applied to the 30 credit hour requirement.

Language/Research Skill Competency: Each student is required to demonstrate competency in a foreign language or research skill. This requirement may be satisfied in several ways including:

- successful completion (meaning a grade of B or better) of at least the second course in a language course sequence such as FR 101/102, GN 101/102, or SPA 101/102;
- certification of competency by examination from the appropriate language department;
- successful completion of a graduate level statistics course such as Sociology 701 or another statistics course subject to the approval of the chair and the program director.

- Students must get the approval of their advisor before undertaking any of these options. The student will be responsible for furnishing evidence of completion of this requirement to the director of graduate studies and the department chairman.

M.A. Committee: By the start of the second year of academic work each graduate student will be required to have identified a faculty member willing to serve as permanent advisor and at least three additional faculty members to comprise an M.A. jury. This committee is subject to final approval by the chair and program director and functions as the principal advisory and research project approval board. The committee may include an external member of the Graduate Faculty.

Comprehensive Examinations: All students must take and pass comprehensive examinations on their knowledge of the field of anthropology. The student will take written exams in at least three of the four subdisciplines. The selection of the three areas will be made in collaboration with the faculty advisor. The entire anthropology faculty will participate in composing the exam questions and evaluating each student's responses.

The faculty's evaluations will be communicated to the director of graduate studies and to the chairman of the department.

Interinstitutional Requirement

Students must take at least 6 hours of graduate credit at the University of Alabama (Tuscaloosa) as required by the Interinstitutional MA.

Three Plans of Study for the Master's Degree

In addition to choosing one of the two program options outlined above, the student must satisfy the requirements for one of the following three plans of study. Choice of the plan of study must be made by the student in consultation with the M.A. Committee and the faculty advisor.

Thesis Option: Thirty (30) hours of non-thesis course work, successful completion of the comprehensive examinations, plus a master's thesis. A student electing this plan of study will be required to conceive and execute a research project under the direction of his or her M.A. committee. The student's advisor will convene the committee as necessary to discuss, refine, and approve this plan. After twenty hours of course work are completed, the student may enroll in ANTH 699 (Thesis Research). The purpose of this coursework is to provide a structure for supervised contact hours with the student's faculty advisor. Such coursework, including the decision as to the number of contact hours required, must be pre-arranged in consultation with the faculty advisor. Hours completed in ANTH 699 must be over and above the 30-hour minimum.

In preparing a thesis, the student should consult the booklet, *A Manual for Students Preparing Theses and Dissertations* available from the Graduate School.

Students who take the thesis option will present a departmental colloquium based on the results of their research in the final semester in residence. Students should consult their faculty advisor and the director of graduate studies in scheduling and posting advance notice of their colloquia.

Non-thesis Research Project Option: Thirty-six (36) hours of non-thesis course work plus successful completion of one of the following:

- Presentation of a research paper at a national meeting which has been approved in advance by the student's M.A. Committee;
- Acceptance for publication of a research paper submitted to a refereed journal which has been approved in advance by the student's M.A. Committee.

In either case, it will be the responsibility of the student's committee to approve a written draft of the research paper. Approval of the paper will be conveyed in writing to the director of graduate studies and to the department chairman by the student's advisor. Final approval of the research project requirement is at the discretion of the M.A. committee.

Students who elect the thesis option will be required to defend their thesis before a departmental committee in the final semester of residence.

Non-thesis Option by Examination: Thirty-six (36) hours of non-thesis course work and successful completion of written examinations.

Additional Information

Deadline for Entry Term(s):	Consult Program Director for information
Deadline for All Application Materials to be in the Graduate School Office:	January 31
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)
Comments	See UA catalog and www.as.ua.edu/ant

Contact Information

For detailed information, contact Dr. Carolyn Conley, Graduate Program Director, UAB Department of Anthropology, HHB 360H, 1401 University Blvd, Birmingham, Alabama 35294-1152.

Telephone 205-934-8691

E-mail cconley@uab.edu

Web www.sbs.uab.edu/Depts/Anthro/Anthropology/Anthrohome.html

Course Descriptions

For courses at the University of Alabama (Tuscaloosa), see the graduate catalog of 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.

Anthropology (ANTH)

601. **Forensic Anthropology.** Applied human osteology, emphasizing ability to identify age, sex, and population type of skeletal material. Effects of disease and behavior on bones. (Wheatley)

602. **The Conquest of Mexico.** Examines the Spanish conquest of Mexico from both Spanish and indigenous perspectives. Surveys the institutionalization of Spanish control over the fallen Aztec Empire and the broader intellectual and material consequences of the conquest. (Kyle)

603. **As Others See Us.** Jointly offered with American Studies and International Studies, this seminar surveys international perceptions of U.S. culture. (Millard)

604. **Introduction to Mapmaking.** Introduction to theory and methods of cartographic representation, image analysis and GIS.

605. **Advanced Cultural Anthropology.** Critical review of theoretical approaches in cultural anthropology. (Taylor, Kyle, Cormier)

608. **Advanced Linguistic Anthropology.** Historical development of theory and field practice of linguistics. (Smith)

609. **Advanced Archaeological Anthropology.** Principal theoretical approaches in 19th- and 20th-century archaeology; historical, processual, and postprocessual. (Jones, Parcak)

610. **Advanced Physical Anthropology.** Human evolution, primatology, race, human genetics. Tasks performed by physical anthropologists. (Wheatley)

611. **Field Archaeology.** Archaeological field and laboratory techniques, including excavation, surveying, and artifact analysis and description; general problems of archaeological interpretation. 1-6 hours.

613. **Human Osteology.** 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 601. 4 hours (Wheatley)

614. **Geoarchaeology.** Survey of geological methods as applied to archaeological questions. Practicum in geoarchaeological laboratory and analytic methods. (Brande)

615. **Ethnographic Field Methods.** Classroom instruction and practical experience in techniques of ethnographic fieldwork, including participant observation, household surveys, structured and unstructured interviewing, and genealogies. 3-6 hours.

616. **Ethnographic Filmmaking.** The use of film and video to document and analyze aspects of human social and cultural life. Students view, analyze, and create ethnographic films. 3-6 hours.

619. **Food and Culture.** The role of food in human culture through time and in a variety of geographic settings. Examines the biological basis of diet, how foodways develop and change, how and why anthropologists study diet, and variations in foodways around the world. (Jones)

620. **Computers and Statistics in Anthropology.** Computers and statistical applications in anthropology. 1 to 3 hours.

622. **Landscape Archaeology.** Archaeological techniques of reconstructing past landscapes, including remote sensing, GIS, survey, excavation, and environmental analysis. (Parcak)

626. **Archaeology of the Pacific Islands.** Survey of Pacific Islands societies in the past drawing on archaeological, ethnographic, historic, linguistic, and biological data. (Jones)

628. **Comparative Religion.** Human behavior in relation to the supernatural; religion as a system of social behavior and values; theories of religion. (Taylor)

630. Animal Bone Archaeology. Introduction to methods and theories of zooarchaeological research. Practical experience in processing, identification, and interpretation of animal bone remains from archaeological sites. 4-6 hours. (Jones)

634. Observing the Earth from Space. This course will provide students with an introductory knowledge of remote sensing analysis. Students will learn how to analyze diverse types of satellite imagery in a wide range of fields, and how to apply this knowledge in original research projects. (Parcak)

635. Ethnomedicine and Ethnopsychiatry. Approaches and contributions of anthropology to study of health, sickness, and healing. Physical environment and human adaptations as key determinants of health systems; culturally defined concepts of sickness, health, and healing; healing as social, as well as physiological, activity. Topics may include life stages, medical knowledge among different human groups, impact of culture contact on medical systems, ecological balance and population control, cultural definitions and treatment of abnormal behavior, healers, health and supernatural, social roles of sick, and illness and social control. (Taylor)

637. Real World Remote Sensing. Real world applications of remote sensing technology. Students work closely with UAB professors and scientists at NASA's Marshall Space Flight Center doing original remote sensing research on diverse topics, possibly including terrorism, global warming, health, anthropology/archaeology, atmospheric studies, urban expansion, and coastal management. (Parcak)

650. Nationalism, Ethnicity and Violence. 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. (Taylor)

653. Primatology. Biology, behavior, and distribution of living nonhuman primates with emphasis on field studies of old-world monkeys and apes. (Wheatley)

655. Archaeology of Alabama.

657. Anthropology of Gender. Cultural construction of gender differences in human societies; shifting definitions of proper male and female roles across cultures and through time. (Cormier, Jones)

660. Ecological Anthropology. Examines interactions among behavioral, technological, institutional, and ideological features of human cultures that serve to adapt societies to their environment. (Cormier)

664. Political Anthropology. 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. (Kyle)

669. Ethnographic Perspectives on Mexico. Comparative and historical analysis of rural Mexican communities, emphasizing the impact of recent neoliberal economic policies and democratic political reforms. (Kyle)

681. Anthropology and the Health Profession. Anthropological theory and practice relevant to health care professions in medicine, nursing, public health, psychology, etc. Anthropological

perspectives on practice of health care and practical applications of anthropology in providing health care to culturally diverse people. (Cormier)

685. Foundations of Symbolism. Study of symbolic forms in myth and ritual and overview of theoretical approaches. (Smith)

691. 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. 2-6 hours.

692. Special Problems in Archaeology. Supervised study of specified topic area; defined problem explored in depth. Topics determined by student and instructor interest in archaeology. 2-6 hours.

693. Special Problems in Linguistics. Supervised study of specified topic area; defined problem explored in depth. Topics determined by student and instructor interest in linguistics. 2-6 hours.

694. Special Problems in Physical Anthropology. Supervised study of specified topic area; defined problem explored in depth. Topics determined by student and instructor interest in special topics in physical anthropology. 2-6 hours.

699. Thesis Research. Independent development of research project. Prerequisite: Admission to candidacy. 1-3 hours.

Art History (M.A.)

Degree Offered: M.A.*

Director: Dr. Katherine McIver

Phone: (205) 934-4941

E-mail: mciver@uab.edu

Web site: www.uab.edu/art

UAB Faculty

Jessica Dallow, Associate Professor (Art History); Contemporary Art, American Art, African American Art

Katherine McIver, Professor (Art History); Renaissance and Baroque Art

Heather McPherson, Professor (Art History); 18th-20th Century European Art

Cathleen Cummings, Assistant Professor (Art History); South Asian 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.

Tuscaloosa Faculty

Amalia Amaki, Professor (Art History); Modern/Contemporary Art

Lucy Curzon, Assistant Professor (Art History); Modern/Contemporary Art

Robert Mellown, Associate Professor (Art History); Nineteenth-Century Art

Mindy Nancarrow, Professor (Art History); Baroque Art

Catherine Pagani, Professor (Art History); Asian Art

Admission Requirements

Applicants may seek admission to either UAB or the University of Alabama (Tuscaloosa), but admission is upon recommendation of the joint art history faculty of the two institutions. 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 complete 24 semester hours in art history and related areas such as history, aesthetics, archaeology, and anthropology. With the concurrence of the joint faculty, this requirement may be reduced. 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

Courses

Students must complete 24 semester hours in art history.* Students must take courses in **three** of the following five general areas: Renaissance Art, Baroque Art, Nineteenth-Century Art, Twentieth-Century/Contemporary Art & Criticism, and Asian Art. A maximum of 3 semester hours of independent study will be permitted. Each student must take ARH 680 (Literature of Art). 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

Each student must demonstrate a reading knowledge of French or German. This is tested by examination by the Department of Foreign Languages or by passing French 201 or 202 or German 201 or 202 with a grade of B or better. For students specializing in Asian or other areas, a relevant language may be substituted with the approval of the faculty advisor and the Director of Graduate Studies. This requirement should be satisfied in or before the term in which the student has passed 15 semester hours of coursework. A reading knowledge of a second foreign language is strongly recommended.

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, fall and spring.

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.

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 applicants whose native language is not English.)
Additional Requirements	Students must provide a writing sample

Contact Information

For detailed information, contact Dr. Katherine McIver, Graduate Program Director, UAB Department of Art and Art History, Humanities Building, Room 113, 900 13th Street South, Birmingham, AL 35294-1260.

Telephone 205-934-4941; Fax (205) 996-6639

E-mail mciver@uab.edu

Course Descriptions

For courses at the University of Alabama (Tuscaloosa), see the graduate catalog of 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.

Art History (ARH)

A student may take any seminar twice for credit (see UAB Class Schedule for announcement of subjects). Prerequisite for admission to a seminar is permission of the instructor.

507. Art of Rome. 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. (McIver)

521. Renaissance Art in Italy: 1300-1480. Painting, sculpture, and architecture with an emphasis on the artistic centers of Florence, Venice, Rome and Siena. (McIver)

522 Renaissance Art in Italy: 1480-1580. Painting, sculpture, and architecture from major artistic centers of Florence, Venice, Rome, and Milan. (McIver)

523. Study Abroad: Art in Italy: On-site study of works of art and architecture in Italy, 1300-1650. (McIver)

524. Renaissance Painting in Northern Europe. Paintings in Holland, Belgium, and Germany, 1350-1550. (McIver)

530. Eighteenth-Century Art in Europe Visual culture in eighteenth-century Britain and France including study of eighteenth-century holdings in the Birmingham Museum of Art. (McPherson)

531. Northern Baroque Painting. Painting in Holland and Belgium, 1580-1680. (McIver)

535. Southern Baroque Art. Painting, sculpture, and architecture, with an emphasis on the artistic centers of Rome, Florence, and Venice and painting in Spain, 1580-1680. (McIver)

540. Nineteenth-Century Art I: Neoclassicism, Romanticism, and Realism. Painting, sculpture, and graphic arts in Europe, emphasizing France, 1780-1860. (McPherson)

541. Nineteenth-Century Art II: Impressionism, Post-Impressionism, and Symbolism. Painting, sculpture, and graphic arts in Europe, 1850-1900. (McPherson)

550. American Art to 1900: Painting, sculpture, and architecture in the U.S., with an emphasis on 19th century. (Dallow)

560. Twentieth-Century Art to 1945. Painting, sculpture, and architecture in Europe and the United States, 1900-1945. (McPherson)

561. Modern Design. History of modern design. Will examine various design disciplines, design theory, well as the relationships between design, fine art, architecture, and popular culture. (Staff)

564. Art Since 1945. Painting, sculpture, and architecture, primarily in the United States, 1945 to the present. (McPherson, Dallow)

565. Aspects of Contemporary Art. Topics in Contemporary Art, c. 1970 to the present. Course offerings will vary from year to year and will study a specific historical moment, medium, theme, or subject. (Dallow)

567. Modern Architecture. History of modern architecture, covering examples from the late 18th century to the present and emphasizing the United States. Focus on understanding and conceptualizing plans, diagrams, and space. (Dallow)

568. Race and Representation. History of 20th-Century African American art in the contexts of contemporary theories of identity and issues of diversity, and in relation to African art. Includes study of objects in the Birmingham Museum of Art.(Dallow)

570. Art and Culture in China. An in-depth survey of the art and culture of China from the Neolithic era through the eighteenth century. (Cummings)

571. Topics in Asian Cinema. This course offers students an introduction to a vital aspect of contemporary Asian culture, recognizing that film can be an important locus of contemporary cultural commentary and critique. (Cummings)

573. Japanese Prints and Printmakers. History of Japanese wood-block prints and printmakers, 17th-20th centuries. (Cummings)

575. Japanese Art. Art and culture of Neolithic era through 19th century. (Cummings)

577. Art and Architecture of India. Explores the visual culture of South Asia from the Indus Valley Civilization until the beginning of British rule in India, c. 2500 BCE-1700 CE. (Cummings)

578. Buddhist Arts of Asia. Study of Buddhist art and architecture in Asia, with an emphasis on the original context and function of painting, sculpture, and monuments. The specific historical and cultural theme will vary with each course offering. Will also examine ethical issues surrounding display and preservation of objects and monuments. (Cummings)

579. Study Abroad: Art and Culture of Asia. This course will allow students to become immersed in the art and culture of Asia through direct experience in the field. Focus will be primarily South Asia. (Cummings)

580. Art Criticism and Theory. Critical theory and contemporary issues focusing on art from the 1960s to the present. Explored through writing, lectures, and discussion. (Dallow)

***582. Topics in Art History.** Study of thematic topics throughout art history.

587. Field Study. Trips to prominent museums and galleries in the United States or foreign art centers.

585. Museum Studies. Museum operation; organization and preparation of exhibitions; cataloging objects in collection; experience with UAB Visual Arts Gallery and Birmingham Museum of Art. (Dallow)

***590. Seminar in Art History:** May be repeated if focus is different.

592. Museum Internship. Through active participation in the daily operations of one or more curatorial departments, students acquire a working knowledge of museums through a program of internships at cooperating institutions. The student will be required to work at the institution a minimum of 12 supervised hours per week during the term. Prior approval of the instructor is required for registration.

620. Seminar: Renaissance Art. (McIver)

630. Seminar: Baroque and Rococo Art. (McPherson, McIver)

640. Seminar: Nineteenth-Century Art. (McPherson, Dallow)

660. Seminar: Twentieth-Century Art. (McPherson, Dallow)

670. Seminar: Asian Art. (Cummings)

680. Literature of Art. Principles and methodology of literature of art as described in writing of founders and chief makers; bibliographical research methods and mastery. (McPherson)

698. Independent Study. Prerequisite: Permission of instructor.

***699. Thesis Research.** Prerequisite: Admission to candidacy. 3 or 6 hours.

Art Studio

Although UAB does not offer a graduate degree in studio art, courses in this area are available to interested graduate students. For additional information, contact Erin Wright, Chair, UAB Department of Art and Art History, Humanities Building, Room 113, 900 13th Street South, Birmingham, AL 35294-1260 (telephone 205-934-4941).

Faculty

James R. Alexander, Professor (Art); Sculpture, Ceramic Sculpture

Doug Barrett, Assistant Professor (Art); Graphic Design

Douglas Baulos, Assistant Professor (Art); Drawing & Bookmaking

Bert Brouwer, Professor (Art); Painting, Drawing

Gary Chapman, Professor (Art); Painting, Drawing

Derek Cracco, Associate Professor (Art); Printmaking

Christopher Lowther, Assistant Professor (Art); Time-Based Media

John Powers, Assistant Professor (Art); Sculpture

Sonja O. Rieger, Professor (Art); Photography

Erin Wright, Chair/Professor (Art); Graphic Design

Biology (Ph.D., M.S.)

Degree Offered: Ph.D., M.S., 5th Year M.S.

Director: *Watts*

Phone: (205) 934-9645

E-mail: sawatts@uab.edu

Web site: www.uab.edu/biology/

Faculty

Charles D. Amsler, Professor (Biology); Ecophysiology and Chemical Interactions

Robert A. Angus, Professor (Biology); Population Biology, Genetics of Fish, Environmental Biology

Asim K. Bej, Professor (Biology); Microbial Ecology, Molecular Genetics

James A. Coker, Assistant Professor (Biology); Biochemistry, genetics/genomics, molecular biology of extremophilic microorganisms

Anne Cusic, Associate Professor (Biology)

Robert U. Fischer, Chair and Professor (Biology); Aquatic Ecology, Fisheries Biology, and Physiological Ecology

Vithal K. Ghanta, Professor (Biology); Tumor Immunology, Aging and Immune System

Roger Gilchrist, Assistant Professor (Biology)

David T. Jenkins, Associate Professor (Biology); Taxonomy, Nomenclature, and Cultural Studies of Basidiomycetes

Ken R. Marion, Professor (Biology); Population Dynamics, Reproductive Cycles, Environmental Cues for Reproduction

James B. McClintock, Professor (Biology); Invertebrate Reproduction, Ecology

Karolina M. Mukhtar, Assistant Professor (Biology); Plant-Pathology Interactions, Transcriptional Networks

Dana Petterson,

Robert W. Thacker, Associate Professor (Biology); Community and Behavioral Ecology, Molecular Systematics

Trygve O. Tollefsbol, Professor (Biology); Developmental Biology and Molecular Biology of DNA Methylation

R. Douglas Watson, Professor (Biology); Endocrinology, Neuroendocrinology, Insect Development

Stephen A. Watts, Professor (Biology); Nutrition, Physiology and Growth of Marine and Aquatic Organisms; Aquaculture

Thane Wibbels, Professor (Biology); Comparative Reproductive Physiology of Vertebrates

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 minimum combined verbal and quantitative score of 1150 on 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. Students may enter at the beginning of any semester.

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.

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).

Additional Information & Mailing Address

Deadline for Entry Term(s):	Each semester
Deadline for All Application Materials to be in the Graduate School Office:	Eight weeks before semester begins
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, 1530 3rd Avenue South, Birmingham, Alabama 35294-1170.

Telephone 205-934-9685

Fax 205.975.6097

E-mail sawatts@uab.edu

Web www.uab.edu/uabbio

Physical Address

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

Course Descriptions

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.

Biology (BY)

501. Advanced Biology for Teachers I – (Genetics). Basic genetic principles; recent research developments. Prerequisite: Permission of instructor.

502. Advanced Biology for Teachers II – (Botany). Provides understanding of human structural and functional relationships essential in modern biology. Corequisite: BY 503.

507. Microbial Ecology. Microorganisms in nature; interactions with each other and with environment. Independent project required. Prerequisite: BY 271.

511. Molecular Genetics. Prokaryotic and eukaryotic gene structure and function. Prerequisites: BY 271 and 330, and CH 232. Independent project required.

520. General Endocrinology. Principles of chemical communication in animals. Use of invertebrate and vertebrate systems. Prerequisite: BY 309 or permission of instructor.

531. Advanced Recombinant DNA Technology. Manipulation of genes and their regulations, and techniques used in recombinant DNA technology. Independent project required. Prerequisites: BY 311 and 330, and CH 233 and 461. Lectures and laboratories.

535. Natural History of the Vertebrates. 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. 4 hours.

540. Biology and Aging. Current understanding of aging, measuring aging changes, theories of aging and aging changes in various human systems. Prerequisite: BY 103 or permission of instructor.

552. Field Botany. Principles and techniques of plant identification and classification; consideration of phylogenetic systems. Lecture and field trips. Independent project required. 4 hours.

560. Advanced Invertebrate Zoology. Selected topics. Lecture and student projects. Prerequisite: BY 255 or permission of instructor.

565. Limnology. Biology of freshwater and estuarine organisms. Lecture, laboratory, and field trips. Prerequisites: BY 104 and 370 or permission of instructor. 4 hours.

567. Tropical Ecology. An overview of the major tropical ecotypes with emphasis on ecology of terrestrial, aquatic, and marine tropical organisms. Prerequisite: BY 255 or 370 or permission of instructor. Major portion of course taught at a tropical field station in the Caribbean. Lectures, laboratory, and field trips. Library research paper required.

568. Galapagos Ecology. An overview of the ecology of the Galapagos Island, with an emphasis on the ecology of terrestrial and marine organisms. Major portion of course conducted on the Galapagos Islands. Lecture and field trips (May session, alternate years). *Prerequisite:* BY 124 and Permission of Instructor.

569. Rain Forest Ecology. 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. Prerequisites: BY 255 or 256 or 370 and permission of instructor. Major portion of course taught in Costa Rica. Lectures and field trips. Library research paper required.

570. Ecology. Ecosystems and population biology. Lectures, laboratories, and field trips. Independent project required. Prerequisite: BY 255 or 256.

571. Biochemical Adaptations to Environment. Examination of physiological and biochemical adaptations of organisms to physical environment. Prerequisites: BY 309 and 330 and CH 460, or permission of instructor.

***595. Special Topics in Biology I.** Lecture, laboratory, or both. 1-4 hours.

***596. Special Topics in Biology II.** Lecture, laboratory, or both. 1-4 hours.

605. Microbial Physiology. Microbial structure and function, growth, metabolism, and regulation of cellular activity. Independent project required. Prerequisites: BY 271 and 3 semester hours of organic chemistry.

607. Microbial Ecology. Microorganisms in nature; interactions with each other and with the environment. Independent project required. Prerequisite: BY 271.

610. Comparative Animal Physiology. Special physical and chemical processes occurring at cell tissue, and organ levels. Independent projects required. Prerequisite: BY 309 or permission of instructor.

611. Advanced Human Anatomy. This course will provide students with an interest in medical and health sciences a detailed examination of human anatomy. The lecture/seminar will correlate detailed knowledge of human anatomy with cutting-edge surgical and medical advances including hypothermic treatment of spinal cord trauma, bioengineering of synthetic scaffolds for organ and limb regeneration and

nano-particle drug delivery systems. Laboratory sessions will be devoted to focused observation of projected cadavers and small student-team dissection of entire cadavers. *Prerequisite:* BY 115 or permission of the instructor.

616. Cellular Physiology. Structure and function of cells and their components at the molecular level. Laboratory experience using modern equipment and biochemical methods. Independent project required. Prerequisites: BY 309 or 330 and CH 232. 4 hours.

619. Reproductive Physiology. Comparative reproductive physiology in animals with emphasis on mammals. Independent project required. Prerequisites: BY 256 and 3 semester hours of organic chemistry.

626. Evolutionary Medicine. An evolutionary approach to issues relating to human health and disease. Prerequisites: (BY 116 or BY 409) and BY 330 or permission of instructor.

628. Biology Laboratory Teaching Techniques. 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. Prerequisites: Permission of instructor.

629. Evolution. Introduction to the study of evolutionary processes *Prerequisites:* BY 210.

633. Advanced Molecular Genetics. 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. Prerequisites: BY 311 and 431.

640. Immunology. Immune system and functions of host humoral and cellular immune responses. Mechanisms of antigen and antibody reactions and basic immunological methods. Independent project required. Prerequisites: BY 271, BY 330, and CH 231.

642. Experimental Phycology. Introduction to algae. Experimental approaches to productivity. Algae as model systems. Independent project required. Prerequisites: BY 104 and either BY 330, BY 450, and CH 462, or permission of instructor. Lecture and laboratory. 4 hours.

646. Techniques in Biological Research I. Concepts and practical application of techniques pertinent to biological research. Prerequisites: Permission of instructor. Lecture and laboratory.

648. Psychoneuroimmunology. Explores communication between neuroendocrine and immune systems. Prerequisite: Permission of instructor. 3 hours

652. Field Botany for Teachers. Principles and techniques of plant identification and classification; consideration of phylogenetic systems. Lectures and field trips. Independent project required. Prerequisite: BY 260 or permission of instructor. 4 hours.

653. Mycology. Fungi, including morphology, development, physiology, taxonomy, and phylogeny. Independent project required. Prerequisites: BY 260 or 271 and 3 semester hours of organic chemistry. Lecture and laboratory. Offered at irregular intervals. 4 hours.

655. Biometry. Methods of data summary, presentation and analysis and the use of computer statistical applications. Lectures and computer laboratories.

662. Introductory Neurobiology. 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. Prerequisites: BY 309, CH 231, and PH 101.

665. Limnology. Introduction to ecology of inland waters and estuaries. Lectures and field trips. Prerequisite: BY 255 or 256. 4 hours.

667. Population Ecology. Structure and dynamics of populations with an emphasis on understanding how reproduction, mortality and dispersal interact to control fluctuations in population size and structure. Quantitative Literacy is a significant component of this course (QEP). *Prerequisites:* BY 124.

669. Molecular Ecology and Phylogenetics. Course will survey processes and patterns of molecular evolution and methods of phylogenetic analysis using DNA sequences, amino acid sequences, and molecular markers. *Prerequisites:* BY 124 and BY 210, or permission of instructor.

671. Biochemical Adaptations to Environment. Examination of physiological and biochemical adaptations of organisms to physical environment. Prerequisites: BY 309 and 330 and CH 460, or permission of instructor.

673.- Chemical Ecology. Chemical interactions between organism and chemical sensing of the environment, including chemical defenses against threats and chemical communication between individuals. *Prerequisites:* BY 124 and CH 235 or permission of instructor.

675. Mammalian Embryology. Examination of control mechanisms of embryonic development at molecular level and differentiation from fertilization through gestation. Mechanisms of abnormal embryonic development. Prerequisite: BY 314.

***681. Seminar in Physiological Ecology.** Current research. 1 hour.

***682. Seminar in Immunology.** Current research. 1 hour.

***683. Seminar in Physiology.** Current research. 1 hour.

***684. Seminar in Microbial Ecology.** Current research. 1 hour.

***685. Seminar in Cell Biology.** Current research. 1 hour.

***686. Seminar in Mammalian Development.** Current research. 1 hour.

***687. Seminar in Endocrinology.** Current research. 1 hour.

***688. Seminar in Algal Ecophysiology.** Current research in specific areas. 1 hour.

***689. Seminar in Genetics.** Current research. 1 hour.

***690. Seminar in Cellular Physiology.** Current research in specific areas. 1 hour.

***691. Seminar in Botany.** Current research developments. 1 hour.

***692. Seminar in Ecology.** Current research. 1 hour.

***693. Seminar in Embryology.** Current research. 1 hour.

***694. Seminar in Microbiology.** Current research in microbial ecology and microbial physiology. 1 hour.

***695. Special Topics in Biology I.** Lecture, laboratory, or both. 1-4 hours.

***696. Special Topics in Biology II.** Lecture, laboratory, or both. 1-4 hours.

*697. **Investigative Techniques.** Application of modern experimental techniques in solving research problems. 1-2 hours.

*698. **Nonthesis Research.** 1-10 hours.

*699. **Thesis Research.** Prerequisite: Admission to candidacy. Pass/Fail. 1-10 hours.

746. **Techniques in Biological Research I.** Concepts and practical application of techniques pertinent to biological research. Prerequisites: Permission of instructor. Lecture and laboratory.

755. **Biometry.** Methods of data summary, presentation and analysis and the use of computer statistical applications. Lectures and computer laboratories.

767. **Population Ecology.** Structure and dynamics of populations with an emphasis on understanding how reproduction, mortality and dispersal interact to control fluctuations in population size and structure. Quantitative Literacy is a significant component of this course (QEP). *Prerequisites:* BY 124.

769. **Molecular Ecology and Phylogenetics.** Course will survey processes and patterns of molecular evolution and methods of phylogenetic analysis using DNA sequences, amino acid sequences, and molecular markers. *Prerequisites:* BY 124 and BY 210, or permission of instructor.

771. **Biochemical Adaptations to Environment.** Examination of physiological and biochemical adaptations of organisms to physical environment. Independent project required. Prerequisites: BY 309 and 330, and CH 461, or permission of instructor.

*781. **Seminar in Physiological Ecology.** Current research. 1 hour.

*782. **Seminar in Immunology.** Current research. 1 hour.

*783. **Seminar in Physiology.** Current research. 1 hour.

*784. **Seminar in Microbial Ecology.** Current research. 1 hour.

*785. **Seminar in Cell Biology.** Current research. 1 hour.

*786. **Seminar in Mammalian Development.** Current research. 1 hour.

*787. **Seminar in Endocrinology.** Current research. 1 hour.

*788. **Seminar in Algal Ecophysiology.** Current research in specific areas. 1 hour.

*789. **Seminar in Genetics.** Current research. 1hour.

*790. **Seminar in Cellular Physiology.** Current research in specific areas. 1 hour.

*791. **Seminar in Botany.** Current research developments. 1 hour.

*792. **Seminar in Ecology.** Current research. 1 hour.

*793. **Seminar in Embryology.** Current research. 1 hour.

*794. **Seminar in Microbiology.** Current research in microbial ecology and microbial physiology. 1 hour.

*795. **Special Topics in Biology I.** Lecture, laboratory, or both. 1-2 hours.

*796. **Special Topics in Biology II.** Lecture, Laboratory, or both. 1-2 hours.

*797. **Investigative Techniques.** Application of modern experimental techniques in solving research problems. 1-2 hours.

*798. **Nondissertation Research.** 1-10 hours.

*799. **Dissertation Research.** Prerequisite: Admission to candidacy. Pass/Fail. 1-10 hours.

Marine Science (MESC)

In addition to the course offerings listed below, certain courses given through the Marine Environmental Sciences Consortium at Dauphin Island, Alabama, may be taken for graduate credit. For detailed information, contact Dr. Ken R. Marion, Department of Biology, Campbell Hall, Room 173, 1300 University Boulevard, Birmingham, Alabama 35294-1170.

Telephone 205-934-3582

E-mail kmarion@uab.edu

611. **Marsh Ecology.** Habitat analysis, natural history studies, and population dynamics of selected marsh organisms. Lecture, laboratory, and fieldwork. 4 hours.

612. **Marine Ecology.** Bioenergetics, community structure, population dynamics, predation, completion, and speciation in marine ecosystems. Lecture, laboratory, and fieldwork. 4 hours.

614. **Advanced Marine Ecology.** Mechanisms controlling the distribution of marine organisms. Major concepts in marine ecological theory. 2 hours.

615. **Coastal Ornithology.** Coastal and pelagic birds, with emphasis on ecology, taxonomy, and distribution. Lecture, laboratory and field trips. 4 hours.

618. **Benthic Ecology.** Factors controlling life cycles of marine benthic organisms and organization of their communities. 2 hours.

619. **Marine Microbial Ecology.** Survey of the types of microorganisms found in the marine environment and their interactions with each other and their environment. Lecture and laboratory.

620. **Coastal Ecosystems Dynamics.** Investigation of the structure and function of a variety of coastal ecosystems and evaluation of energy and nutrient processing in disparate ecosystems. 2 hours.

621. **Marine Plankton.** Taxonomy and biology of marine phytoplankton, bacterioplankton and zooplankton. Lecture and laboratory.

622. **Chemical Oceanography.** An in-depth examination of the chemistry of seawater and its relationship with biological, geological and physical processes in the oceans.

623. **Geological Oceanography.** Historic and current consequences of both geophysical and classic geological processes as they relate to the marine environment. Tectonic theory, sedimentary processes, stratigraphy, micropaleontology, erosion, and the formation of hydrocarbons. Lecture and laboratory.

625. **Physical Oceanography.** Physical properties of the world's oceans. Waves, tides, circulations, fluctuations, and interactions of the sea with the atmosphere and landmasses.

626. **Biological Oceanography.** Chemical, physical, and geological patterns and processes important in the interaction of organisms and the sea.

627. Fisheries Oceanography. Examination of the relationships between fish life history, recruitment dynamics and harvest potential, and local-, meso-, and global-scale oceanography processes. 2 hours.

629. Fisheries Techniques. Current biological and technological methodologies for studying fishes and aquatic habitats, with emphasis on study design and integration across subdisciplines.

630. Marine Biogeochemical Processes. Understanding how biogeochemical processes regulate ecosystem function in the marine environment. 2 hours.

631. Sediment Biogeochemistry. Sediment biogeochemical processes and their effects on nutrient cycles, plant production, and animal distribution. Lecture and laboratory.

632. Ocean Variability and Global Change. Examination of large-scale, spatial and temporal variability in the earth/ocean system. 2 hours.

633. Marine Biogeography and Paleobiology. Overview of the time course of evolutionary changes in marine ecosystems and the role of historical factors influencing the distribution of marine organisms. Lecture and field trip.

634. Marine Resource Management. Management of marine resources, development of legislation, and impacts of management on human resources. 2 hours.

635. Marine Analytical Instrumentation. Overview of the major analytical tools available to marine scientists. Lecture and laboratory.

636. Oceanographic Experiences. Participation in an oceanographic research cruise. Research project report. 1-3 hours.

670. Field Marine Science. Two-week field exercise at selected sites along the Gulf of Mexico and Atlantic shoreline of North America. Pretrip lectures and readings. 2 hours.

692. Seagrass Ecosystem Ecology. Ecology of seagrass systems of estuarine environments. 2 hours.

693. Seminar in Marine Science. Current research. 1 hour.

694. Directed Studies on Marine Topics. Research on marine topics. 1-6 hours.

696. Special Topics in Marine Science. Lecture, laboratory, or both. 1-6 hours.

714. Advanced Marine Ecology. Mechanisms controlling the distribution of marine organisms. Major concepts in marine ecological theory. 2 hours.

718. Benthic Ecology. Factors controlling life cycles of marine benthic organisms and organization of their communities. 2 hours.

719. Marine Microbial Ecology. Summary of the types of micro-organisms found in the marine environment and their interactions with each other and their environment. Lecture and laboratory.

720. Coastal Ecosystems Dynamics. Investigation of the structure and function of a variety of coastal ecosystems and evaluation of energy and nutrient processing in disparate ecosystems. 2 hours.

721. Marine Plankton. Taxonomy and biology of marine phytoplankton, bacterioplankton and zooplankton. Lecture and laboratory.

722. Chemical Oceanography. An in-depth examination of the chemistry of seawater and its relationship with biological, geological and physical processes in the oceans.

723. Geological Oceanography. Historic and current consequences of both geophysical and classic geological processes as they relate to the marine environment. Tectonic theory, sedimentary processes, stratigraphy, micropaleontology, erosion, and the formation of hydrocarbons. Lecture and laboratory.

725. Physical Oceanography. Physical properties of the world's oceans. Waves, tides, circulations, fluctuations and interactions of the sea with the atmosphere and landmasses.

726. Biological Oceanography. Chemical, physical and geological patterns and processes important in the interaction of organisms and the sea.

727. Fisheries Oceanography. Examination of the relationships between fish life history, recruitment dynamics and harvest potential and local-, meso-, and global-scale oceanographic processes. 2 hours.

729. Fisheries Techniques. Current biological and technological methodologies for studying fishes and aquatic habitats, with emphasis on study design and integration across sub-disciplines.

730. Marine Biogeochemical Processes. Understanding how biogeochemical processes regulate ecosystem function in the marine environment. 2 hours.

731. Sediment Biogeochemistry. Sediment biogeochemical processes and their effects on nutrient cycles, plant production and animal distribution. Lecture and laboratory.

732. Ocean Variability and Global Change. Examination of large-scale, spatial and temporal variability in the earth/ocean system. 2 hours.

733. Marine Biogeography and Paleobiology. Overview of the time course of evolutionary changes in marine ecosystems and the role of historical factors influencing the distribution of marine organisms. Lecture and field trip.

734. Marine Resource Management. Management of marine resources, development of legislation, and impacts of management on human resources. 2 hours.

735. Marine Analytical Instrumentation. Overview of the major analytical tools available to marine scientists. Lecture and laboratory.

736. Oceanographic Experiences. Participation in an oceanographic research cruise. Research project report. 1-3 hours.

770. Field Marine Science. Two-week field exercise at selected sites along the Gulf of Mexico and Atlantic shorelines of North America. Pre-trip lectures and readings. 2 hours.

792. Seagrass Ecosystem Ecology. Ecology of seagrass systems of estuarine environments. 2 hours.

793. Seminar in Marine Science. Current research. 1 hour.

794. Directed Studies on Marine Topics. Research on marine topics. 1-6 hours.

796. Special Topics in Marine Science. Lecture, laboratory, or both. 1-6 hours

Chemistry (Ph.D., M.S)

Degree Offered:	Ph.D., M.S.
Director:	<i>David E. Graves</i>
Phone:	(205) 934-5381
Fax:	(205) 934-2543
E-mail:	dgraves@uab.edu
Web site:	www.chem.uab.edu

Faculty

Venkatram R. Atigadda, Research Assistant Professor (Chemistry); Organic Chemistry, Synthesis, drug design and synthesis, anticonvulsant drug development, antidiabetic and cardiac drug development, drugs for treating or preventing cancer, drugs for influenza.

Christie G. Brouillette, Research Professor (Chemistry); Biophysical Chemistry, protein structural cooperativity and energetics through the application of biophysical techniques to study protein stability and protein-ligand interactions, with particular emphasis on pharmaceutical development.

Wayne J. Brouillette. Professor (Chemistry); Design and synthesis of small organic molecules as new drugs. Active projects include neuraminidase inhibitors as drugs for influenza; NAD synthetase inhibitors as biological warfare defense agents and broad spectrum antibacterial agents; sodium channel ligands as neuroprotective (anti-stroke), analgesic, and anticancer agents; and retinoids as chemopreventive and chemotherapeutic agents. Combinatorial chemistry, structure-based drug design, and computer-assisted methods such as in silico screening (FlexX) and 3D-QSAR (CoMFA) are utilized.

David E. Graves, Professor and Chair (Chemistry); Biophysical Chemistry, nucleic acid structure and function, interactions of ligand-DNA interactions, development of novel topoisomerase I and II inhibitors for cancer chemotherapy.

Gary M. Gray, Professor (Chemistry); Inorganic Chemistry, Transition metal P-donor complexes, chemistry of metallacrown ethers, transition metal complexes that combine the catalytic abilities of transition metal complexes of phosphorus-donor ligands with the cation and small molecule binding abilities of crown ethers, synthesis of metal containing polymers for use in laser fusion, transition metal complexes can exhibit third-order optical nonlinearities.

Tracy P. Hamilton, Associate Professor (Chemistry); Physical Chemistry, *Ab Initio* theoretical chemistry development and applications, reactions of nitric oxide (NO) with superoxide (O₂⁻). Predictions of the vibrational spectroscopy of peroxy nitrite and its salts, the UV-visible electronic spectrum, the NMR shifts, the energetics, and the reactions of peroxy nitrite with other molecules such as carbon dioxide.

Eugenia Kharlampieva, Assistant Professor (Chemistry); Nanomaterials/Polymer Chemistry

Aaron L. Lucius, Assistant Professor (Chemistry); Biophysical Chemistry, Kinetic and thermodynamic methods to examine catalyzed protein unfolding, DNA helicase and DNA gyrase mechanisms.

Joe L. March, Associate Professor (Chemistry); Chemical Education, teaching methods in General Chemistry; Strategies in peer-led instruction, guided-inquiry laboratories, and incorporation of technology in the curriculum.

Craig P. McClure, Assistant Professor (Chemistry); Chemical Education, development of novel chemistry instruction pedagogy, enhancement of retention in introductory chemistry for nonscience majors.

Donald D. Muccio, Professor (Chemistry); Biophysical Chemistry, the use and interpretation of spectroscopy, including NMR and circular dichroism CD to probe structures, folding, and ligand binding of conformationally constrained retinoids, peptides that damage the cornea in the alkaline-injured eye, and NAD synthetase - a new target for antibacterial agents.

Jacqueline A. Nikles, Associate Professor (Chemistry); Chemical Education, development of novel methods for enhancing organic chemistry instruction and student retention.

James C. Patterson, Assistant Professor (Chemistry); Computational methods to study the reaction mechanisms of metalloenzymes and the dynamic of membrane-associated proteins.

Sadanandan E. Velu, Assistant Professor (Chemistry); Organic Synthesis, total synthesis of natural compounds with biological activities, development of novel topoisomerase I and II inhibitors, antibacterial drug development.

Sergey Vyazovkin, Associate Professor (Chemistry); Analytical Chemistry. Thermophysical properties and reactions of polymeric, energetic, and pharmaceutical materials using a variety of analytical techniques including Infrared (IR) spectroscopy, Mass Spectrometry (MS), Thermogravimetric Analysis (TGA), Differential Scanning Calorimetry (DSC), Thermomechanical Analysis (TMA), Dynamic Mechanical Analysis (DMA), Polarized Light Microscopy (PLM). Kinetic analysis of thermal data plays the key role in our work. We develop and apply our original kinetic methodology known as "Model-free Kinetics".

Pengfei Wang, Assistant Professor (Chemistry); Organic Chemistry, Discovery and development of new methods and their application toward prodrug design and synthesis, carbohydrate chemistry, and synthesis of biologically important natural products. The main focus centers on the development of new reactions and methodologies which would lead to general, flexible and dependable approaches to various synthetic and medicinal targets.

Charles L. Watkins, Professor (Chemistry); Physical Inorganic Chemistry

Program Information

General Requirements

The graduate curricula in the Department of Chemistry are designed to ensure superior disciplinary quality and research competency in target research areas that UAB can uniquely offer. This department has an outstanding research active faculty that provides a very favorable faculty/student ratio to encourage close contacts between students and their faculty research advisors and provides opportunities for mentors to give personalized attention to the academic and research progress of each of their students.

All graduate students are required to pursue a graduate curriculum that provides the general knowledge-based foundation for the student's program through a series of six core curriculum courses (18 semester hours). All students are required to enroll in two Foundations Courses [CH 700, Foundations I (Analytical and Physical); CH 701, Foundations II (Organic and Inorganic)] and four additional courses that they may select to complete their course requirements. Graduate students also enroll in courses offered in the Basic Health Sciences and the Joint Material Sciences Programs to broaden their backgrounds in selective areas and greatly strengthen their ability to carry out interdisciplinary research. Students involved in interdisciplinary programs (pharmaceutical design, materials science, molecular biophysics, forensic science, etc.) may, with the approval of their Advisory Committee, make appropriate substitutions for some of the courses, i.e. Polymer/Materials Chemistry, Biochemistry, etc. A grade of B must be

earned in each of these courses for Admission to Candidacy in the Ph.D. program. Courses may be repeated once to raise the grade.

All graduate students are to demonstrate communication skills competencies. Adequate performance is required on the literature seminar, written responses to essay exams, dissertation defense, teaching, written publications, presentations at professional meetings, and/or enrollment in the Graduate School course series GRD 701 (Presentation and Discussion Skills), GRD 702 (Writing Up Research), and GRD 717 (Principles of scientific integrity). All incoming international graduate students will be required to take GRD 700 (Culture and speaking in the US as well as GRD 714 (Individualized Pronunciation and Accent Training). All graduate students are required to present a departmental literature seminar after their first year.

Students must select a research advisor after their first year and have a research committee in place by the end of their third semester. This selection occurs after the student has interviewed each graduate faculty member in the Department of Chemistry. The student and the major professor will recommend to the director of the graduate program in chemistry the composition of the graduate study committee.

Core Courses: CH 629/729, CH 631/731, CH 632/732, CH 633/733, CH 639/739, CH 642/742, CH 649/749, CH 659/759, CH 664/764, CH 669/769, CH 671/771, CH 689/789

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 nonthesis 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.

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 study committee. A written qualifying examination must be passed in the student's area of specialization. If failure occurs, only one repeat exam is allowed. A research proposal must be defended within 12 months of completion of the written qualifying examination. If failure occurs, one repeat defense is allowed. The student, having been admitted to candidacy and having completed an approved plan of research, will submit a dissertation to the Graduate School. This dissertation must be defended at an open meeting. **Additional Information**

NIBIB Supported T-32 Predoctoral Training Grant

National Institute of Biomedical Imaging and Bioengineering (NIBIB) has awarded an interdisciplinary predoctoral training grant to UAB that is entitled "Nanotechnology in Biosensors and Bioengineering". It is a five year program that started on September 1, 2007. Benefits to participating graduate students include: graduate stipends of \$25,000 per year, full tuition and health insurance, and a travel award of \$1,000 per year. The purpose of this grant is to implement a training program at the interfaces of physics, chemistry, materials science and engineering, and biomedical engineering that will reduce the time from discovery of a new tool in nanotechnology to its application in medical devices, tissue engineering, and biosensors for earliest detection of molecular signatures of disease.

For more information regarding this training program, visit
<http://www.uab.edu/cnmb/graduate/index.html>.

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
Graduate Catalog Description	http://main.uab.edu/show.asp?durki=24862

For detailed information, contact Dr. David E. Graves, Department of Chemistry Graduate Program Director, CHEM 201C, 1530 3rd Avenue South, Birmingham, AL 35294-1240.
Telephone 205-975-8094

E-mail dgraves@uab.edu
Web www.chem.uab.edu

Course Descriptions

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.

Chemistry (CH)

525. Physical Chemistry I for Graduate Study. Thermodynamics and chemical equilibria; and chemical kinetics. Prerequisites: MA 126, PH 202, CH 117. Fall.

526. Physical Chemistry II for Graduate Study. Quantum mechanics, chemical bonding, and molecular spectroscopy. Prerequisite: CH 525. Spring.

535. Organic Chemistry I for Graduate Study. Structure of organic compounds based on bonding, stereochemical, and physical properties. Fall, spring, summer.

537. Organic Chemistry II for Graduate Study. Practical and theoretical considerations of organic reactions; Introduction to spectroscopy. Prerequisite: CH 535. Fall, Spring, Summer.

540. Inorganic Chemistry I for Graduate Study. Chemical reactivity and descriptive chemistry in terms of structural and electronic parameters. Fall.

541. Transition Metal Chemistry. Atomic structure, chemical bonding characterization and reactivity of transition metal complexes. Prerequisite: CH 345, CH 326. Spring.

550. Analytical Chemistry I for Graduate Study. Analytical measurements, spectrophotometric and gravimetric analyses, chromatography, and chemical equilibrium. Spring.

555. Analytical Chemistry II for Graduate Study. General operating principles and quantitative applications of commonly used analytical instruments. Prerequisite: CH 550. Spring.

561. Biochemistry I: Introduction to biological macromolecules and chemistry and physical properties of component building blocks. Prerequisites: 237 and 355. Successful completion of CHEM 561 is a prerequisite for CHEM 562. Fall.

562. Biochemistry II. Continuation of biochemistry including molecular genetics (replication, transcription, and translation), metabolic pathways, control of gene expression. Prerequisite: 561. Spring.

563. Biochemistry Laboratory. Introduction to modern analytical techniques used for the isolation and characterization of biological macromolecules. Prerequisites: CH 355 and CH 461 and permission of instructor.

564. Physical Biochemistry Laboratory. Physical/analytical approaches toward determination of macromolecular structures, ligand binding, and enzymology. Prerequisites: CH 325, CH 355, and CH 461 or permission of instructor.

580. Polymer Chemistry I. (also MSE 530). Structure and properties of crystalline and amorphous polymers; polymer processing; correlation of polymer structure with processability and performance. Synthesis and characterization of polymers; polymerization reactions, kinetics, and mechanisms; polymer solution properties. Prerequisite: CH 237, 325, or MSE 254. Spring.

581. Polymer Chemistry II. Synthesis and characterization of polymers: polymerization reaction kinetics and mechanisms; polymer solution properties. Prerequisite: CH 580 and concurrent enrollment in CH 581L.

600. Foundations of Physical and Analytical Chemistry. Molecular thermodynamics and molecular reaction dynamics, chemical equilibrium and solubility in aqueous/organic solutions, and ligand binding to macromolecules in aqueous solution. Fall.

601. Foundations of Organic and Inorganic Chemistry. Organic – Bonding and structure, concerted pericyclic reactions, stereochemistry, effects of conformation, sterics and electronics on reactivity; and the study of reaction mechanisms with emphasis on nucleophilic substitution. Inorganic – Bonding and structure including basic molecular orbital theory, the solid state, Lewis acid-base chemistry, coordination chemistry, reaction mechanisms for transition metal complexes and characterization of transition metal complexes.

602. Principles of Chemical Instruction. Responsibilities of laboratory instructors, safety regulations, grading, teaching styles and formats, and instructional objectives. Prerequisite: Permission of instructor. Fall. 1 hour.

610. Laboratory Experiences in Chemistry I. Application of simple experiments to high school science programs.

611. Laboratory Experiences in Chemistry II. Continuation of CH 602.

612. Polymer Chemistry for Teachers. Lecture and laboratory experiences focusing on natural and synthetic polymers. Morning lectures by polymer chemists with afternoon labs where polymers are synthesized and studied. Emphasis is on practical application and new developments in polymer chemistry. Experiments are suitable for high school science programs.

613. Introductory Organic Chemistry for Teachers. 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.

614. Introductory Biochemistry for Teachers. Lecture series covering carbohydrates, lipids, and proteins. Emphasis given to practical applications and relationship between chemistry and biology. Aspects of nutrition are discussed.

615. Introductory Biochemistry for Teachers II. Lecture series covering vitamins, minerals, enzymes, biochemical energy and metabolism. Strong connections between chemistry and biology. Practical applications are emphasized.

616. Chemical Demonstrations. A laboratory-based course exploring the teaching potential of selected chemical reactions. Teachers perform at least 50 demonstrations in the laboratory and share ways they can use these in their own classes. Emphasis on facilitating learning of chemistry.

617. Chemical Demonstrations II. At least 50 demonstrations will be performed. Focus is on safe, practical and effective experiments suitable for high school students.

619. Special Topics in Chemical Education. Topics determined by interest of students and faculty.

625. Molecular Structure and Spectroscopy. 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.

629. Special Topics in Physical Chemistry. Topics determined by interest of students and faculty. Typical are computational chemistry, molecular spectroscopy, nuclear magnetic resonance. Prerequisite: CH 600 or permission of Instructor. 1 – 3 hours.

630. Physical Organic Chemistry. Localized and delocalized chemical bonds, stereochemistry, acidity and basicity, determining organic mechanisms and structure. Fall.

631. Organic Reactions and Their Mechanisms. Nucleophilic and electrophilic substitution, free radical substitutions, additions to carbon-carbon and carbon-hetero multiple bonds, elimination reactions. Prerequisite: CH 730. Spring.

632. Organic Reactions and Synthesis. Strategy of synthesis, carbon skeletal assembly, selective functional group interconversion, blocking groups, stereochemical control. Prerequisite: CH 731. Spring.

633. Reactive Intermediates and Conservation of Bonding. Behavior of organic molecules in static and reactive situations. Prerequisite: CH 731 or permission of instructor. Spring.

639. Special Topics in Organic Chemistry. Topics determined by interest of students and faculty. Prerequisite: CH 327. 1-3 hours.

640. Bonding and Structure in Inorganic Compounds. Advanced treatment of bonding in main group and transition metal compounds, and a study of its relationship to the properties of compounds. Prerequisite: CH 540 or permission of instructor. Spring.

642. Organometallic Chemistry and Catalysis. Study of transition metal organometallic compounds and their applications as homogeneous catalysts for organic and polymer syntheses. Prerequisite: CH 640 or 740 or permission of instructor. Summer (alternate years).

649. Special Topics in Inorganic Chemistry. Topics determined by interest of students and faculty. Prerequisite: Permission of instructor. 1-3 hours.

650. Chemometrics. Introduction to basic data analysis techniques that include testing hypotheses, establishing tendencies and correlations, experimental design, etc. The course is designed to provide a

support to a research chemist in effectively solving everyday problems associated with production and interpretation of experimental data. Prerequisite: Permission of instructor.

659. Thermal processes and methods. 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. Prerequisite: permission of instructor.

664. Biophysical Chemistry. 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. Prerequisite: CH 325 or 461. Spring.

669. Special Topics in Biochemistry. Detailed consideration of areas of special interest. Prerequisite: CH 462.

670. Chemical Literature. Use of on-line literature and development of searching techniques.

671. Medicinal Chemistry & Drug Discovery. 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.

689. Special Topics in Polymer Chemistry. Detailed consideration of areas of special interests in polymer chemistry. Prerequisite: CH 580, 581.

691. Seminar. Seminars on current topics in chemical research. Pass/Fail. 1 hour.

692. Seminar Presentation. Seminar given by graduate students on current topics in chemical research. 2 hours.

698. Graduate Research. Prerequisite: Permission of graduate faculty member. Pass/Fail. 1-8 hours.

699. M.S. Thesis Research. Prerequisites: Admission to candidacy and permission of graduate faculty member. 1-8 hours.

700. Foundations of Physical and Analytical Chemistry. Molecular thermodynamics and molecular reaction dynamics, chemical equilibrium and solubility in aqueous/organic solutions, and ligand binding to macromolecules in aqueous solution. Fall.

701. Foundations of Organic and Inorganic Chemistry. Organic – Bonding and structure, concerted pericyclic reactions, stereochemistry, effects of conformation, sterics and electronics on reactivity; and the study of reaction mechanisms with emphasis on nucleophilic substitution. Inorganic – Bonding and structure including basic molecular orbital theory, the solid state, Lewis acid-base chemistry, coordination chemistry, reaction mechanisms for transition metal complexes and characterization of transition metal complexes.

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730. Physical Organic Chemistry. Localized and delocalized chemical bonds, stereochemistry, acidity and basicity, determining organic mechanisms and structure. Fall.

731. Organic Reactions and Their Mechanisms. Nucleophilic and electrophilic substitution, free radical substitutions, additions to carbon-carbon and carbon-hetero multiple bonds, elimination reactions. Prerequisite: CH 730. Spring.

732. Organic Reactions and Synthesis. Strategy of synthesis, carbon skeletal assembly, selective functional group interconversion, blocking groups, stereochemical control. Prerequisite: CH 731. Spring.

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742. Organometallic Chemistry and Catalysis. Study of transition metal organometallic compounds and their applications as homogeneous catalysts for organic and polymer syntheses. Prerequisite: CH 640 or 740 or permission of instructor. Summer (alternate years).

749. Special Topics in Inorganic Chemistry. Topics determined by interest of students and faculty. Prerequisite: Permission of instructor. 1-3 hours.

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791. Seminar. Seminars on current topics in chemical research. Pass/Fail. 1 hour.

792. Seminar Presentation. Seminar given by graduate students on current topics in chemical research. 2 hours.

798. Nondissertation Research. Prerequisite: Permission of graduate faculty member. Pass/Fail. 1-8 hours.

799. Dissertation Research. Prerequisite: Admission to candidacy and permission of graduate faculty member. 1-8 hours.

Communication Management (M.A.)

Degree Offered: M.A.

Director: Mark Hickson, PhD

Phone: (205) 934-3877

E-mail: hickson@uab.edu

Web site: cs.hum.uab.edu

Faculty

Jonathan Amsbary, Associate Professor (Communication Studies)

Mark Hickson, Professor/Program Director (Communication Studies)

Eduardo Neiva, Professor (Communication Studies)

Larry Powell, Professor (Communication Studies)

Virginia Peck Richmond, Professor (Communication Studies)

M.S. Program

The master's degree program in communication management is targeted at professionals in the fields of public relations, print and broadcast journalism, and other related areas. Students can explore practical and theoretical applications in professional communication fields. Classes are held primarily or exclusively at night and on the weekends to benefit working students. The program will award students with a master's degree in communication managements. Students in the program will need to complete 36 semester hours of graduate study. The range of courses are designed to allow students to customize their studies according to their career goals.

Additional Information

Deadline for Entry Term(s):	Every semester
Deadline for All Application Materials to be in the Graduate School Office:	Two months before term begins
Number of Evaluation Forms Required:	3 from college professors
Entrance Tests	GRE or MAT (TOEFL and TWE for international applicants whose native language is not English.)

For additional information, contact Dr. Mark Hickson, Program Director, HHB, Room 341, 1401 University Boulevard, Birmingham, AL 35294-1152.

Telephone 205-934-3877

E-mail hickson@uab.edu

Web <http://www.uab.edu/communication/graduate-program>

Course Descriptions

Communication Management (CM)

Unless otherwise noted, all courses are for 3 semester hours of credit. Courses numbers preceded with an asterisk indicate courses that can be repeated for credit, with stated stipulations.

601. Foundations of Communication Management. Development of communication models, relationships between models and research, examination of functions of models and their impact on human communication in various media.

602. Source Credibility. Theories of ethos, dynamics of credibility in public speaking, organizational, interpersonal, print, and broadcasting contexts. Measures of credibility and methods for constructing credibility.

603. Message Construction. 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.

604. Audience Analysis. Analysis of the audience and its place in the communication model. Includes needs and gratifications from various media as well as how messages and feedback are interpreted.

605. Communication Effects. Effects of communication, especially through mass media, as a result of messages transmitted. Topics include violence, persuasion, and sexuality.

607. Seminar in Applied Human Communication. Topics include interpersonal communication, small group communication, organizational communication, and political communication.

609. Special Topics in Communibiology. Communication personality traits are the focus of this class

611. Seminar in Organizational Communication. The study of communication theory, practice and research in the organizational context.

612. Instructional Communication. Makes theory and research accessible to students who want to learn more about teaching, communication and learning.

613. Nonverbal Communication. The study of theory, research and application of communication in various nonverbal contexts.

614. Seminar in Political Communication. The application of communication theory and research as they apply to political movements.

615. Intercultural Communication. The study of verbal and nonverbal communication theory and research as it applies to various cultural and intercultural contexts.

616. Seminar in Health Communication. The study of communication theory and research as is applies to the various relationships within the healthcare system.

617. Training and Development. Applying communication theory and research into practical contexts.

618. Independent Study. Topics of mutual interest to student and faculty member. Prerequisites: 15 hours in CM courses and written permission of instructor prior to registration.

619. Communication and the Law. An examination of various legal issues as they apply to communication behaviors and how communication theory and research impact the practice of law.

691. Seminar in Communication Management. Theory and research as they apply to a variety of subjects of interest to both the instructor and students. Special emphasis will be placed on developing issues addressed in other classes.

694. Quantitative Communication Research. Study of human communication from a quantitative perspective, including experimental design and survey methods using parametric and non-parametric statistics.

696. Qualitative Communication Research. Study of communication theory from a qualitative perspective. Historical/critical, participant-observations, and various data gathering methods and models explored from theoretical and practical point of view.

697. Internship. Prerequisite: 18 graduate hours in CM and permission of graduate director.

698. Master's Applied Project. Development of project as requisite for obtaining the MA in Communication Management.

699. Thesis Research. Development of thesis as requisite for obtaining the MA in Communication Management.

Computer and Information Sciences (Ph.D., M.S.)

Degree Offered: Ph.D., M.S.

Director: *Dr. Purushotham Bangalore*

Phone: (205) 934-8604

E-mail: puri@uab.edu

Web site: www.cis.uab.edu/graduate/

Faculty

Purushotham V. Bangalore, Associate Professor and Graduate Program Director (Computer and Information Sciences); Grid Computing, High Performance Computing, Bioinformatics

Barrett R. Bryant, Professor and Associate Chair (Computer and Information Sciences); Programming Languages, Compiler Design, Formal Methods for Software Engineering

Robert M. Hyatt, Associate Professor (Computer and Information Sciences); Computer Chess, Parallel Architectures and Software

John K. Johnstone, Associate Professor (Computer and Information Sciences); Shape Modeling, Biomedical Modeling, Computer Graphics, Computer Vision

Anthony Skjellum, Professor and Chair (Computer and Information Sciences); Parallel and High Performance Computing, Bioinformatics

Kenneth R. Sloan, Associate Professor (Computer and Information Sciences); Computer Graphics, Anatomy of the Retina

Thamar Solorio, Assistant Professor (Computer and Information Sciences); Natural Language Processing, Artificial Intelligence

Alan P. Sprague, Associate Professor (Computer and Information Sciences); Data Mining, Graph Algorithms, Bioinformatics

Chengcui Zhang, Assistant Professor (Computer and Information Sciences); Databases, Data Mining

Program Information

The field of computer and information sciences 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. Program

The M.S. program requires 30 semester hours of coursework and a thesis (Plan I) or 36 semester hours of coursework (Plan II). Specializations are available in bioinformatics, computer graphics, distributed computing and software engineering.

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.

Additional Information

Deadline for Entry Term(s):

February 1 for Fall; September 1 for Spring.

Contact Information

For detailed information, after first visiting the website below for basic information including application guidelines and prerequisites, contact Dr. Purushotham Bangalore, Associate Professor and Graduate Program Director, UAB Department of Computer and Information Sciences, Campbell Hall, Room 130, 1300 University Boulevard, Birmingham, Alabama 35294-1170.

Telephone 205-934-8604

E-mail puri@uab.edu

Web <http://www.cis.uab.edu/graduate/>

Course Descriptions

Computer and Information Sciences (CS)

All courses require permission of the student's academic advisor. All 500-level and 600-level courses carry 3 semester hours of credit, unless otherwise specified. All 700-level courses carry 2 or 3 hours of credit, unless otherwise specified.

501. Programming Languages. Formal syntax and semantics; compilers and interpreters; virtual machines; representation of data types; sequence and data control; type checking; run-time storage management; functional, logic, and object-oriented programming paradigms; concurrency and multi-threading. Prerequisites: Graduate Standing. 3 hours.

510. Database Management Systems. Relational model of databases, structured query language, normalized structure of database management systems based on relational model, and security and integrity of databases. Prerequisite: Graduate Standing. 3 hours.

520. Software Engineering. 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. Prerequisite: Graduate Standing. 3 hours.

533. Operating Systems. 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. Prerequisites: Graduate Standing. 3 hours.

534. Internetworking with TCP/IP. Underlying network technology. 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. Prerequisites: Graduate Standing. 3 hours.

535. Network Programming. Remote procedure call and client-server mechanisms. Protocol definition and compilation; client and server stubs, application code; transport independence; multiple client and server systems. Applications, e.g., remote database query and update, image filtering and archiving; systems programming, and file systems contexts. Prerequisite: Graduate Standing. 3 hours.

536. Computer Network Security. Conventional and public-key cryptography. Message encryption and authentication. Secure communication between computers in a hostile environment, including E-mail (PGP), virtual private networks (IPSec) and the World Wide Web (SSL). Firewalls. Mandatory weekly linux-based lab. Prerequisite: Graduate Standing. 3 hours.

550. Automata and Formal Language Theory. Finite-state automata and regular expressions, context-free grammars and pushdown automata, Turing machines, computability and decidability, and complexity classes. Prerequisites: Graduate Standing. 3 hours.

555. Probability and Statistics in Computer Science. 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. 3 hours

591. Special Topics. Prerequisites: Permission of Instructor. 1-3 hours.

594. Special Topics. Prerequisites: Permission of Instructor. 1-3 hour.

597. Competitive Programming Techniques. This course will help students to be more competitive in the ACM programming contest by exploring numerous problem solving techniques and algorithms not covered in the traditional curriculum. Prerequisites: Graduate Standing. 1 hour.

598. Practical Work Experience. Credit for Working in the computer science field. Does not count toward M.S. degree. Prerequisites: Permission of Instructor. 1-3 hours.

600. Formal Semantics of Programming Languages. Context-sensitive and semantic aspects of programming languages, denotational semantics, mathematical foundations. Prerequisite: Graduate Standing. 3 hours.

601. Program Verification. Proving properties of programs, termination and correctness, computability and decidability, role of formal methods in software design. Prerequisite: Graduate Standing. 3 hours.

602. Compiler Design I. Lexical and syntactical scan, semantics, code generation and optimization, dataflow analysis, parallelizing compilers, automatic compiler generation. Prerequisite: CS 505 or equivalent. 3 hours.

603. Compiler Design II. Advanced topics in compiler design. Prerequisite: Graduate Standing. 3 hours.

608. Programming Languages Seminar. Pass/Fail. Prerequisite: Permission of Instructor. 1 hour.

610. Database Systems I. 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. Prerequisites: CS 510 or equivalent. 3 hours.

611. Database Systems II. Relational, hierarchical, and network models; object-oriented databases, knowledge-based systems; security issues, concurrency control and distributed databases, query optimization; advanced topics. Prerequisites: CS 610 or equivalent. 3 hours.

612. Knowledge-Base Systems. Logic model for deductive databases, top-down and bottom-up evaluation, conjunctive and disjunctive queries, recursion, query optimization, universal relation model. Prerequisites: CS 610 or equivalent. 3 hours.

613. Object-Oriented Database Systems. Object data model, object-oriented query languages and database architecture, schema evolution, integration with non-object-oriented models, query optimization. Prerequisites: CS 610 or equivalent. 3 hours.

614. Distributed Database Systems. Distributed DBMS architecture, query decomposition and data localization, distributed query optimization, transaction management, concurrency control, multidatabase systems. Prerequisites: CS 610 or equivalent. 3 hours.

615. Multimedia Databases. 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. Prerequisites: CS 510. 3 hours.

618. Database System Seminar. Pass/Fail. Prerequisites: CS 610 or equivalent. 1 hour.

620. Advanced Software Engineering. Advanced topics in software design, including: Software modularization, design patterns, formal methods, and software testing. Prerequisites: CS 520 or equivalent. 3 hours.

622. Reflective and Adaptive Systems. 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). Prerequisites: Graduate Standing. 3 hours.

624. Formal Specification of Software Systems. Formal methods for software requirements specification, including VDM, Z, and object-oriented extensions; the relationship among formal requirements, design, and implementation. Prerequisites: CS 501. 3 hours.

625. Metrics and Performance. Metrics in systems analysis, development, and performance evaluation; querying models; capacity planning for Web system; computation via spreadsheets, discrete simulation, etc. Prerequisites: Graduate Standing. 3 hours.

628. Software Engineering Seminar. This is a special topics class that meets once a week to study new research ideas emerging in the area of software engineering. Pass/Fail. Prerequisites: CS 520. 1 hour.

629. Software Engineering Research Project. This is a project-based experimental research course affiliated with the Masters Specialization in Software Engineering. Can only be taken as part of a specialization in Software Engineering. Prerequisites: Permission of Instructor. 1-3 hours.

630. Computer Systems. 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. Prerequisites: Graduate Standing. 3 hours.

631. Distributed Computing. Object-oriented distributed systems design, distributed software architecture, data and resource access, communication, client-server computing, web technologies, enterprise technologies. Prerequisites: Graduate Standing. 3 hours.

632. Parallel Computing. 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. Prerequisites: Graduate Standing. 3 hours.

633. Grid Computing. Motivation for developing and using Grid Computing, the evolution of Grid Computing, and relationship between Grid Computing and other types of computing such as Cluster Computing, Distributed Computing, Internet Computing, and Peer-to-Peer Computing. Study technologies and architectures used to develop Grids. Prerequisites: CS 631 & CS 632. 3 hours.

636. Computer Security. Study of computer security including assurance, authorization, authentication, key distribution, encryption, threats including phishing and key logging, and related distributed computing issues. Theory and practical applications. Prerequisite: Graduate Standing. 3 hours.

638A. Computer Systems Seminar. Lectures & discussion on advanced topics in Computer Systems. Prerequisite: Permission of Instructor/ 1 hour.

638B. Computer Systems Seminar. Lectures & discussion on advanced topics in Computer Systems. Prerequisite: Permission of Instructor/ 1 hour.

639. Distributed Computing Research Project. Project based course using distributed parallel computing techniques. Can only be taken as part of a specialization in Distributed Computing. 1-3 hours.

640. Bioinformatics I. Introduction to computational methodologies in bioinformatics. Prerequisites: Graduate Standing. 3 hours.

641. Bioinformatics II. Introduction to computational methodologies in bioinformatics. Prerequisites: CS 640. 3 hours.

647. **Biomedical Modeling.** Modeling from biomedical datasets. Construction and analysis of anatomical models. Prerequisites: Graduate standing. 3 hours.

648. **Bioinformatics Seminar.** Pass/Fail. Prerequisites: Permission of Instructor. 1 hour.

649. **Bioinformatics Research Project.** Can only be taken as part of a specialization in Bioinformatics. Pass/Fail. Prerequisites: Permission of Instructor. 1-3 hours.

650. **Automata, Languages, and Computation.** Formal grammars and automata, Turing machines, computability and decidability, computational complexity, intractability. Prerequisites: Graduate Standing. 3 hours.

651. **Formal Language Theory.** Parsing and translation theory, formal syntax, proof properties and complexity measures. Prerequisites: Graduate Standing. 3 hours.

652. **Design and Analysis of Algorithms.** Algorithms for bioinformatics applications, especially string matching algorithms. Also, traditional algorithmic techniques, such as greedy algorithms, dynamic programming, and branch and bound. Prerequisites: Graduate Standing. 3 hours.

653. **Computational Geometry.** Basic methods and data structures, geometric searching, convex hulls, proximity, intersections. Prerequisites: Graduate Standing. 3 hours.

658. **Theoretical Foundations Seminar.** Pass/Fail. Prerequisites: Permission of Instructor. 1 hour.

660. **Principles of Artificial Intelligence.** Programming methodologies, logic foundations, natural language applications, expert systems. Prerequisites: Graduate Standing. 3 hours.

661. **Expert Systems.** Concepts and architectures, tools, reasoning, evaluations, selected examples. Prerequisites: Graduate Standing. 3 hours.

662. **Natural Language Processing.** Syntax, semantics, ATNs, logic grammars, language and memory. Prerequisites: Graduate Standing. 3 hours.

663. **Knowledge Discovery & Data Mining.** Techniques used in data mining (such as frequent sets and association rules, decision trees, Bayesian networks, classification, clustering), algorithms underlying these techniques, and applications. Prerequisites: Graduate Standing. 3 hours.

664. **Knowledge Representation.** Logic, production systems, semantic nets, frames, multiple representational systems. Prerequisites: Graduate Standing. 3 hours.

665. **Neural Networks.** Theoretical foundations, associative memory, pattern processing, biological neural nets. Prerequisites: Graduate Standing. 3 hours.

668. **Artificial Intelligence Seminar.** Pass/Fail. Prerequisites: Permission of Instructor. 1 hour.

670. **Computer Graphics.** Graphics architectures, geometric transforms, 3-D, object models, shading, intensity, hidden elements, color, advanced topics. Prerequisites: Graduate Standing or Permission of Instructor. 3 hours.

671. **Shape Design.** Shape modeling, including meshes, Bezier curves and surfaces, B-splines, subdivision curves and surfaces, implicit curves and surfaces. Algorithms including interpolation, intersection. Prerequisites: Graduate Standing. 3 hours.

672. **Motion Design.** Motion design for computer graphics and robotics. Orientation control, quaternion splines, camera control, motion planning, collision detection, swept surfaces, visibility analysis, tangent space analysis. Prerequisites: Graduate Standing. 3 hours.

673. **Computer Vision Systems.** Image understanding feature extraction, domain-specific knowledge for high-level vision. Prerequisites: Graduate Standing. 3 hours.

675. **Computer Visualization.** Advanced Computer Graphics techniques aimed at "Scientific Visualization" applications. Prerequisites: Graduate Standing. 3 hours.

678. **Graphics and Image Processing Seminar.** Pass/Fail. Prerequisites: Permission of Instructor. 1 hour.

679. **Computer Graphics Research Project.** Can only be taken as part of a specialization in Computer Graphics. Pass/Fail. Prerequisites: Permission of Instructor. 3 hours.

680. **Numerical Computing.** Matrix computations and matrix analysis, including solution of linear systems, least squares, spectral analysis, and singular value decomposition. Applications such as principal component analysis and PageRank. Prerequisites: CIS graduate standing and permission of instructor. 3 hours.

681. **Simulation Models and Animations.** 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. Prerequisites: Graduate Standing. 3 hours.

682. **Simulation Methodology and Applications.** Combined continuous and discrete simulation, simulation theory, modeling environments. Prerequisites: Graduate Standing. 3 hours.

688. **Geometric Modeling Seminar.** Prerequisites: Permission of Instructor. 1 hour.

690. **Special Topics.** Prerequisites: Permission of Instructor. 1-3 hours.

691. **Special Topics.** Prerequisites: Permission of Instructor. 1-3 hours.

692. **Special Topics.** Prerequisites: Permission of Instructor. 1-3 hours.

693. **Special Topics.** Prerequisites: Permission of Instructor. 1-3 hours.

694. **Special Topics.** Prerequisites: Permission of Instructor. 1-3 hours.

697. **Directed Readings.** Prerequisites: Permission of Instructor and Graduate Program Director. 1-3, 6 hours.

698. **Masters Plan II.** (Plan II) Pass/Fail. Prerequisites: Permission of Graduate Program Director. 2, 3, 5, 6, 9 hours.

699. **Masters Thesis Research.** Pass/Fail. Prerequisite: Admission to candidacy. 1-6 hours.

700. **Topics in Programming Language Semantics.** Prerequisites: Graduate Standing. 2-3 hours.

701. **Topics in Program Verification.** Prerequisites: Graduate Standing. 2-3 hours.

702. **Topics in Compiler Design.** Prerequisites: Graduate Standing. 2-3 hours.

703. **Topics in Compiler Design.** Prerequisites: Graduate Standing. 2-3 hours.

708. **Topics in Programming Languages Seminar.** Prerequisites: Graduate Standing. 2-3 hours.
710. **Topics in Database Systems.** Prerequisites: Graduate Standing . 2-3 hours.
711. **Topics in Database Systems.** Prerequisites: Graduate Standing. 2-3 hours.
712. **Topics in Knowledge-Base Systems.** Prerequisites: Graduate Standing. 2-3 hours.
713. **Topics in Object-Oriented Database Systems.** Prerequisites: Graduate Standing. 2-3 hours.
714. **Topics in Distributed Database Systems.** Prerequisites: Graduate Standing. 2-3 hours.
715. **Topics in Multimedia Database.** Prerequisites: Graduate Standing. 2-3 hours.
718. **Database Systems Seminar.** Prerequisites: Graduate Standing. 2-3 hours.
720. **Topics in Advanced Software Engineering. Prerequisites: Graduate Standing. 2-3 Hours.**
722. **Topics in Reflective and Adaptive Systems.** Prerequisites: Graduate Standing. 2-3 Hours.
724. **Topics in Formal Specification of Software Systems.** Prerequisites: Graduate Standing. 2-3 hours.
725. **Topics in Metrics & Performance.** Prerequisites: Graduate Standing. 2-3 hours.
728. **Software Engineering Seminar.** Prerequisites: Graduate Standing. 2-3 hours.
730. **Topics in Computer Systems.** Prerequisites: Graduate Standing. 2-3 hours.
731. **Topics in Distributed Computing.** Prerequisites: Graduate Standing. 2-3 hours.
732. **Topics in Parallel Computing.** Prerequisites: Graduate Standing. 2-3 hours.
733. **Topics in Grid Computing.** Prerequisites: Graduate Standing. 2-3 hours.
736. **Topics in Computer Security.** Prerequisites: Graduate Standing. 2-3 hours.
- 738A. **Computer Systems Seminar.** Prerequisites: Graduate Standing. 2-3 hours.
- 738B. **Computer Systems Seminar.** Prerequisites: Graduate Standing. 2-3 hours.
740. **Topics in Bioinformatics.** Prerequisites: Graduate Standing. 2-3 hours.
741. **Topics in Bioinformatics.** Prerequisites: Graduate Standing. 2-3 hours.
747. **Topics in Biomedical Modeling.** Prerequisites: Graduate Standing. 2-3 hours.
748. **Topics in Bioinformatics Seminar.** Prerequisites: Graduate Standing. 2-3 hours.
750. **Topics in Automata Theory.** Prerequisites: Graduate Standing. 2-3 hours.
751. **Topics in Formal Language Theory.** Prerequisites: Graduate Standing. 2-3 hours.
752. **Topics in Design and Analysis of Algorithms.** Prerequisites: Graduate Standing. 2-3 hours.

753. **Topics in Computational Geometry.** Prerequisites: Graduate Standing. 2-3 hours.
758. **Theoretical Foundations Seminar.** Prerequisites: Graduate Standing. 2-3 hours.
760. **Topics in Artificial Intelligence.** Prerequisites: Graduate Standing. 2-3 hours.
761. **Topics in Expert Systems.** Prerequisites: Graduate Standing. 2-3 hours.
762. **Topics in Natural Language Processing.** Prerequisites: Graduate Standing. 2-3 hours.
763. **Topics in Knowledge Discovery & Data Mining.** Prerequisites: Graduate Standing. 2-3 hours.
764. **Topics in Knowledge Representation.** Prerequisites: Graduate Standing. 2-3 hours.
765. **Topics in Neural Networks.** Prerequisites: Graduate Standing. 2-3 hours.
768. **Artificial Intelligence Seminar.** Prerequisites: Graduate Standing. 2-3 hours.
770. **Topics in Computer Graphics.** Prerequisites: Graduate Standing. 2-3 hours.
771. **Topics in Shape Design.** Prerequisites: Graduate Standing. 2-3 hours.
772. **Topics in Motion Design.** Prerequisites: Graduate Standing. 2-3 hours.
773. **Topics in Computer Vision.** Prerequisites: Graduate Standing. 2-3 hours.
775. **Topics in Computer Visualization.** Prerequisites: Graduate Standing. 2-3 hours.
778. **Graphics and Image Processing Seminar.** Prerequisites: Graduate Standing. 2-3 hours.
780. **Topics in Numerical Computing Foundations.** Prerequisites: Graduate Standing. 2-3 hours.
781. **Topics in Simulation Models and Animations.** Prerequisites: Graduate Standing. 2-3 hours.
782. **Topics in Simulation, Methodology, and Application.** Prerequisites: Graduate Standing. 2-3 hours.
788. **Topics in Geometric Modeling Seminar.** Prerequisites: Graduate Standing. 2-3 hours.
790. **Special Topics.** Prerequisites: Graduate Standing. 2-3 hours.
791. **Special Topics.** Prerequisites: Graduate Standing. 2-3 hours.
792. **Special Topics.** Prerequisites: Graduate Standing. 2-3 hours.
793. **Special Topics.** Prerequisites: Graduate Standing. 2-3 hours.
794. **Special Topics.** Prerequisites: Graduate Standing. 2-3 hours.
796. **Directed Readings and Research.** Prerequisites: Permission of Instructor. 1-6 hours.
799. **Dissertation Research.** Pass/Fail. Prerequisite: Admission to candidacy. 1-6, 9 hours

Computer Forensics and Security Management (MSCFSM)

Program Contact Information

Program Co-Directors:

Dr. Anthony Skjellum
Department of Computer and Information Sciences
CH116
1530 3rd Ave South
Birmingham, AL 35294-1170

Dr. John Sloan
Department of Justice Sciences
UBOB 210
1530 3rd Ave South
Birmingham, AL 35294-4562

Dr. Molly Wasko
Department of Management, Information Systems, and Quantitative Methods
BEC 319
1530 3rd Ave South
Birmingham, AL 35294-4460

Program Information

The Master of Science in Computer Forensics and Security Management (MSCFSM) is an interdisciplinary professional/practice graduate program involving faculty from the Departments of Computer & Information Sciences, Justice Sciences, Management, Information Systems, and Quantitative Methods, and Accounting & Finance. The program is designed to prepare graduate students with backgrounds in criminal justice, computer and information sciences, information systems, information technology, and forensic accounting to practice in the fields of computer forensics and security management including information security and forensic accounting. Further, the program is intended to develop skills, including familiarity with industry practices, innovative methods, critical thinking, and problem solving crucial for competitiveness and success in entry- and (depending on experience), advanced-level positions in the areas of computer forensics, information security management, and forensic accounting. Further, the program is intended to increase the pipeline of prospective, high-quality, entry- and advanced level employees involved with protecting physical and virtual systems, vital to the U.S., whose incapacitation or destruction would have a debilitating effect on national security, the nation's economic system. The program also seeks to provide to current employees in the public and private sectors an opportunity to obtain advanced-level, high-quality training in the core areas of computer forensics, information security management, and forensic accounting, to facilitate career advancement.

The program is modeled after traditional MBA programs, in which students are introduced to various aspects of business and then allowed to choose a specialization or concentration. In the proposed program, students are introduced to various aspects of computer forensics, cybercrime, information security, and forensic accounting and are then provided the option of pursuing a specialization in either computer forensics or information security management. Students are required to complete a field practicum (internship) with an appropriate public or private sector agency or organization. Currently, the Department of Justice Sciences has internship arrangements for undergraduate and graduate students with approximately 25-30 public and private sector agencies, including several agencies for which internship opportunities would be tied directly to this program. Included here are the Alabama Department of Public Safety's Alabama Bureau of Investigation and Fusion Center (located in Montgomery); the Jefferson County District Attorney's Office; the Birmingham Field Offices of the Federal Bureau of Investigation (FBI) and the United States Secret Service (USSS); and the National Computer Forensics Institute (located in nearby Hoover, AL) which is sponsored by the USSS. Local companies

with which internships are likely include Regions Bank, Energen Corporation, and Alabama Power, among others.

Faculty

Anthony Barnard, Professor (Computer and Information Sciences), Networks and Network Security;

John Grimes, Assistant Professor (Justice Sciences), Cyber-Intelligence, Open-Source Intelligence, Criminal Law and Procedure

Allen Johnston, Associate Professor (Management, Information Systems, and Quantitative Methods), Information Assurance and Computer Security; Privacy

Julio Rivera, Associate Professor (Accounting and Finance), Forensic Accounting, IT Auditing; Fraud

Tommie Singleton, Associate Professor (Accounting and Finance), Forensic Accounting; Information Technology Audits; Fraud

Anthony Skjellum, Professor and Chair, Co-Program Director (Computer and Information Sciences), High-Performance Computing; Information Security; Cybercrime

John Sloan, Professor and Chair, Co-Program Director (Justice Sciences), Ethics; Cybercrime and Victimization; Research Methods

Thamar Solorio, Assistant Professor (Computer and Information Sciences), Natural Language Processing; Cybercrime

Gary Warner, Instructor and Director of Research in Computer Forensics (Computer and Information Sciences/Justice Sciences), Computer Forensics; Cybercrime Investigation; Information Security

Molly Wasko, Associate Professor and Chair, Co-Program Director (Management, Information Systems, and Quantitative Methods),

Sallie Wright, Instructor (Information Technology) Information Assurance and Security

Admission Requirements

Students accepted into the program will have graduated, or anticipate graduating, with a baccalaureate degree from a regionally accredited college or university or from a recognized university abroad. Most students accepted into the program will have achieved a minimum overall undergraduate grade point average (GPA) of 3.0 on a 4.0 scale and will have earned a combined score of 1100 or higher on the verbal and quantitative sections of the Graduate Record Examination (GRE) or a total score of 550 or higher on the Graduate Management Aptitude Test (GMAT). An Admissions Committee consisting of the Program Directors and a minimum of 2 affiliated faculty members will screen applicants and make recommendations to the UAB Graduate School for admission into the program.

Students seeking admission to the program will be accepted from undergraduate programs including criminal justice, computer science, electrical and computer engineering, MIS, IT, business, accounting, as well as other science and social science fields. Students seeking admission to the program, regardless of specific undergraduate preparation, will have had formal exposure to the core areas of computer forensics – including cybercrime and its investigation; IT auditing/forensic accounting; fundamentals of computer and Internet literacy, probability and statistics, computer programming, and networking, logic, and discrete mathematics/logic, and information security management. Students who do not have requisite backgrounds but who meet other admission requirements will be admitted on a contingency basis and be required to take a series of prerequisite courses – potentially including courses in computer programming, accounting, and law – that allow them to gain the necessary background to be successful in the program.

Degree Requirements

A total of 36 semester hours are required for the degree, including 24 hours of required courses and 12 hours of electives in one of two tracks: Cybercrime and Computer Forensics or Fraud Examination.

Students are also required to complete a field practicum.

Course Descriptions

AC572 - Forensic Accounting & Information Technology Auditing. Key legal principles and courtroom procedures relevant to forensic accounting, and survey of related topics - criminology theories, evidence management, and litigation services. *Hours Credit: 3.*

AC573 - Fraud Examination. Forensic accounting concepts with a primary focus on occupational fraud and abuse - its origins, perpetration, prevention, and detection. Course covers some of the material found on Certified Fraud Examiner (CFE) certification exam. *Hours Credit: 3. Prerequisite: AC572*

AC574 - Fraud Examination Practicum. Work-related experience in a private, public, or government organization enhancing the applications of forensic accounting theories and concepts. *Hours Credit: 3. Prerequisite: AC573.*

CS514 - Digital Documents, Security & Intellectual Property. Concepts in digital documents, provenance, digital forgery, steganography, and the digital millennium copyright act are key aspects of this course. *Hours Credit: 3.*

CS516 - Organizational Information Assurance. Information assurance in organizational settings, including prevention, detection, response to threats, and subdomains and their interactions. *Hours Credit: 3.*

CS517/JS515 - Investigating Online Crime. Introduction to cyber-investigative techniques involving focused analysis of email and websites and examination of legal processes and preparation of digital evidence. *Hours Credit: 3.*

CS518 - Computer Forensics Practicum. Internship placement with law enforcement agency or corporate partner-. *Hours Credit: 3-6.*

CS534 - Internetworking & Intranets. Underlying network technology including 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, email, network address translation and firewalls. Weekly Linux-based lab. *Hours Credit: 3.*

CS536 - Network Security. Conventional and public-key cryptography. Message encryption and authentication. Secure communication between computers in a hostile environment, including E-mail (PGP), virtual private networks (IPSec) and the World Wide Web (SSL). Mandatory weekly Linux-based lab. *Hours Credit: 3.*

CS537 - Cybercrime & Forensics. Overview of all aspects of media forensics including analysis of character encoding, file formats and digital media, examination of disk acquisition and duplication techniques and application of these techniques in criminal investigations scenarios. *Hours Credit: 3.*

CS636 - Computer Security. Study of computer security including assurance, authorization, authentication, key distribution, encryption, threats including phishing and key logging, and related distributed computing issues. Theory and practical applications. *Hours Credit: 3.*

CS591 - Special Topics in Organizational Information Assurance (CISSP Training). Preparation for Certified Information Systems Security Professional examination. *Hours Credit: 3.*

IS577 - Information Security Management. Provides students with a strong foundation in key security management issues, including: an understanding of key concepts and how people, technology and organizational policies should be developed and managed to safeguard an information resources. *Hours Credit: 3*.

JS530 - Ethics and Computer Forensics. Overview of systems of ethics with application of core principles to issues relating to cyberinvestigation, computer forensics, and related areas. *Hours Credit: 3*.

JS502 - Introduction to Computer Forensics. Analytical and investigative techniques in criminal or civil litigation to identify, collect, examine and preserve evidence/information magnetically stored or encoded. *Hours Credit: 3*.

JS675 - Law, Evidence & Procedure. Overview and examination of the legal aspects of physical evidence including rules of evidence, procedural rules, and the role of expert witnesses; moot court component. *Hours Credit: 3*.

LS571- Expert Witness & Litigation Support. Principles of law related to forensic accounting, including forensic evidence, and expert witnesses. The course content covers some material found on the Certified Fraud Examiner (CFE) certification exam. *Hours Credit: 3*.

Criminal Justice (M.S.C.J.)

Degree Offered: M.S.C.J.

Director: *Morgan*

Phone: (205) 934-2069

E-mail: kmorgan@uab.edu

Web site: www.uab.edu/justicesciences

Faculty

J. Heith Copes, Associate Professor (Justice Sciences); Qualitative Methods; Criminal Decision Making; White Collar Crime; Police

Martha Earwood, Instructor (Justice Sciences)

Elizabeth Gardner, Assistant Professor (Justice Sciences)

John Grimes, Teaching Assistant Professor (Justice Sciences)

Kent Kerley, Associate Professor (Justice Sciences); Policing; White-Collar Crime; Criminal Justice Policy

Jason Linville, Assistant Professor (Justice Sciences)

Kathryn D. Morgan, Associate Professor (Justice Sciences); Corrections; Criminological Theory; Minorities

John J. Sloan, III, Associate Professor and Chair (Justice Sciences); Victimization; Fear of Crime; Criminal Justice Policy; Juvenile Justice; Program Evaluation

Shelley McGrath, Assistant Professor (Justice Sciences); Research Methods, Statistics

Suzanne Perumean-Chaney, Assistant Professor (Justice Sciences); Statistics, Homicide

Adjunct Faculty

Robert Berry, Police Administration; Criminal Justice Policy

Foster Cook, Research Professor (Psychiatry); Drugs and Crime; Addiction; Program Evaluation

Mark LaGory, Professor (Sociology); Urban Sociology; Demography; Violence

James Philips, Criminal Law, Evidence, and Procedure; White Collar and Corporate Crime

Program Information

The criminal justice graduate program requires study in the overall discipline, including intensive investigation in the areas of criminal justice policy, criminal justice administration, research methods and statistics, and criminological theory.

Each year, students are admitted to the M.S.C.J. program for the fall term. **The application deadline is May 1**. 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** have taken an introductory-level statistics and an introductory-level research methods course in which a grade of B or better was earned in each course. Students who otherwise meet the minimum admission criteria but have not taken one or both of these 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 but lacking 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 undertake remedial coursework before they will be allowed to register for any graduate coursework. Students failing to meet the minimum requirements for admission, but who are reasonably close, **may** be admitted to the M.S.C.J. program "on probation." Students admitted on probation will be given the opportunity to establish and maintain a minimum GPA of 3.0 for all graduate coursework undertaken. Failing to do so will result in dismissal from the program.

Degree Requirements

Plan I (Thesis)

Students selecting the Plan I option must (1) complete a minimum of 30 semester hours (24 of which are the required professional seminars JS 600, 601, 602, 604, 605, and 606) and (2) propose and then complete a major research project under the direction of a thesis committee chaired by the student's major advisor. Students who select the Plan I option must establish and maintain a minimum GPA of 3.0 in all coursework undertaken (required and elective). Students failing to do so may be dismissed from the program.

Plan II (Nonthesis)

Students selecting the Plan II option must (1) complete a minimum of 36 semester hours in coursework, 24 hours of which consist of the required professional seminars and (2) write a 20-25 page "research paper" in their area of substantive interest. The research paper must combine material covered in theory, research methods, data analysis, and social policy classes. This research paper is done under the guidance of the student's advisor. The student will enroll in a

minimum of 6 credit hours of course work to satisfy this requirement. The student will prepare and submit this research paper to his/her advisor. Students who select the Plan II option must establish and maintain a minimum GPA of 3.0 in all coursework undertaken (required and elective). Students failing to do so may be dismissed from the program.

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 research 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:	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.)

Contact Information

For detailed information contact Dr. Kay Morgan, Department of Justice Sciences, University Boulevard Office Building (UBOB) room 238, 1530 3rd Avenue South, Birmingham, Alabama 35294-4562.

Telephone: 205-934-2069

E-mail kmorgan@uab.edu

Web www.uab.edu/justicesciences

Course Descriptions

Unless otherwise noted, all courses are for 3 semester hours of credit. Course numbers preceded by an asterisk indicate courses that can be repeated for credit, with stated stipulations.

Criminal Justice (JS)

Required Seminars

600. **Proseminar in Criminal Justice.** Critical analysis of formal and informal processing of offenders by criminal justice agencies, including police, courts, and corrections; effectiveness and future directions.

601. **Criminological Theory I.** Analysis of crime patterns and known correlates; theoretical explanations of criminality including classical, biophysiological, psychological, and sociological theories.

602. **Criminological Theory II.** Classic and contemporary structural explanations of crime; substantive focus on relationships between crime and cultural and institutional arrangements.

604. Seminar in Criminal Justice Policy Analysis. Origins, formulation, implementation, and evaluation of criminal justice policy; classic and contemporary examples of policy innovations.

605. Seminar in Criminal Justice Research Methods. Quantitative methods of empirical research emphasizing criminal justice/criminological applications; current research methodologies relating to analysis of issues involving crime and criminal justice.

606. Seminar in Criminal Justice Data Analysis. Bivariate and multivariate analyses and interpretation of results from substantive research.

Elective Courses

500-504. Special Topics in Criminal Justice. Investigation of topics of current interest to faculty members. Topics selected for in-depth analysis are listed each term in class schedule. May be repeated in different topics for a maximum of 12 hours. 3 hours each.

507. Advanced Criminal Law. In-depth, case-study examination of substantive criminal law; analysis of acts, mental states, and attendant circumstances constituting various crimes.

540. White Collar and Corporate Crime. Analysis of illegal or deviant behavior occurring in organizational settings, including crimes committed by and against complex organizations.

541. Terrorism and Social Control. Analysis of the causes and consequences of terrorism; substantive focus on government response including investigation, prosecution, and punishment of terrorists.

542. Race, Crime, and Justice. An examination of how the subordinate status of minority groups (primarily African Americans, Hispanics, and Native Americans) affects their interaction with the justice system.

543. Women and the Criminal Justice System. Examination of the role of women in the criminal justice system as offenders, victims, and professionals.

544. Law and Society. Origins and definition of law; overview of legal systems and their characteristics; use of law to facilitate or retard social control, social change, and social conflict.

545. Juvenile Corrections. Analysis of ongoing efforts to reduce juvenile delinquency; particular attention paid to recent innovations, programs, and program effectiveness.

580 Patterns of Crime. Analysis of the social correlates of crime and the typologies of offenders.

607. Seminar in Criminal Justice Planning. Planning and integration of programs in criminal justice system; techniques and tools used by planners.

608. Seminar in Current Issues in Law Enforcement. Analysis of such issues as administration, police-community relations, corruption, and design of law enforcement agencies.

609. Seminar in Juvenile Delinquency. History, measurement, patterns, and theories relating to delinquent behavior.

610. Seminar in Correctional Systems. Correctional philosophy; legal decisions, correctional programs, research, treatment approaches, and decision-making processes.

612. Seminar in Comparative Criminal Justice Administration. Theories, philosophies, and techniques of criminal justice systems worldwide; evaluation of governmental role in administration of justice systems.

613. Seminar in Law and Society. Classical and modern perspectives on the nature, origins, and functions of law.

614. Seminar in Advanced Legal Problems. Legal theories; criminal law, evidence, and procedure; origins, philosophy, and development of legal system; exposure to legal reasoning.

620. Investigation and Prosecution of White Collar Crime. Analyses of legal aspects of case preparation and presentation; legal theories of individual and collective criminal responsibility; trial strategies

676. Law, Evidence, and Procedure. Legal aspects of physical evidence; role of expert witnesses in criminal process; moot court activities.

***696. Graduate Internship in Criminal Justice.** Field experience in criminal justice agency setting. May be repeated for a maximum of 6 hours of credit.

***697, 698. Directed Research.** Independent study in a student's substantive area of interest under the direction of a faculty member.

***699. Thesis Research.** Prerequisite: Admission to candidacy and successful defense of thesis proposal. 1-6 hours.

English (M.A.)

Degree Offered:	M.A.
Director:	Dr. Gale Temple
Phone:	(205) 934-8593
E-mail:	gtemple@uab.edu
Web site:	www.uab.edu/english

Faculty

Daniel Anderson, Associate Professor (English); Creative Writing

Rebecca A. Bach, Associate Professor (English); Shakespeare, Renaissance Drama

Tracey A. Baker, Associate Professor (English); Rhetoric and Composition

David A. Basilico, Associate Professor (English); Linguistic Theory, Syntax and Semantics, Cognitive Science

Peter J. Bellis, Professor and Chair (English); American Literature

Mary Flowers Braswell, Professor (English); Chaucer, Medieval Studies, Fourteenth-Century English, Arthurian Legend, Bibliography

Alison Chapman, Associate Professor (English); Renaissance Poetry and Prose

Robert J. Collins, Associate Professor (English); American Literature, Creative Writing

Lila Graves, Associate Professor (English); Prose Fiction, Eighteenth-Century British Literature

Kyle Grimes, Associate Professor (English); British Romanticism, Eighteenth- and Nineteenth-Century English Literature, Electronic Textuality, Bibliography

Ann Hoff, Assistant Professor (English); Modern Poetry and Poetics

William Hutchings, Professor (English); Modern British Fiction, Modern Drama, World Literature

Peggy B. Jolly, Professor (English); Rhetoric and Composition

Sue Kim, Assistant Professor (English); Contemporary Literature, Literary Theory, Postcolonial Studies, Ethnic Studies

Marilyn J. Kurata, Associate Professor (English); Nineteenth-Century British Novel, Victorian Poetry

Bruce McComiskey, Professor (English); History and Theory of Rhetoric, Discourse Analysis, Composition

Kieran Quinlan, Professor (English); American Literature

Cynthia Ryan, Associate Professor (English); Composition, Professional Writing, Public Discourse, Medical Rhetoric

Daniel Siegel, Associate Professor (English); Nineteenth-Century British Literature and Culture; The Novel

Virginia Whatley Smith, Associate Professor (English); African American Literature, American Literature

Gale Temple, Associate Professor (English); Early American Literature

Lawrence G. Wharton, Associate Professor (English); American Literature, Fiction Writing

Jacqueline E. Wood, Associate Professor (English); African American Literature, American Literature

Admission Requirements

For admission in good standing, applicants must meet the Graduate School's requirements for scholarship and test scores (GRE General Test or MAT). The applicant should normally have finished the requirements for an undergraduate degree in English, including satisfactory completion of at least eight semester hours in a foreign language. 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 can concentrate their studies in any of three areas: Literature, Composition and Rhetoric, or Creative Writing. The requirements for each of these concentrations are explained below.

Concentration in Literature

Most literature courses can be considered to fall into one of the following areas, each of which has its own reading list.

Group I:

British Lit before 1500

British Lit 1500-1660

British Lit 1660-1790

British Lit 1790-1900

British Lit 1900-present

Group II:

American Lit before 1800

American Lit 1800-1900

American Lit 1900-present

African American Lit 1746-present

African Diaspora Lit

Group III:

Composition Pedagogy

Rhetorical Theory

Linguistics

Critical Theory

Concentration in Literature

Plan I.

1. Students who write a thesis must take 3 hours in Bibliography & Methods, 3 hours of linguistics, 6 hours of thesis work, 12 hours of British/American literature, and 6 hours of electives. They must take at least 6 hours in Group I and 6 hours in Group II.

2. 15 hours of course work must be at the 600 seminar level in English. A maximum of 3 of these required 15 hours can be taken as EH 699, Thesis Research.
3. Students must choose a member of the English faculty to chair their Graduate Study Committee (GSC). In consultation with this chair, students must select at least three other faculty members to complete their GSC. All members of the GSC must be graduate faculty, and one must have a primary appointment outside the UAB English Department. Once constituted, membership of the GSC cannot be changed without the approval of the departmental graduate program committee.
4. Before students can be admitted to candidacy, they must have passed 18 hours of course work and had a thesis proposal accepted by their GSC and the Director of Graduate Studies.
5. Students must pass a Thesis Defense.

Plan II.

1. Nonthesis students must take 3 hours in Bibliography & Methods, 3 hours of linguistics, 12 hours of British/American literature, and 12 hours of electives.
2. 15 hours of course work must be at the 600 seminar level in English.
3. Students must pass individual tests in 5 areas, but 1 of these tests may be replaced by earning a cumulative 3.5 or better G.P.A. in two English graduate courses in one of the listed areas OR by passing two creative writing courses at the 500 level or above.
4. All students must choose at least one test area from each Group.
5. By the time students have earned 24 credit hours toward the M.A., students must secure the agreement of a graduate faculty member to serve as chair of their Graduate Study Committee (GSC). Students are encouraged to secure this faculty mentor as early as possible since the chair of a student's GSC has primary responsibility for mentoring the student through the exam process. The Committee chair must coordinate the composition, administration, and evaluation of all area tests for that student. The chair is also responsible for informing the student (and graduate program director) of the criteria for evaluation of the subject area tests; for notifying the student of the results; and for meeting with the student afterwards to review the tests. The chair is also responsible for keeping the graduate program director informed of the student's progress and maintaining a complete exam file on the student.
6. In consultation with the student and the graduate program director, the Committee chair will appoint at least three other faculty to serve on the student's GSC. All members of the GSC must be graduate faculty. Once constituted, membership of the GSC cannot be changed without the approval of the departmental graduate program committee.
7. Each two-hour area test must follow a standard format that allows students to demonstrate their ability to read closely and to synthesize ideas.
 - a. Area tests in literature and critical theory will give the following instructions based on selections from the area reading list:

Choose one of the following passages and write an essay that (1) establishes—based on the chosen passage—some significant literary, intellectual, and/or cultural context and presents a thesis having to do with that context; (2) explains, by a close reading of the text, why the chosen passage is

important both to the work from which it is taken and to the thesis of the present essay; and (3) discusses the context and thesis in relation to at least two other works from the area reading list.

b. Area tests for Composition Pedagogy or Rhetorical Theory will give the following instructions based on selections from the area reading list:

Choose one of the following passages or set of passages and write an essay that (1) indicates your understanding of the passage(s) and the work from which it is taken; (2) identifies and explains the specific issues in rhetorical theory or composition pedagogy that are addressed by or related to the selection(s); and (3) discusses these issues in a broader context by drawing on at least two other works from the area reading list.

c. See the Director of the Linguistics Program for a sample area test in Linguistics.

8. Students must provide their GSC with a minimum of three weeks' notice in scheduling area tests, which must be taken Monday-Friday during the tenth week of each semester (sixth week during the shortened summer term).

9. Students are limited to three attempts at passing a test for the same area.

10. The GSC will hold a group grading session to evaluate individual tests as Failing, Passing, or High Pass (the latter designation must be a unanimous decision of the GSC). If a student earns four High Passes, this student will be passed "With Distinction."

11. There is no oral examination for nonthesis students.

Concentration in Composition/Rhetoric

Plan I.

1. Students who write a thesis must take 3 hours in Bibliography & Methods of Research, 3 hours of linguistics, 9 hours of literature electives, 6 hours of thesis research, 3 hours of rhetorical theory, and 6 additional hours of courses in the areas of Rhetorical Theory, Composition Pedagogy, or Professional Writing (total of 30 hours).

2. 15 hours of course work must be at the 600 seminar level in English. A maximum of 3 of these required 15 hours can be taken as EH 699, Thesis Research.

3. Students must choose a member of the Composition/Rhetoric faculty to chair their Graduate Study Committee (GSC). In consultation with this chair, students must select at least three other faculty members to complete their GSC. All members of the GSC must be graduate faculty, at least one (in addition to the chair) should be another composition/rhetoric specialist, and one must have a primary appointment outside the UAB English Department. Once constituted, membership of the GSC cannot be changed without the approval of the departmental graduate program committee.

4. Before students can be admitted to candidacy, they must have passed 18 hours of course work and had a thesis proposal accepted by their GSC and the Director of Graduate Studies.

5. Students must pass a Thesis Defense.

Plan II.

1. Nonthesis students must take 3 hours in Bibliography & Methods of Research, 3 hours of linguistics, 9 hours of literature electives, 3 hours of rhetorical theory, and 12 additional hours of courses in the areas of Rhetorical Theory, Composition Pedagogy, or Professional Writing (total of 30 hours).
2. Guidelines 2-11 under Concentration in Literature, Plan II, apply to these students.

Concentration in Creative Writing (Plan I only)

1. Creative writing students are required to take 12 hours of creative writing workshop courses, 6 hours of thesis research, 9 hours of literature, and 3 hours of English electives.
2. 15 hours of course work must be at the 600 seminar level in English including at least one section of a 600-level creative writing workshop. A maximum of 3 of these required 15 hours can be taken as EH 699, Thesis Research.
3. Students must choose a member of the Creative Writing faculty to chair their Graduate Study Committee (GSC). In consultation with this chair, students must select at least three other faculty members to complete their GSC. All members of the GSC must be graduate faculty, at least one (in addition to the chair) should be another creative writing specialist, and one must have a primary appointment outside the UAB English Department. Once constituted, membership of the GSC cannot be changed without the approval of the departmental graduate program committee.
4. Before students can be admitted to candidacy, they must have passed 18 hours of course work, including at least 3 hours in creative writing, and had a thesis proposal accepted by their GSC and the Director of Graduate Studies.
5. Students must pass a Thesis Defense.

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 or MAT (TOEFL and TWE also required for international applicants whose native language is not English.)

For detailed information, contact Dr. Gayle Temple, Graduate Program Director, Department of English HB 220, 1530 3rd Avenue South, Birmingham, AL 35294-1260.

Telephone 205-934-8593

E-mail EnglishGrad@uab.edu

Web www.uab.edu/english/grad

Course Descriptions

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.

English (EH)

501. **Tutoring Writing.** Examines the theory and practice of one-to-one writing instruction.
502. **The Rhetoric of Popular Periodicals.** Explores the production and consumption of magazine discourse.
503. **Business Writing.** Advanced writing focused on letters, resumes, and professional reports.
504. **Technical Writing.** Advanced writing focused on short informal and long formal reports.
- 505, 506. **Poetry Writing Workshop.** Advanced work in poetry through student's own writing.
- 507, 508. **Creative Nonfiction Writing Workshop.** Advanced work in creative nonfiction through student's own writing.
- 509, 510. **Fiction Writing Workshop.** Advanced work in prose fiction through students' own writing.
511. **Novel.** History and techniques of the novel. Authors vary.
512. **Poetry: Lyric and Shorter Forms.** The evolution and generic influences of the small poem in English from the early Renaissance to the present.
513. **Drama.** Techniques and problems of drama, classical through contemporary.
514. **Modern British and European Drama.** Techniques and problems of modern European drama from Ibsen to the present, including works by Chekhov, Shaw, Synge, Brecht, Pinter, and Beckett.
515. **Form of Fiction: The Short Story.** American, Russian, and European short stories, emphasizing aesthetics of form.
516. **Modern American Poetry.** Focus on writers from 1900-1945 such as Frost, Stein, Stevens, Williams, H.D., Pound, Moore, Eliot, Toomer, Crane, and Hughes.
- 517, 518. **Creative Writing Workshop: Special Projects.** Creative Writing Workshop: Special Projects: Advanced work in creative writing focusing on the student's own writing in unique settings and/or genres.
519. **Young Adult Literature.** Close reading of young adult literature; its form and history, its assumptions about adolescent psychology, and its literary relationship to the traditional canon.
520. **World Literature I (to 1600).** Survey of monuments mainly in the Western tradition (Sumerian, Hebraic, Hellenic, continental) with emphasis on the epic.
521. **World Literature II (1600 to present).** Selections in translation from Europe, Africa, South America, and/or Asia and the Pacific.
522. **African Literature.** 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.
523. **African Women's Literature.** Writing in all genres by African women from pre-colonial Africa to the present.

531. Special Topics in Film. In-depth study of a specialized topic in film, for example, a particular national cinema, one or more directors, a development in film history or genre, or issues in visual representation.

535. Teaching Creative Writing. A practical exploration of creative writing pedagogy through workshops and lesson-planning exercises.

537. Writing Children's Literature.

541. Literary Theory and Criticism: The Ancients to the Nineteenth Century. Introduction to the theories of art and literary production in the contexts of aesthetics and culture from Plato to the end of the nineteenth century.

542. Literary Theory and Criticism. The Twentieth Century to the Present. Introduction to the major schools of literary theory and criticism since the beginning of the twentieth century. Topics will include Russian formalism and New Criticism; structuralism, post-structuralism, and deconstruction; reader-response criticism; narrative theory; psychoanalytic theory; Marxist criticism; new historicism and cultural studies; feminist criticism and queer theory; postcolonial and ethnic studies; and postmodernism.

543. Archetype and Myth. Recurring images, underlying patterns, and shapes-of-meaning in poetry, fiction, and fairy tales.

544. Women's Literature and Theory. Literary works and theoretical perspectives of Angelou, Chopin, Hong Kingston, Hurston, Walker, Woolf, Plath, and others.

545. Special Topics in African American Studies. Literary and theoretical explorations of a specific topic.

546. African American Autobiography. Personal narratives by African Americans, including texts by Wheatley, Douglass, Jacobs, Wilson, DuBois, Johnson, Hurston, Hughes, Wright, Baldwin, Angelou, and Moody.

547. African American Drama. Development of African American dramatic tradition from the nineteenth century through the Harlem Renaissance and Black Arts movement to contemporary postmodernism, including such playwrights as Brown, Hurston, Baraka, Sanchez, Wilson, and Parks.

548. African American Poetry. Development of African American poetry from early works to the present, including such poets as Wheatley, Dunbar, Hughes, Brooks, Alexander, Dove, and Angelou.

550. Advanced Grammar. Present-day English grammar.

551. Generative Grammar. Advanced analysis of English grammar with emphasis on Chomskyan generative grammar. Prerequisite: permission of instructor.

552. Grammar and Usage for English Teachers. Intensive review of the structure of English; emphasis on usage, punctuation, and style as these relate to grammar.

553. Advanced History of the English Language. Advanced topics.

554. The Biology of Language. Vocal tract and neuroanatomical specializations for language, language acquisition, genetic language disorders, language and other primates, and the evolution of language.

557. Writing and Medicine. Public discourse focusing on health, illness, and medical practice. Production of texts as health consumers and health practitioners.

559. Discourse Analysis. Public discourse, with emphasis on social politics of linguistic choices.

560. American Women Writers Before 1900. Survey of American women's writing before 1900.

561. American Literature, 1620-1820. Representative American writing from the colonial period to Washington Irving.

562. American Literature, 1820-1870. Representative writers such as Alcott, Dickinson, Douglass, Emerson, Fern, Fuller, Harper, Hawthorne, Jacobs, Melville, Poe, Spofford, Stowe, Thoreau, Whitman, and Whittier.

563. American Literature, 1870-1914. Representative writers such as Twain, James, Howells, Crane, Jewett, Wharton, Dreiser, Norris, Chopin, and others.

564. American Literature, 1914-1945. A study of some of the main texts from the period by writers such as O'Neill, Frost, Stein, Stevens, Eliot, Cather, Hemingway, Larsen, Fitzgerald, Hughes, Faulkner, and Wright.

565. American Literature 1945-Present. Selected fiction, poetry, and drama in the context of postwar cultural trends and literary movements.

566. The Slave Narrative and its Literary Expressions. Representative writers from Gustavus Vassa to Alice Walker, with emphasis on periods and movements.

567. Black Women Writers. Evolution of the Afrocentric feminist consciousness through early and contemporary writings.

568. The Harlem Renaissance. Black writers during Harlem Renaissance movement. Includes Johnson, Toomer, Murray, Larsen, McKay, Thurman, Reed, and Morrison.

569. Medieval Culture: Literature and Society. Exploration through art, literature, and history of the dominant themes of the English Middle Ages.

570. Arthurian Legend. King Arthur and his knights in literature from 6th-century history and formulation of the legend in the Middle Ages to its use in the 20th century.

571. Beowulf in Context. An interdisciplinary course in Anglo-Saxon art and culture bearing upon *Beowulf*; close study of the Norse analogues of the Old English epic.

573. Chaucer: Pilgrimage to Canterbury. Selections from Canterbury Tales and the 14th-century milieu.

574. English Renaissance Drama Excluding Shakespeare. Survey of the Elizabethan and Jacobean theater. Authors vary, but may include Jonson, Webster, Dekker, and Heywood.

575. **English Renaissance Poetry and Prose.** Focus varies from broad survey of period to close analysis of genre, theme, or author.

576. **Shakespeare.** Intensive study of seven plays, focusing on the interactions between culture and the theater.

578. **Age of Milton.** Selected prose and poetry, including *Paradise Lost*.

580. **The Restoration.** Dryden, Butler, Rochester, Marvell, Bunyan, Congreve, Wycherley, and Etherege.

581. **The Eighteenth Century: Literature and Culture.** An interdisciplinary exploration of texts that focuses on social, economic, and political backgrounds of selected texts from the period. Authors and topics vary.

582. **The Eighteenth Century: Theory and Interpretation.** An interdisciplinary exploration that focuses on the formal and philosophical implications of selected texts. Authors and topics vary.

583. **British Romanticism.** Study of works by British writers, 1785-1834. Authors will likely include Blake, Smith, Wordsworth, Coleridge, Byron, P.B. and Mary Shelley, Keats, and others.

585. **British Victorian Poetry.** Study of Tennyson, Browning, the pre-Raphaelites, and others, with a focus on the cultural context of their poetry.

586. **Eighteenth-Century British Novel.** Study of narrative techniques and cultural contexts in eighteenth-century prose fiction. Course explores works written during the long eighteenth century and includes authors in a chronological range extending from Aphra Behn to Sir Walter Scott. Authors and topics vary.

587. **Nineteenth-Century British Novel.** Study of writers like Austen, Dickens, Thackeray, the Brontës, George Eliot and Hardy with an emphasis on the relationship between cultural changes and the development of the novel.

588. **British Novel: The Modern Age.** Study of Conrad, Lawrence, Joyce, Woolf, Ford, and others, focusing on narrative technique and the transformation of traditional literary forms.

589. **James Joyce.** A study of Joyce's writings through *Ulysses*.

*591. **Major Writers.** See class schedule for announcement of subjects. May be repeated for total of 9 hours credit if focus is on different subjects.

*592. **Special Topics.** See class schedule for announcement of subjects. May be repeated for total of 9 hours credit if focus is on different subjects.

597. **Individual Studies.** Prerequisite: proposal must be submitted to the Graduate Director before the last two weeks of the semester preceding the semester in which the student intends to register. 1-3 hours.

600. **Engineering Communication.** Strengthens engineering students' understanding of and application of effective communications practices in the workplace. Subjects covered include 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.

601. **Classical Rhetorical Theory.** Review of rhetoric from classical period through Renaissance with emphasis on the works of Plato and Aristotle.

602. **Modern Rhetorical Theory.** Advanced studies in twentieth-century theories of rhetoric; themes include Marxism, feminism, philosophy, semiotics, and ideology.

603. **Literacy in Communities.** Examines the theory and practice of literacy instruction in varied cultural contexts.

604. **Research Methods in Composition and Rhetoric.** Develops skills in planning and implementing research designs in composition.

610. **Prosody, Poetics, and Close Reading.** Fosters an ability to read poetry closely and analytically; examines traditional descriptions of poetic form and meter; introduces recent work in poetic theory and philosophy of poetic composition.

615, 616. **Seminar: Graduate Poetry Writing Workshop.** Advanced work in poetry through students' own writing.

617, 618. **Seminar: Graduate Creative Nonfiction Workshop.** Advanced work in creative nonfiction through students' own writing.

619, 620. **Seminar: Graduate Fiction Writing Workshop.** Advanced work in prose fiction through students' own writing.

635. **Middle English Literature.** Study of writers other than Chaucer, with a concentration on the writings of the Gawain Poet, the lais and lyrics, and some female writers.

636. **Chaucer.** Emphasis on the importance of Chaucer as a poet, his contributions to literature, and his cultural setting. Canterbury Tales and selected earlier poetry.

637. **English Renaissance Literature.** Topics vary. Analysis of a group of texts within a genre, with a common theme, or by a single author or group of authors, as well as the discursive and social contexts in which these texts were produced.

638. **Eighteenth-Century British Literature.** Analysis of the formal and cultural aspects of 18th-century literature; attention to interdisciplinary aspects of selected texts.

639. **Nineteenth-Century British Literature.** Intensive exploration of a particular aspect of literature and culture from the Romantic or Victorian period. Focus varies.

640. **Twentieth-Century British Literature.** An in-depth examination of selected literary trends in modern English and Irish literature, focusing especially on the critical and/or theoretical frameworks by which these trends were defined. Topics vary.

645. **Bibliography and Methods of Research.** Emphasis on how materials in Sterne Library may be used effectively. Includes computer searching, listserve, and the internet. Field trips to special collections.

646. **Practicum in Teaching Writing.** Theory and practice of teaching writing at the postsecondary level.

647. Practicum in Tutoring. 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.

648. Introduction to Old English. Part one of an in-depth study of Anglo-Saxon English culminating in interpretation of The Dream of the Rood and The Wanderer in the original alliterative verse. Satisfies the M.A. linguistics requirement.

649. Beowulf. Part two in the Old English sequence, exploring a few shorter works as well as the epic in close detail. Prerequisite: EH 648.

655. History of the English Language.

656. American Literature, 1620-1820. Focus on texts reflecting the evolution of American culture from its early colonial period to the early national period.

657. American Literature, 1820-1870. Centering on writers from the American Romantic Movement to explore such themes as their use of symbolism, transcendentalism, feminist approaches, or connections with American landscape art.

658. American Literature, 1870-1914.

659. American Literature, 1914-1945. A study of one or more authors from the following list: O'Neill, Faulkner, Larsen, Frost, Eliot, Stevens.

660. American Literature, 1945-Present. Selected postmodern works in the context of U.S. cultural trends and literary movements since the Cold War.

677. Shakespeare: The Body, Gender, and Sexuality. Investigates languages of the body, sexuality, and gender in seven plays, as well as historical materials and current criticism and theories of the body.

***690. Major Writers.** See class schedule for announcement of subjects. May be repeated for total of 9 hours credit if focus is on different subjects.

***693. Special Topics.** See class schedule for announcement of subjects. May be repeated for total of 9 hours credit if focus is on different subjects.

694. British Literary Themes from the Middle Ages Through the Early Eighteenth Century. See class schedule for topic.

695. British Literary Themes from Jane Austen to the Present. Recent themes include effects of industrialism, role of women, the concept of the gentleman, loss of faith, and relation of the artist and audience. Writers vary.

696. American Literary Themes from the Puritans to the Present. See class schedule for topic.

698. Directed Studies. See the departmental description of the M.A. program for the special restrictions on this course. Prerequisite: Permission of Director of Graduate Studies. 1-3 hours.

***699. Thesis Research.** Prerequisite: Admission to candidacy and approval of thesis proposal by departmental Graduate Committee. 1-6 hours. May be repeated for a total of 9 hours credit.

Forensic Science (M.S.F.S.)

Degree Offered: M.S.F.S.
Director: *Linville*
Phone: (205) 934-2069
E-mail: jglinvil@uab.edu
Web site: www.uab.edu/criminaljustice

Faculty

Steve Drexler, Instructor; Conventional Criminalistics

Elizabeth Gardner, Assistant Professor

Jay Glass, Instructor; Questioned Death Investigation

Michael Jackson, Instructor (Justice Sciences); Computer Forensics

Jason Linville, Teaching Assistant Professor, Director

James Phillips, Adjunct Instructor; Law, Evidence, and Procedure

Mitch Rector, Instructor; Conventional Criminalistics

Anthony Skjellum, Professor (Computer and Information Sciences); Computer Forensics

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 offerings helpful in building a strong foundation to pursue doctoral (Ph.D. and M.D.) studies. The program also offers, in conjunction with the Department of Computer and Information Sciences, the opportunity for students to pursue a graduate certificate in computer forensics that involves additional, elective coursework. Students may also pursue a certificate in forensic accounting, offered in conjunction with the Department of Accounting and Information Systems.

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 in Chemistry, Biology, or a related natural science. Coursework should include the completion of one year of general chemistry, one year of organic chemistry, and quantitative analysis. 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.

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 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.)
Comments	None

For detailed information, contact [Dr. Jason G. Linville](#), UAB Department of Justice Sciences, University Boulevard Office Building (UBOB) room 210, 1530 3rd Avenue South, Birmingham, Alabama 35294-4562.

Telephone 205-934-2069

E-mail jglinvil@uab.edu

Course Descriptions

All forensic science courses have a Justice Sciences (JS) prefix. 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.

Justice Science (JS)

502. Introduction to Computer Forensics. Overview of retrieval, preservation, and presentation of evidence found in computers and other electronic communication devices.

551. Research Methods in Forensic Science. Exploration of research methods used in forensic science, including data collection techniques and reporting of results.

572. Biology for Forensic Scientists. Discussion of molecular biology and recombinant DNA technologies, including DNA/RNA, genes/genetic expression, cloning, DNA extraction, and PCR amplification.

650. Advanced Questioned-Death Investigation. Examination of forensic pathology as used in/applied by local medical examiners' offices.

652. Advanced Questioned Document. Discussion of the use of thin layer chromatography and advanced instrumentation in the analysis of paper, ink, and typewriters/printers; includes handwriting analysis.

653. Advanced Investigation of Fires and Explosives. Examination of the collection, preservation, and analysis of accelerants; discussion of GC/MS analysis.

656. Advanced Forensic Approaches to Osteology. Overview of the study of human remains as applied to forensic science. Collection and analysis of bones, including determination of age, sex, and race of subject.

670. Elements of Forensic Science. Introduction to philosophical considerations and historic landmarks in the discipline; overview of major sub-disciplines in forensic science; examination of the role of expert witnesses and their importance.

671. **Conventional Criminalistics I.** Exploration of basic methodologies and approaches for analyzing trace and transfer evidence; examination of major evidence categories.

672. **Conventional Criminalistics II.** Examination of advanced methods for the analysis of trace and transfer evidence including methodologies for examination of firearms, and questioned documents. Prerequisite: JS 671.

673. **Forensic Drug Analysis.** Discussion of the isolation, identification, and quantification of commonly abused drugs and common poisons; interpretation of findings and correlation with legal applications.

674. **Biological Methods in Forensic Science.** Examination of biological evidence in crime laboratory, including identification of bloodstains and semen stains, and DNA typing of blood, bloodstains, and other body fluids.

675. **Law, Evidence, and Procedure.** Overview and examination of the legal aspects of physical evidence including rules of evidence, procedural rules, and the role of expert witnesses; moot court component.

676. **Topics in Forensic Science: Advanced Biological Methods in Forensic Science.** Examines current issues and trends in forensic DNA analysis, including STR polymorphisms, stutter analysis, low copy number analysis, and Y-STRs. Prerequisite: JS 674.

677. **Topics in Forensic Science: Forensic Toxicology.** Discussion of relevant analyses conducted for drugs and poisons occurring in biological evidence, including evidence collection and handling, selecting the most appropriate evidence, and the analytical process; examination of the pharmacokinetic and pharmacodynamic properties of detected substances.

678. **Topics in Forensic Science: Capillary Electrophoresis.** Examination of the principles, methods, and current issues in the forensic application of capillary electrophoresis.

679. **Seminar in Forensic Science.** Review, discussion, and presentation of the forensic literature; forensic science in the news, media, and public opinion.

680. **Graduate Internship in Forensic Science.** Field experience in forensic science agency. May be repeated for credit. 3-6 hours.

681. **Directed Research in Forensic Science (Non-thesis).** Forensic science problems, issues, and theories. May be repeated for credit. 1-6 hours.

682. **Directed Research in Forensic Science (Non-thesis).** Forensic science problems, issues, and theories. Includes laboratory component. May be repeated for credit. 1-6 hours.

684. **Thesis Research in Forensic Science.** Prerequisite: Admission to candidacy. May be repeated for credit. 1-6 hours.

History (M.A.)

Degree Offered: M.A.

Director: *Dr. John Van Sant*

Phone: (205) 975-6520
E-mail: jvansant@uab.edu
Web site: www.uab.edu/history

Faculty

Carolyn A. Conley, Professor and Chair of the Department (History); British and Irish Political and Social History; History of Violence

Colin J. Davis, Professor (History); U.S. Labor, Women's Labor History, Social History.

Harriet E. Amos Doss, Associate Professor (History); U.S. Middle Period, Antebellum South, U.S. Social History

Robert F. Jefferson, Associate Professor (History); African American History, 20th Century U.S.

Andrew W. Keitt, Associate Professor (History); Early Modern Europe, European Cultural and Intellectual, Iberian World

George O. Liber, Professor (History); Soviet, Post-Soviet, Russian, Eastern European, and Ukraine

Andre J. Millard, Professor (History); History of Technology, Economic and U.S. Cultural History

Stephen J. Miller, Associate Professor (History); France; Economic History

Raymond A. Mohl, Professor (History); U.S., Urban, Social, Ethnic, and Historiography

Pamela S. Murray, Professor (History); Latin America, National Period, Colombia

John E. Van Sant, Associate Professor (History); Japan, East Asia, World History

Brian D. Steele, Assistant Professor (History); Jefferson-Jackson, U.S. Social, Intellectual History

Walter D. Ward, Assistant Professor (History); Ancient World, Mediterranean, Islamic history

Emeritus Faculty

Virginia V. Hamilton, Professor and University Scholar Emerita (History); Twentieth-Century U.S., The South Since Reconstruction

Daniel R. Lesnick, Associate Professor Emeritus (History); Medieval and Renaissance History

Michael N. McConnell, Associate Professor Emeritus (History); Colonial America, Native Americans

Tenant S. McWilliams, Professor (History) and Dean Emeritus; Recent South, Modern United States, U.S. Foreign Affairs

James F. Tent, Professor and University Scholar Emeritus (History); Modern European History; Germany, Military History, Cold War

Samuel L. Webb, Associate Professor Emeritus (History); New South, Alabama, Legal and Constitutional history

Secondary Faculty

Robert G. Corley; Director (Global and Community Leader Honors Program); Modern South, History of Birmingham

Program Information

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 includes more course work. 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 (Thesis Plan)

HY 601	Historiography	3 hours
HY 602	Research and Writing	3 hours
U.S. History	3 seminars	9 hours
Non-U.S. History	3 seminars	9 hours
Electives	2 courses	6 hours
Thesis Research	2 courses or equivalent	6 hours
Foreign Language	Examination	0 hours
Total		36 hours

No foreign language study credits can be counted toward the degree requirements. Where foreign language requirements are appropriate, it is recommended that students satisfy these requirements before commencing thesis research.

Plan II: (Nonthesis Plan)

HY 601	Historiography	3 hours
HY 602	Research and Writing	3 hours
U.S. History	3 seminars	9 hours
Non-U.S. History	3 seminars	9 hours
Electives	4 courses	12 hours
Total		36 hours

Students interested in Teaching Certification for Public Schools should contact the School of Education Certification Office, EB 229, 1530 3rd Avenue South, Birmingham, Alabama 35294-1250 (telephone 205-934-5323).

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
Graduate Catalog Description	http://main.uab.edu/show.asp?durki=24904

For detailed information, contact Dr. John Van Sant, History Graduate Program Director, Department of History, U401, 1530 3rd Avenue South, Birmingham, Alabama 35294-3350.

Telephone 205-975-6520

E-mail jvansant@uab.edu

Course Descriptions

History (HY)

Courses are for 3 hours of credit unless otherwise indicated. All seminars except 601 and 602 may be taken more than once. Students may take no more than two Directed Readings courses (681) or internships (682).

601. Historiography. Seminar on various theoretical perspectives and methodologies of professional historians. What historians do, how they do it, and why.

602. Historical Research and Writing. Methods of historical research, including research in primary sources, and the distinctive characteristics of historical writing.

612. Seminar in Early America. Topics and issues in the history and historiography of Colonial North America, circa 1500-1775.

613. Seminar in the Civil War Period. Specialized themes and military, political, social and economic developments related to Civil War; particular emphasis on the South, 1860-1865.

614. Seminar in Recent American History. Topics in the politics of modern America.

615. Seminar in American Myths, American Values. 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.

621. Seminar in Southern History to 1877. Subjects ranging from the Antebellum through Reconstruction periods.

622. Seminar in Southern History Since 1877. Subjects pertaining to the New South era.

623. **Seminar in Alabama History.** Specific social, political, and economic aspects of Alabama history.

631. **Seminar: Topics in American History.** Historical topics of American history (e.g., conservatism, crime and punishment).

632. **Seminar in U.S. Urban History.** Topics in urban history.

633. **Seminar in American Constitutional and Legal History.** 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.

634. **Seminar in American Foreign Relations.** Selected topics related to American experience with foreign relations.

635. **Seminar in American Social History.** A reading and research seminar examining the history of the structure and power of social groups in America.

637. **Seminar in U.S. Labor History.** Development of labor force and movements in U.S. nineteenth and twentieth centuries.

638. **Seminar in Civil Rights History.** An analysis of history and historiography of Civil Rights Movement in America since the 19th century.

639. **Seminar in Women's History.** An analysis of the changing economic, political, and social roles of women.

641. **Seminar in Latin American History.** 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.

650. **Seminar.** Topics in European History.

651. **Seminar in Pre-Modern History.** Survey of the pre-modern world focusing on society, religion, and culture before 1500.

652. **Seminar in the Renaissance.** Special attention given to the new urban context of society, culture, politics, art, and religion.

653. **Seminar in Modern Europe.** Reformation to the present; major topics such as society and politics, warfare, religious trends, state building, and industrialization.

654. **Seminar in British History.** Focuses on a particular period or problem in British history. Reading and discussion of current publications on the topic.

655. **Seminar in Russian/Soviet History.** Analysis of primary sources and secondary works dealing with political and social history of Imperial Russia or Soviet Union and their successor states.

656. **Seminar in French History.** Seminar dealing with various periods and issues in the history of France.

671. **Seminar in Asian History.** Topics in Asian History.

672. **Seminar: Topics in World History.** Seminar in historical topics of world history.

673. **Seminar in World Environmental History.** Comparative examination of cultures and their

relationship with the natural environment in a modern world context.

674. Seminar in Comparative History. Explores through reading and research varied issues in comparative history; revolution, war, slavery, labor, urbanization, industrialization, nationalism, democratization, and social and cultural topics.

681. Directed Readings in History. Individually designed course of readings in various fields. May be repeated. Only two directed reading courses will count toward degree requirements for history majors. Prerequisite: Permission of instructor. 1, 2, 3, and 6 hours.

682. Internship in Public History. Individually designed program that places students in local historical museums and sites to gain professional experience in public history. Prerequisite: Permission of instructor. 1 to 3 hours.

683. Seminar in Public History. Explores the diverse approaches and methods of presenting history to public audiences, museums, historic sites, architectural preservation, documentary editing, and archival preservation.

693. Special Topics in History. Seminar exploring the historiography of a specialized topic in history.

698. Nonthesis Research. Individual research project. 3-6 hours.

699. Thesis Research. Research culminating in master's thesis in history. Prerequisite: Admission to candidacy. 3-6 hours.

771. Special Projects in History. Prerequisite: Open only to those who hold the M.A. degree. 1-3 hours

Mathematics (M.S.)

Degree Offered: M.S.

Director: *Karpechina*

Phone: (205) 934-2154

E-mail: karpeshi@uab.edu

Web site: www.math.uab.edu

Faculty

Alexander Blokh, Professor (Mathematics); Dynamical Systems.

Nikolai Chernov, Professor (Mathematics); Dynamical Systems, Ergodic Theory

Louis Dale, Professor (Mathematics); Ring Theory

Hassan Fathallah, Associate Professor (Mathematics); Mathematical Biology

Paul H. Jung, Assistant Professor (Mathematics); Probability Theory

Ioulia Karpechina, Professor (Mathematics); Partial Differential Equations and Mathematics Physics

Ian W. Knowles, Professor (Mathematics); Ordinary and Partial Differential Equations, Numerical Analysis

Roger T. Lewis, Professor Emeritus (Mathematics); Differential Equations, Spectral Theory

Junfang Li Assistant Professor (Mathematics); Nonlinear Partial Differential Equations.

John C. Mayer, Professor (Mathematics); Topology, Continuum Theory, Dynamical Systems

Mubenga N. Nkashama, Professor (Mathematics); Differential Equations, Dynamical Systems, Nonlinear Functional Analysis

Peter V. O'Neil, Professor Emeritus (Mathematics); Graph Theory, Combinatorics

Lex G. Oversteegen, Professor (Mathematics); Topology, Continuum Theory, Dynamical Systems

Yoshimi Saito, Professor (Mathematics); Scattering Theory, Differential Equations

Roman Shterenberg, Associate Professor (Mathematics); Mathematical Physics, Spectral Theory, Inverse Problems, Partial Differential Equations, Non-linear Partial Differential Equations

Nandor Simanyi, Professor (Mathematics); Dynamical Systems With Some Algebraic Flavour

Gunter Stoltz, Professor (Mathematics); Spectral Theory, Mathematical Physics

James R. Ward, Jr., Professor Emeritus (Mathematics); Differential Equations, Nonlinear Analysis, Dynamical Systems

Rudi Weikard, Professor (Mathematics); Ordinary and Partial Differential Equations, Mathematical Physics

Gilbert Weinstein, Associate Professor (Mathematics); Partial Differential Equations, General Relativity, Differential Geometry

Yanni Zeng, Associate Professor (Mathematics); Nonlinear Partial Differential Equations, Numerical Analysis, Gas Dynamics

Henghui Zou, Associate Professor (Mathematics); Nonlinear Partial Differential Equations, Nonlinear Analysis

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 director, who will nominate a graduate study committee for the student. Courses offered to meet degree requirements must be approved by the mathematics graduate program director and the student's graduate study committee.

Degree Requirements

Plan I (Thesis)

The student must complete 30 semester hours approved by the mathematics graduate program director and the student's graduate study committee. The grade in each course has to be a B or better. A minimum of 24 hours must be on the 600 level or above. See Course Descriptions for which courses at the 500 level may not be counted toward the M.S. degree. In addition the following specific requirements must be met:

- at least 9 hours must be in the primary area of specialization,
- at least 6 hours must be in the secondary area of specialization,
- at least 9 hours must be outside the primary area,
- at most 6 hours of research may be included in the 30-hour requirement,
- a thesis must be completed, and
- an examination must be passed on material in the primary area of specialization (the exam may be written, oral, or both, at the discretion of the student's graduate study committee).

The student's performance in all respects must be approved by the graduate program director and the student's graduate study committee.

Plan II (Nonthesis)

The student must complete 30 semester hours approved by the mathematics graduate program director and the student's graduate study committee. The grade in each course has to be a B or better. A minimum of 24 hours must be on the 600 level or above. See Course Descriptions for which courses at the 500 level may not be counted toward the M.S. degree. In addition, the following specific requirements must be met:

- at least 12 hours must be in the primary area of specialization,
- at least 6 hours must be in the secondary area of specialization,
- at least 9 hours must be outside the primary area,
- no research may be included in the 30-hour requirement,

Two examinations must be passed on material in the two areas of specialization. (The exams may be written, oral, or both, at the discretion of the student's graduate study committee.)

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	None

For detailed information, contact Dr. Ioulia Karpechina, Mathematics Graduate Program Director, UAB Department of Mathematics, CH 493B, 1500 University Boulevard, Birmingham, Alabama 35294-1170.

Telephone 205-934-2154

E-mail karpeshi@uab.edu

Web www.math.uab.edu

Course Descriptions

All courses carry 3 hours of credit unless otherwise noted. A course may count as a prerequisite only if it was completed with a grade of B or better. The instructor can waive any prerequisite. Courses numbered below 520 and 540-541 may not be counted toward a graduate degree in mathematics.

513. Patterns, Functions & Algebraic Reasoning. 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. Recommended that 2 years of high school algebra or MA102 has been completed before taking course.

514. Geometry & Proportional Reasoning. 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.

515. Probabilistic & Statistics Reasoning. Descriptive and inferential statistics, probability, estimation, hypothesis testing. Reasoning with probability and statistics is emphasized.

516. Numerical Reasoning. Develop understanding of numbers and improve numerical reasoning skills specifically with regard to place value, number relationships 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 numbers, primes and composites, perfect, abundant and significant numbers, and figurate numbers; inductive and deductive reasoning with numbers.

517. 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. Prerequisite: MA 313.

519. Special Topics for Teachers. With permission of instructor, may be used as continuation of any of MA 513 through 518. May be repeated for credit when topics vary.

534. Algebra I: Linear. Abstract vector spaces, subspaces, dimension, bases, linear transformations, matrix algebra, matrix representations of linear transformations, determinants. Prerequisites: MA 142 or permission of instructor.

535. Algebra II: Abstract. Groups, homomorphisms, quotient groups, isomorphism theorems, rings and ideals, integral domains, fields. As time permits, Galois theory, semigroups, modules, or other areas of algebra may be included. Prerequisites: MA 534 or permission of instructor.

540. Advanced Calculus I. Introduction to the 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 4 hours per week. Prerequisites: Admission to the graduate program or permission of instructor.

541. Advanced Calculus II. 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: Admission to the graduate program or permission of instructor.

544. Vector Analysis. 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. Prerequisite: MA 244.

545. Complex Analysis. Analytic functions, complex integration and Cauchy's theorem, Taylor and Laurent series, calculus of residues and applications, conformal mappings. Prerequisite: MA 244.

553. Transforms. Theory and applications of Laplace and Fourier transforms. Prerequisite: MA 252.

554. Intermediate Differential Equations. Topics from among Frobenius series solutions, Sturm-Liouville systems, nonlinear equations, and stability theory. Prerequisite: MA 252.

555, 556. Partial Differential Equations I, II. Classification of second-order partial differential equations, background on eigenfunction expansions and Fourier series, solution of the wave equation, reflection of waves, solution of the heat equation in bounded and unbounded media, Laplace's equation, Dirichlet and Neumann problems. Prerequisite: MA 252.

560. Scientific Programming. This course is designed to provide the computational skills needed to attempt serious scientific computational tasks. Computers and floating point arithmetic; the GNU/Linux operating system and an introduction to the compiled programming languages FORTRAN (including FORTRAN 95) and C++ in the context of solving systems of linear equations and differential equations 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 a Beowulf system with MPI; introduction to Matlab.

561. Modeling with PDE. 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.

562. Intro to Stochastic Differential Equations. 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.

563, 564. Operations Research I, II. Mathematical techniques and models with application in industry, government, and defense. Topics usually chosen from dynamic, linear, and nonlinear programming, decision theory; Markov chains, queuing theory, inventory control, simulation, network analysis, and selected case studies. Prerequisite: MA 243.

565. PDE: Finite Difference Methods. Review of difference methods for ordinary differential equations including Runge-Kutta, multistep, adaptive stepsizing, 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, method of lines for hyperbolic equations.

567. Gas Dynamics. Euler's equations for inviscid flows, rotation and vorticity, Navier-Stokes

568, 569. **Numerical Analysis I, II.** 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 252 and either MA 263 or CS 210.

570, 571. **Differential Geometry I, II.** Theory of curves and surfaces: Frenet formulas for curves, first and second fundamental forms of surfaces. Global theory; abstract surfaces, manifolds, Riemannian geometry. Prerequisite: MA 244.

572. **Geometry I.** The axiomatic method; Euclidean geometry including Euclidean constructions, basic analytical geometry, transformational geometry, and Klein's Erlanger Program; introduction to fractal geometry. Course integrates intuition/exploration and proof/explanation.

573. **Geometry II.** 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.

574, 575. **Introduction to Topology I, II.** Separable metric spaces, basis and sub-basis, continuity, compactness, completeness, Baire category theorem, countable products, general topological spaces, Tychonov theorem. Prerequisite: MA 244.

585. **Introduction to Probability.** Sample spaces, combinatorics, absolute and conditional probability, discrete and continuous random variables, probability distributions and density functions. Prerequisite: MA 244.

586. **Mathematical Statistics.** Confidence intervals, hypothesis testing, analysis of variance and covariance, maximum likelihood estimates, linear regression, tests of fit, robust estimates and tests.

590-591. **Math Seminar.** Topics vary; may be repeated for credit. Prerequisites vary with topics. 1-3 hours.

592-597. **Special Topics in Mathematics.** These courses cover special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics. 1, 2, or 3 hours.

598-599. **Research in Mathematics.** Topics vary; may be repeated for credit. Prerequisites vary with topics. 1-3 hours.

610. **Introduction to Set Theory.** Set theory, products, relations, orders and functions, cardinal and ordinal numbers, transfinite induction, axiom of choice, equivalent statements.

630. **Algebra I.** 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: Admission to graduate program or permission of instructor.

631. Algebra II. Vector spaces and their bases; linear transformations; eigenvalues and eigenvectors; Jordan canonical form; multilinear algebra and determinants; norms and inner products. Prerequisites: Admission to graduate program or permission of instructor.

642. Calculus of Several Variables. Functions of several variables; total and partial derivatives; the implicit function theorem, integration of different forms; Stokes' Theorem. Prerequisites: A grade of at least B in MA 441/541 or permission of instructor.

645. Real Analysis I. Abstract measures and integration; positive Borel measures; L_p spaces. Prerequisites: A grade of at least B in MA 642 or permission of instructor.

646. Real Analysis II. Complex measures and the Radon-Nikodym theorem; differentiation; integration on product spaces and Fubini theorem. Prerequisites: A grade of at least B in MA645 or permission of instructor.

648. Complex Analysis. 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, residues, the Laurent expansion, the Riemann mapping. Prerequisite: A grade of at least B in MA 642 or permission of instructor.

650. Differential Equations. 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: A grade of at least B in MA 630 or permission of instructor.

655. Partial Differential Equations. This course covers first order partial differential equations, elliptic equations, parabolic equations, and hyperbolic equations. The prerequisites for this class are MA 642, or MA 650, or permission of the instructor.

660. Numerical Linear Algebra. Vectors and matrix norms; the singular value decomposition; stability; condition numbers and error analysis; QR factorization; LU factorization; least squares problems; computation of eigenvalues and eigenvectors; iterative methods. Prerequisites: A grade of at least B in MA 630 or permission of instructor.

661. Modeling with PDE. 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.

663-664. Operations Research I-II. Mathematical optimization techniques. Formulation, solution, and analysis of problems arising from business, engineering, and science. Prerequisite: MA 244.

665. Partial Differential Equations: Finite Difference Method. 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, method of lines; first order hyperbolic systems and characteristics Lax-Wendroff schemes, methods of lines for hyperbolic equations.

668, 669. Numerical Analysis I, II. 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 252 and either MA 263 or CS 210.

670. Topology I. Definition of topologies; closure; continuity; product topology; metric spaces. Prerequisites: A grade of at least B in MA 630 or permission of instructor.

671. Topology II. Connectedness; completeness and compactness (in particular in metric spaces); countability and separation axioms; Tychonoff's theorem; homotopy; partitions of unity. Prerequisites: A grade of at least B in MA 670 or permission of instructor.

675. Differential Geometry. Local and global theory of curves and surfaces: Fenchel's theorem; the first and second fundamental forms; surface area; Bernstein's theorem; Gauss theorema egregium; local intrinsic geometry of surfaces; Riemannian surfaces; Lie derivatives; covariant differentiation; geodesics; the Riemann curvature tensor; the second variation of arclength; selected topics in the global theory of surfaces. Prerequisites: A grade of at least B in MA 642 or permission of instructor.

680. Probability. Combinatorics; probability spaces; independence and conditional probability; discrete and continuous random variables; probability distributions and density functions; the law of large numbers; the central limit theorem.

690, 691. Mathematics Seminar. 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.

691-697. Special Topics in Mathematics. These courses cover special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites vary with topics. 1, 2, or 3 hours.

698. Nonthesis Research. Prerequisite: Permission of instructor. 1-6 hours.

699. Thesis Research. Prerequisite: Admission to candidacy and permission of instructor. 1-6 hours

Mathematics, Applied (Ph.D.*)

*The Applied Mathematics graduate program is offered jointly by the University of Alabama at Birmingham, the University of Alabama (Tuscaloosa), and the University of Alabama in Huntsville.

Ph.D.*

Degree Offered:

Director: *Karpechina*

Phone: (205) 934-2154

E-mail: karpeshi@uab.edu

Web site: www.math.uab.edu

Faculty

Alexander Blokh, Professor (Mathematics); Dynamical Systems.

Nikolai Chernov, Professor (Mathematics); Dynamical Systems, Ergodic Theory

Louis Dale, Professor (Mathematics); Ring Theory

Hassan Fathallah, Associate Professor (Mathematics); Mathematical Biology

Logan Hoehn, Visiting Assistant Professor (Mathematics)

Walter Johnson, Instructor (Mathematics)

Ioulia Karpechina, Professor (Mathematics); Partial Differential Equations and Mathematics Physics

Ian W. Knowles, Professor (Mathematics); Ordinary and Partial Differential Equations, Numerical Analysis

Elena Kravchuk, Instructor (Mathematics)

Mary Larussa, Visting Instructor (Mathematics)

Roger T. Lewis, Professor Emeritus (Mathematics); Differential Equations, Spectral Theory

Junfang Li Assistant Professor (Mathematics); Nonlinear Partial Differential Equations.

John C. Mayer, Professor (Mathematics); Topology, Continuum Theory, Dynamical Systems

Mubenga N. Nkashama, Professor (Mathematics); Differential Equations, Dynamical Systems, Nonlinear Functional Analysis

Peter V. O'Neil, Professor Emeritus (Mathematics); Graph Theory, Combinatorics

Lex G. Oversteegen, Professor (Mathematics); Topology, Continuum Theory, Dynamical Systems

Yoshimi Saito, Professor (Mathematics); Scattering Theory, Differential Equations

Roman Shterenberg, Assistant Professor (Mathematics); Mathematical Physics, Spectral Theory, Inverse Problems, Partial Differential Equations, Non-linear Partial Differential Equations

Nandor Simanyi, Professor (Mathematics); Dynamical Systems With Some Algebraic Flavour

Douglas Stocks, Associate Professor Emeritus (Mathematics)

Gunter Stolz, Professor (Mathematics); Spectral Theory, Mathematical Physics

James R. Ward, Jr., Professor Emeritus (Mathematics); Differential Equations, Nonlinear Analysis, Dynamical Systems

Rudi Weikard, Professor (Mathematics); Ordinary and Partial Differential Equations, Mathematical Physics

Gilbert Weinstein, Associate Professor (Mathematics); Partial Differential Equations, General Relativity, Differential Geometry

Yanni Zeng, Associate Professor (Mathematics); Nonlinear Partial Differential Equations, Numerical Analysis, Gas Dynamics

Lei Zhang,

Henghui Zou, Associate Professor (Mathematics); Nonlinear Partial Differential Equations, Nonlinear Analysis

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 550 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. This is an exam in real analysis and applied linear algebra. It is administered by the Joint Program Committee, which includes graduate faculty from all three participating universities. A student that is admitted directly into the Ph.D. program is expected to take this exam by the end of the first year at the latest. This examination may be taken no more than twice.
- 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.
- 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 493B, 1500 University Boulevard, Birmingham, Alabama 35294-1170.

Telephone 205-934-2154

E-mail karpeshi@uab.edu

Web www.math.uab.edu

Course Descriptions

For courses at cooperating universities, see the graduate catalogs of the University of Alabama (Tuscaloosa) and the University of Alabama in Huntsville. 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.

In addition to courses offered in the M.S. program, the following courses are offered in the Ph.D. program. All courses carry 3 hours of credit unless otherwise noted.

740. Advanced Complex Analysis. Varying topics. May be repeated for credit. Prerequisites: Having passed the Qualifying Exam or permission of instructor.

745. Functional Analysis I. Normed and Banach spaces, inner product and Hibert 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: Having passed the Qualifying Exam or permission of instructor.

746. Functional Analysis II. Varying topics. May be repeated for credit. Prerequisites: Having passed the Qualifying Exam or permission of instructor.

747. Linear Operators in Hilbert Space. Hilbert space, Bessel's inequality, Parseval's formula, bounded and unbounded linear operators, representation theorems, the Friedrichs extension, the spectral theorem for self-adjoint operators, spectral theory for Schrödinger operators. Prerequisites: Having passed the Qualifying Exam or permission of instructor.

748. Fourier Transforms. Fourier transform and inverse transform of tempered distributions; applications to partial differential equations. Prerequisites: Having passed the Qualifying Exam or permission of instructor.

750. Advanced Ordinary Differential Equations. Varying topics. May be repeated for credit. Prerequisites: Having passed the Qualifying Exam or permission of instructor.

753. Nonlinear Analysis. Selected topics including degree theory, bifurcation theory, and topological methods. Prerequisite: Having passed the Qualifying Exam or permission of instructor.

755. Advanced Partial Differential Equations. Selected topics varying with instructor. : Having passed the Qualifying Exam or permission of instructor.

760. Dynamical Systems I. Continuous dynamical systems. Limit sets, local sections, minimal sets, centers of attraction, recurrence, stable and wandering points, flow boxes, and monotone sequences in planar dynamical systems, Poincare-Bendixson theorem. Prerequisites: Having passed the Qualifying Exam or permission of instructor.

761. Dynamical Systems II. Discrete dynamical systems. Hyperbolicity, symbolic dynamics, chaos, homoclinic orbits, bifurcations, and attractors (theory and examples). Prerequisite: Having passed the Qualifying Exam or permission of instructor.

770. Continuum Theory. Pathology of compact connected metric spaces. Inverse limits, boundary bumping theorem, Hahn-Muzukiewicz theorem, composants, chainable and circle-like continua, irreducibility, separation, unicoherence, indecomposability. Prerequisite: Having passed the Qualifying Exam or permission of instructor.

772. Complex Analytic Dynamics. Riemann surfaces, iteration theory of polynomials, rational functions and entire functions, fixed point theory, Mandelbrot set, Julia sets, prime ends, conformal mappings. Prerequisite: Having passed the Qualifying Exam or permission of instructor.

774. Algebraic Topology. Covering spaces; introduction to homotopy theory, singular homology, cohomology. Prerequisites: Having passed the Qualifying Exam or permission of instructor.

776. Advanced Differential Geometry. Varying topics. May be repeated for credit. Prerequisite: Having passed the Qualifying Exam or permission of instructor.

790-797. Special Topics in Mathematics. These courses cover special topics in mathematics and the applications of mathematics. May be repeated for credit when topics vary. Prerequisites Permission of instructor. 1, 2, or 3 hours.

798. Nondissertation Research. Prerequisite: Permission of instructor. 1-6 hours.

799. Dissertation Research. Prerequisite: Admission to candidacy and permission of instructor. 1-6 hours.

Biomathematics (BST)

Please see Biostatistics (BST) course descriptions for additional graduate courses in applied mathematics

Physics (Ph.D., M.S.)

Degree Offered: Ph.D., M.S.

Director: *Vohra*

Phone: (205) 934-6662

E-mail: ykvohra@uab.edu

Web site: www.phy.uab.edu

Faculty

Renato P. Camata, Associate Professor (Physics); Laser Synthesis, Processing, and Characterization of Nanostructured Materials; Aerosol Strategies in Nanoparticle Research; Hybrid Organic/Inorganic Nanocomposites; Bioactive Nanoparticles and Coatings.

Shane Aaron Catledge, Assistant Professor (Physics); Materials Science, Nanolithography of biomaterials, biosensors, bone regeneration, synthesis and properties of nanostructured super-hard materials; Chemical vapor Deposition (CVD) of diamond films and novel nanostructured coatings for biomedical implants; mechanical properties

Perry A. Gerakines, Associate Professor (Physics); Infrared Astronomy, Laboratory Astrophysics, Interstellar Dust and Ices, Comets, Astrobiology

Joseph G. Harrison, Associate Professor (Physics); Energy-Band Structure, Electronic Structure of Defect Systems, Simulation of CVD processes and EM Energy Deposition in Tissue.

David J. Hilton, Assistant Professor (Physics); Terahertz Time-Domain Spectroscopy, Correlated Electron Materials, Complex Functional Nanomaterials. High Magnetic Field Spectroscopy, Imaging.

Rakesh Kapoor, Assistant Professor (Physics); Biophotonics, Biophysics; Bioimaging; Up Converting Materials; Biosensors and Nanostructured Biomaterials.

Ryoichi Kawai, Associate Professor (Physics); Condensed Matter Physics Theory, Computational Physics, Science of Complexity

Chris M. Lawson, Professor (Physics); Nonlinear Optics, Fiber Optics, Optical Sensor

James C. Martin, Associate Professor (Physics); Conformations of Biological Macromolecules, Laser Light Scattering, Fluorescence Photobleaching

Sergey B. Mirov, University Professor (Physics); Experimental Quantum Electronics, Solid-State Lasers, Laser Spectroscopy

Thomas M. Nordlund, Associate Professor (Physics); Structure and Dynamics of Biological Macromolecules, Optical Spectroscopy and Imaging, Photobiophysics.

David L. Shealy, Chair, Professor (Physics); Geometrical Optics, Laser Beam Shaping Optics; Theoretical Optics, High Performance Computing.

Andrei Stanishevsky, Associate Professor (Physics); Nanomaterials and nanoparticles, thin films, nanostructures, biomedical and optical applications of nanomaterials and nanodevices

Yogesh K. Vohra, Professor & University Scholar (Physics); High Pressure Materials Research, Growth and Characterization of Synthetic Diamond, and Nanoscale Materials for Biomedical Applications

Lowell E. Wenger, Professor (Physics); Magnetic Materials and Superconductors

Mary Ellen Zvanut, Professor (Physics); Electrical and EPR Studies of Insulators and Semiconductors

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 astrophysics, theoretical and computational physics, or biophysics and medical applications of 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.

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 610-611, 650-651, and 671-672 and 6 semester hours of Thesis Research (PH 699). 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 area, including astrophysics, astrobiology, biophysics, chemical physics, geophysics, mathematical physics, neurophysics, 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.

Acceptance into this interdisciplinary track will be through a Physics Graduate Faculty member, who will be prepared to supervise the student's thesis research and develop a plan of study. This plan of study will include a core of courses (Classical Mechanics, PH 561-562; Electromagnetic Theory, PH 545-546; and Quantum Mechanics, PH 550-551), other physics graduate-level courses, and a minimum of 12 hours of graduate-level courses offered by other departments. The Department of Physics will establish a standing Physics Interdisciplinary Track Committee to review and concur in each student's plan of study. As is current practice, thesis oversight will be by the student's M.S. Graduate Study Committee.

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 an additional 6 semester hours of coursework instead of a thesis and gives the student an M.S.-degree exit examination.

Ph.D. Program

All students are required to pass a written qualifying examination covering the areas of classical mechanics, electromagnetic theory, quantum physics, and one selected topic from astrophysics, optics, or solid-state physics, or topics recommended by the graduate committee. This examination is to be taken within two terms of completing six core courses, PH 710-711, 750 -751, and 771-772. Under no circumstances may the examination be taken more than twice.

Following satisfactory completion of the qualifying examination 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 at least four graduate courses and appropriate tools of research, such as computer and/or foreign language competency. After the student completes these specialization courses and tools of research, the Graduate Study Committee will administer an oral 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 following doctoral fellowships are available to the graduate students enrolled in the PhD program in physics at UAB.

NIBIB Supported T-32 Predoctoral Training Grant

National Institute of Biomedical Imaging and Bioengineering (NIBIB) has awarded an interdisciplinary predoctoral training grant to UAB that is entitled "Nanotechnology in Biosensors and Bioengineering". It is a five year program that started on September 1, 2007. Benefits to participating graduate students include: graduate stipends of \$25,000 per year, full tuition and health insurance, and a travel award of \$1,000 per year. The purpose of this grant is to implement a training program at the interfaces of physics, chemistry, materials science and engineering, and biomedical engineering that will reduce the time from discovery of a new tool in nanotechnology to its application in medical devices, tissue engineering, and

biosensors for earliest detection of molecular signatures of disease. For more information regarding this training program, visit <http://www.uab.edu/cnmb/graduate/index.html>.

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, 2009-12, to support the department's doctoral students in their academic pursuits. The funding released through the fiscal year 2009 Graduate Assistance in Areas of National Need (GAAN) program, will support five physics Ph.D. students at a stipend level of \$30,000 each per year through 2012. The GAANN program also makes an annual institutional payment of \$13,552 per student. 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.

Additional Information

Deadline for Entry Term(s):	Each semester Fall
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

For detailed information, contact Dr. Yogesh K. Vohra, UAB Department of Physics, CH 387, 1530 3rd Avenue South, Birmingham, AL 35294-1170.

Telephone 205-934-4736

E-mail ykvohra@uab.edu

Web www.phy.uab.edu

Course Descriptions

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.

Physics (PH)

501. **Instructional Astronomy I.** Survey of selected topics in astronomy of the universe, stellar systems, and solar systems, with a focus on preparing to teach. Corequisite: PH501L. 4 hours.

501L. **Instructional Astronomy Laboratory.** Laboratory for PH501. Corequisite: PH501. 0 hours.

502. Instructional Physical Science. Lecture and discussion in areas of the physical sciences of importance to basic scientific literacy and to current technology, with a focus on preparing to teach. Corequisite: PH502L. 4 hours.

502L. Instructional Physical Science Laboratory. Laboratory for PH502. Corequisite: PH502. 0 hours.

504. Intermediate Mechanics. Intermediate treatment of the kinematics and dynamics of classical systems. Presentation of problem solving techniques is emphasized.

505. Intermediate Electricity and Magnetism. Intermediate treatment of electricity and magnetism including fields, potentials, induction, Maxwell's equations, circuits. Presentation of problem solving techniques is emphasized.

507-509. Physical Science for Teachers I-III. Concepts of physical science. Laboratory includes evaluation of experiments and equipment for lecture demonstrations. Prerequisite: Permission of instructor. 3 hours each.

520, 521. Introduction to Methods in Theoretical Physics I, II. 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. 3 hours each.

525. Applications of Contemporary Optics I. Applied geometrical optics. Refraction and reflection, paraxial optics, thick lens, matrix theory, optical aberrations, optical systems, and optical design using computer simulations.

526. Applications of Contemporary Optics II. Applied wave optics. Fresnel equations, optical interference, optical interferometry, coherence, diffraction, lasers, and Gaussian beam propagation. Prerequisite: PH 525.

527. Geometrical Optics. Properties of optical systems. Lenses, mirrors, and stops; aberrations; rays and wave fronts, optical instruments; aspheric components. Lecture and laboratory.

528. Physical Optics. Interference and diffraction phenomena; emission, propagation, and absorption of radiation; polarization and dispersion; stimulated emission. Lecture and laboratory.

529. Applications of Optics III. Applied optical interactions with materials—linear and nonlinear polarization phenomena, optical properties of materials, anisotropic optics, electro-optics, and nonlinear optics. Prerequisite: PH 526.

532, 533. Statistical Thermodynamics I, II. 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 550. 3 hours each.

545, 546. Electromagnetic Theory I, II. Electromagnetic theory approached from standpoint of fields and using Maxwell's equations. 3 hours each.

550, 551. Introductory Quantum Mechanics I, II. Principles of quantum mechanics; their application to particle waves, angular momentum, tunneling, radiation, and selection rules; perturbation and variational methods. Prerequisites: PH 351 and PH 562, PH 352 recommended. 3 hours each.

553, 554. Introductory Solid-State Physics I, II. 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 331 and PH 551 or equivalent. 3 hours each.

561, 562. **Classical Mechanics I, II.** Kinematics and dynamics, including central forces, rotating coordinate systems, and generalized coordinates; Lagrangian and Hamiltonian. 3 hours each.

567. **Special Relativity.** Foundations and principles of special relativity with applications to mechanics and electrodynamics. Prerequisites: PH 546 and PH 562.

571. **Fundamentals of Spectroscopy.** Explanation of phenomena related to rotational, vibrational and electronic spectroscopy of atoms and molecules; operational principals of spectroscopic tools including diffraction gratins, waveguides, and interferometers; basic group theory concepts and notation. Prerequisite: Modern Physics 351 or equivalent.

575, 576. **Introduction to Biophysics I, II.** Application of physical techniques and analytical methods of selected biological problems. Prerequisite: Permission of instructor. 3 hours each.

581, 582. **Laser Physics I, II.** 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. 3 hours each.

585. **Laser Spectroscopy.** Practical applications of lasers and modern techniques and instrumentation in laser spectroscopy.

587. **Nanoscale Science & Applications.** Physics of electronic, mechanical, and biological properties of materials at the nanoscale level approaching one billionth of a meter. Applications of nanoscale materials in electronic, mechanical, and biomedical systems are emphasized. Special tools in synthesis and characterization of nanomaterials are discussed.

590. **Experimental Methods.** Design and operation of experimental systems for use in teaching laboratories. 3 hours.

591-593. **Advanced Physics Laboratory I-III.** Laboratory investigation of topics of modern physics. Prerequisite: Permission of instructor. 1-3 hours each.

610, 611. **Classical Mechanics.** Applications of methods of LaGrange, Hamilton, Poisson, and Hamilton-Jacobi to such classical problems as central force, small oscillation, and rigid body motions. Prerequisite: PH 562. 3 hours each.

623, 624. **Modern Optics I, II.** Classical and modern theories of propagation of radiation, interference, diffraction, and dispersion; optical devices, including lasers, holograms, sources, and detectors. 3 hours each.

635. **Statistical Mechanics.** Interpretation of macroscopic phenomena from microscopic principles; fundamental laws of statistical mechanics; applications to simple equilibrium systems, phase transitions, and transport problems. Prerequisite: PH 551.

650, 651. **Electromagnetic Theory I, II.** Boundary value and Green function methods for solving potential problems; fields in dielectric, magnetic media, and radiation fields. Prerequisite: PH 546. 3 hours each.

653, 654. **Solid-State Physics I, II.** Structure and dynamics of solids; optical, magnetic, and transport properties. Prerequisites: PH 553, 554. 3 hours each.

655. **Advanced Solid-State Laboratory.** Thin film X-ray diffraction, Raman spectroscopy in materials characterization, electron paramagnetic resonance, and thin film deposition. Prerequisite: PH 351.

671, 672. **Quantum Mechanics I, II.** Discrete and continuous spectra; central force problems; angular momentum and spin; systems of identical particles; perturbation theory; scattering theory. Prerequisites: PH 550, 551. 3 hours each.

673. **Applications of Quantum Mechanics.** Scattering theory, density matrix, and polarization; applications to atomic and nuclear reactions. Prerequisites: PH 671, 672.

697. **Special Topics in Physics.** Topics of current interest, such as theoretical physics, computational physics, experimental techniques. May be repeated for credit. 1-12 hours.

698. **Nonthesis Research.** May be repeated for credit.

699. **Thesis Research.** May be repeated for credit. Prerequisite: Admission to candidacy. 1-12 hours.

710, 711. **Advanced Classical Mechanics I, II.** Analysis of dynamics, including rigid body motion, featuring the LaGrange formulation, introduction to the Hamiltonian, formulation, Poisson brackets, analyses in nonrelativistic applications. 3 hours each.

715, 716. **Advanced Statistical Mechanics.** Applications of statistical laws to modern topics such as quantum fluids, critical phenomena, and nonequilibrium systems. Prerequisite: PH 533 or PH 635. 3 hours each.

732, 733. **Growth and Characterization of Thin Films I, II.** 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). Laboratory practicum on thin-film deposition and basic characterization of film microstructure and properties. Prerequisites: PH553 and PH554 or permission of instructor. Lecture and laboratory. 3 semester hours each.

740. **Physical Applications of Group Theory.** Point groups, space groups, and applications in atomic, molecular, and solid-state physics.

741. **Mössbauer Spectroscopy.** Theory of nuclear gamma resonance phenomena; experimental techniques; computer fitting of Mössbauer data; application to structure chemistry and properties of nuclei.

742. **Electron Spin Resonance.** Microwave techniques, spin Hamiltonian formalism; applications of ESR to solids.

745. **Molecular Spectroscopy.** Infrared, Raman, and ultraviolet techniques applied to study of molecular properties, including rotation-vibration spectra and spectra of crystalline solids.

750, 751. **Classical Electrodynamics I, II.** Static and time-varying fields in vacuum and in matter, radiation fields, solutions and implications of Maxwell's equation utilizing advanced mathematical methods. Prerequisite: PH 546. 3 hours each.

753, 754. **Advanced Solid State I, II.** Properties of electrons and photons in crystal lattices; electromagnetic interactions with solids; lattice defects. 3 hours each.

760, 761. **Methods of Mathematical Physics I, II.** Vector and tensor analysis; differential and integral equations; Green functions; variational techniques; linear operator theory; Fourier and Laplace transforms. 3 hours each.

762, 763. **Computational Physics I, II.** Numerical techniques for solution of differential, integral, and matrix equations of physics; computer simulations of physical phenomena; optimization problems. Prerequisites: PH 545, 551, and 561.

764-767. **Directed Problems in Computational Physics.** Prerequisite: Permission of instructor. 3 hours each.

771, 772. **Quantum Mechanics I, II.** Discrete and continuous spectra; central force problems; angular momentum and spin; systems of identical particles; perturbation theory; scattering theory. Prerequisites: PH 550, 551. 3 hours each.

773. **Applications of Quantum Mechanics.** Scattering theory, density matrix, and polarization; applications to atomic and nuclear reactions. Prerequisites: PH 771, 772. Spring.

791, 792. **Seminar in Physics I, II.** Topics of current interest in physics, presented by graduate students, faculty, and visitors. Required each term of all full-time graduate students. 1 hour each.

793. **Scientific Communications I.** Scientific writing exercises and recent topics in physics presented by graduate students in order to provide experience in written and oral scientific communication. 1 credit hour.

794. **Scientific Communications II.** Scientific writing exercises and recent topics in physics presented by graduate students in order to provide experience in written and oral scientific communication. 1 credit hour.

797. **Special Topics in Physics.** 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. 1-12 hours.

*798. **Non-dissertation Research.** Prerequisite: Permission of instructor. 1-12 hours.

*799. **Dissertation Research.** Prerequisite: Admission to candidacy. 3-12 hours

Psychology (Ph.D.)

Director of Behavioral Neuroscience Specialization: *Randich*

Director of Lifespan Developmental Psychology Specialization: *Biasini*

Director of Medical/Clinical Psychology Specialization (APA Approved): *Milby*

Primary Faculty

Franklin R. Amthor, Professor (Psychology): Neurophysiology and Neuroanatomy of the Visual System

Karlene Ball, University Professor and Chair (Psychology); Cognitive Aging and Driving

Fred J. Biasini, Associate Professor (Psychology); Autism, Developmental Disabilities, and Early Childhood Development

Mary Boggiano, Associate Professor (Psychology); Psychobiology, Eating Disorders, Obesity, and Reward

Olivio J. Clay, Assistant Professor (Psychology); Health Disparities, Caregiving and Social Support

Edwin W. Cook III, Associate Professor (Psychology); Psychopathology, Psychophysiology, and Statistics

James E. Cox, Associate Professor (Psychology); Physiological Psychology, Obesity

Michael Crowe, Assistant Professor (Psychology): Cognitive Aging and Clinical Geropsychology

Eric Gampher, Assistant Professor (Psychology); Visual Perception and Neuroscience

Kristi Guest, Assistant Professor (Psychology); Developmental Psychology, Developmental Disabilities, Social Development

Bart Hodgens, Assistant Professor (Psychology); Clinical Psychology

Maria Hopkins, Assistant Professor (Psychology); Developmental Disabilities

Rajesh Kana, Assistant Professor (Psychology); Functional MRI, Autism and Social Cognitive Neuroscience

David Knight, Assistant Professor (Psychology); Neuroscience; Brain Imaging, Learning, Memory, & Emotion

Jean Ann Linney, Professor (Psychology); Community Psychology, Human Ecology, Prevention Science

Carl E. McFarland, Jr., Professor (Psychology); Cognitive and Developmental Psychology

Jesse B. Milby, Professor (Psychology); Clinical Psychology, Medical Psychology, Behavior Therapy, Addiction Treatment & Outcome

Sylvie Mrug, Associate Professor (Psychology); Child and Adolescent Development and Psychopathology

Alan Randich, Professor (Psychology); Behavioral Neuroscience

Christopher Robinson, Assistant Professor (Psychology); Evolutionary Biology and Psychology; Memory; Cognitive Psychology; Neuroscience; History of Science; Psychology and Art/Music, Cross-Cultural and Social Psychology; and Human Sexuality

Lesley A. Ross, Assistant Professor (Psychology); Lifespan Developmental Psychology, Cognitive Aging, Interventions

David C. Schwebel, Professor and Vice-Chair (Psychology); Child Injury Prevention, Pediatric Psychology, and Child Clinical Psychology

Michael E. Sloane, Professor (Psychology); Visual Perception and Cognitive Neuroscience

Edward Taub, University Professor (Psychology); Medical Psychology, Biofeedback

Diane C. Tucker, Professor (Psychology); Clinical Psychology, Physiological Psychology, Psycho-oncology, Palliative Care

Gitendra Uswatte, Associate Professor (Psychology); Rehabilitation Psychology, Positive Psychology

Rosalyn E. Weller, Associate Professor (Psychology); Neuroscience, Vision, Obesity, and Brain Imaging

Rex A. Wright, Professor (Psychology); Social Psychology, Motivation, and Psychophysiology

Areas of Specialization

The Psychology Graduate Program offers three specialization options to doctoral students: Behavioral Neuroscience, Lifespan Developmental Psychology, and Medical/Clinical Psychology. A terminal master's degree is not offered. The Medical/Clinical Psychology Specialization is approved by the American Psychological Association.

Behavioral Neuroscience

Study in the Behavioral Neuroscience specialization 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

The Lifespan Developmental Psychology doctoral program trains scientists to conduct research to discover and apply basic principles of developmental psychology in an interdisciplinary context and to apply those principles to a variety of problems. Graduates are capable of taking positions in institutions of higher learning, medical schools, research institutions, government agencies, 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 at the Civitan International Research Center, Center for the Advancement of Youth Health, the Center for Aging, the Center for Applied Gerontology, the Comprehensive Youth Violence Center, 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: mental retardation and developmental disabilities (with special interests in prenatal development and exposures, early intervention, improving special education, adolescent psychosocial development and mental health, and how family members adapt to the problems of a handicapped child); 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); 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, caregiving in families of elderly persons, human factor issues in vision and aging); and language and communication disorders (with special interest in the development of speech perception and word segmentation in young children, how word segmentation may relate to beginning reading, and developmental changes in abilities to use computer-assisted communication systems).

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.

It is possible to enroll in the Gerontology Certification Program concurrently with enrollment in the Lifespan Developmental Psychology Program. More information about this program may be found at: <http://www.aging.uab.edu/SubChannel/Training/pdf/cep-student-policy-2006.pdf>

Medical/Clinical Psychology

The Medical/Clinical Psychology Doctoral Program provides scientist-practitioner training in clinical psychology with an emphasis on investigation and service delivery in a medical setting. It is oriented toward assessment and intervention of behavioral factors associated with disorders, their symptoms and risk reduction, enhanced treatment, prevention, and the enhancement of health. The Program is cosponsored by the UAB School of Medicine.

Coursework, research, and clinical clerkship training are provided by faculty psychologists in the Departments of Psychology, Rehabilitation Medicine, Psychiatry, Neurology, Pediatrics, Surgery (Divisions of Gastric and Cardiovascular Surgery), and Medicine (including Divisions of General and Preventive Medicine, Rheumatology, Arthritis, and Gastroenterology), Center for Aging, Center for Palliative Care, Sparks Center for Developmental and Learning Disorders, Civitan International Research Center; VA Medical Center, and UAB School of Public Health. In addition, psychologists in several health psychology-behavioral medicine and mental health centers in the community play an active teaching, research, and clinical supervisory role in this program.

Current research programs in which faculty and students are involved include AIDS treatment-- efficacy and compliance; HIV/AIDS--risk reduction; Autism Spectrum Disorder intervention outcome; cardiology-- hypertension; cardiovascular surgery--open-heart surgery outcome; pediatric virology--congenital infections and mental development; gastroenterology; gastric bypass surgery, anorexia-bulimia and other eating disorders programs; head injury center--rehabilitation, neurovascular surgery research; epilepsy assessment and treatment research; cocaine and other drug dependence--treatment, development and evaluation; very low birth-weight project; mental retardation--Down's syndrome parent coping project, Alzheimer's disease diagnosis and caregiver projects; and neuropsychological evaluations for early cognitive decline, competence, and Alzheimer's Disease; brain injury studies of behavioral and medical interventions and of imaging correlates of psychological processes; improving health status and utilization; cardiovascular risk assessment and reduction in minority populations; access to cancer screening and care in underserved populations; Women's Health Initiative Multi-Center Project; assessing and modifying women's cancer and other health risks; and smoking cessation interventions. This is a representative but not exhaustive list.

Most Medical/Clinical Psychology Program faculty research is extramurally funded by private foundations and federal support, especially the Centers for Disease Control and multiple institutes of the National Institutes of Health.

It is possible to enroll in the Master of Public Health degree program concurrently with enrollment in the Medical/Clinical Psychology Program; this requires the approval of both the Medical/Clinical Psychology Clinical Director and the UAB School of Public Health.

Application

The deadline for receipt of a complete application for admission is: **November 30 for the Medical/Clinical Psychology Program; December 6 for the Lifespan Developmental Psychology Program; and January 15 for the Behavioral Neuroscience Psychology Program.** (preceding the beginning of the Fall term. Applications are solicited both from students with bachelor's degrees and from those who may have already completed some graduate study. The GRE General Test is required. The GRE Subject Test in psychology is recommended.

Admission

Admission to the program is highly selective. We follow an Affirmative Action/Equal Opportunity process to ensure applicants are evaluated on their individual merit. Successful applicants usually present scores of at least 600 on both the verbal and quantitative portions of the GRE General Test and a minimum 1,200 overall score (verbal plus quantitative). Minimum grade point averages of 3.2 (on a 4.0 scale) overall, over the last two years and in psychology courses, are required for admission.

Because of the interdisciplinary nature of the Behavioral Neuroscience specialization, 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.

Admission to the Lifespan Developmental Psychology specialization 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.

The criteria for admission to the Medical/Clinical Psychology specialization include a minimum of 18 semester hours in psychology courses (specific courses recommended are Introduction to Psychology, Psychological Statistics, Physiological Psychology, Psychology of Learning, and Abnormal Psychology or Psychology of Personality) and a minimum of 18 semester hours in life science courses (courses in chemistry and biology/physiology). Courses in mathematics through calculus and in computer programming are recommended. Students with deficits in any of these areas may be required to take suitable additional coursework before and/or after enrollment. Relevant research or clinical service experiences are considered important indications of the applicant's motivation and commitment to psychology. The relevance of the student's goals and interests to the research-health psychology orientation of the specialty is also an admission consideration.

Advisement

Behavioral Neuroscience students are advised by the Behavioral Neuroscience specialization director in consultation with a graduate program steering committee and by their research preceptors until the dissertation committee is appointed, usually early in the third year of study.

Students accepted in the Lifespan Developmental Psychology specialization will be 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.

The associate director of the Medical/Clinical Psychology program is the initial Graduate Study Committee (GSC) chair for each student during their first year. Throughout the first academic year the chair will meet with students as necessary to assess their goals, interests, and background, and to provide general advising as needed. As the year progresses, the initial chair and student will nominate faculty to serve as permanent chair and members of the GSC beginning after the first academic year. Thereafter, students are encouraged to suggest changes in their GSC membership to accommodate evolving interests, advising needs, research collaborations, etc.

Curriculum

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 716-717), and an ongoing seminar in current research (PY 756). Advanced academic coursework is determined by the student and mentor. Each student must enroll in a research practicum directed by a member of the graduate faculty during each term in residence. 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 fulfill the pre-dissertation 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.

Lifespan Developmental Psychology

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.

Medical/Clinical Psychology

The Medical/Clinical Psychology specialization places strong emphasis on integration of biological and behavioral sciences. Research and clinical training require an undergraduate background in both psychology and life science. The program requires continued pursuit of applied skills, biological and psychological skill, and knowledge basic to health psychology research and practice. The curriculum includes three broad areas:

1. Basic biological and psychological knowledge, including cognitive biological and social-emotional basis of behavior, individual differences, statistics and research methodology, professional issues, and ethics;
2. Professional skill and knowledge, including assessment, intervention, evaluation, and consultation; and
3. Medical psychology.

Students pursue research and a clinical focus on one or more of the several available health psychology areas through advanced scientific and applied coursework, clinical clerkship, and directed research activities that typically culminate in the doctoral dissertation.

Course requirements for the Medical/Clinical Psychology specialization include but are not limited to

1. Statistics and Research Design--a four-course sequence;
2. Clinical Psychological Assessment--a one-year modular course sequence;
3. Psychological Intervention--a four-course sequence;
4. General Psychology--Developmental Psychology (core course for all three programs);
5. Biological Bases--Behavioral Neuroscience (core course for all three programs);
6. Health Psychology--a four-course series, three of which involve choices from alternatives such as neuropsychology, psychopharmacology, psychophysiology, neural and humoral bases of behavior, and health psychology, plus elective seminars in fields such as rehabilitation, aging, cardiology, and neuropsychology; and

7. Other Required Courses--Adult Personality & Psychopathology, Professional Issues and Ethics, History & Systems, and Social Psychology.

Additional courses and/or seminars may be taken as electives. The student's advisor may also require additional coursework for a chosen area of emphasis. Courses in many departments of the university are available on an elective basis. Students are required to complete a minimum of 18 semester hours of research and 18 semester hours of clinical clerkship. Students are required to complete a master's project.

Students in Medical/Clinical Psychology are also required to serve a 12-month internship in clinical psychology in a medical facility. The internship must be in a program outside of UAB and accredited by the American Psychological Association. The PhD is awarded upon successful defense of a dissertation and completion of internship.

Financial Aid

All students admitted to the Behavioral Neuroscience, Lifespan Developmental Psychology, and Medical/Clinical Psychology specializations may expect to receive financial aid. Sources of support include fellowships and research and teaching assistantships.

Additional Information

For detailed information, contact the UAB Department of Psychology, Campbell Hall, Room 415, 1300 University Blvd., Birmingham, AL 35294-1170.

Dr. Alan Randich, Behavioral Neuroscience Specialization Director; Telephone 205-934-3850; Email arandich@uab.edu;

Dr. Fred Biasini, Lifespan Developmental Psychology Specialization Director; Telephone 205-934-2610; Email psych-lifedev@mail.ad.uab.edu; Web <http://crag.uab.edu/developmental/>;

Dr. Jesse Milby, Medical/Clinical Psychology Specialization Director; Telephone 205-934-8723; medpsych@uab.edu; Web <http://www.uab.edu/psychology/>

Course Descriptions

Unless otherwise noted, all courses are for 3 semester hours of credit. Courses numbers preceded with an asterisk indicate courses that can be repeated for credit, with stated stipulations.

Psychology (PY)

698. **Premaster's Degree Graduate Research.** 1-3 hours.

699. **Master's Thesis Research.** Prerequisite: Admission to candidacy. 1-6 hours.

701. **Professional Issues and Ethics in Psychology.** 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. APA organizational structure. 1 hour.

702. **History and Systems of Psychology.** Major schools of psychology; influential figures in psychology.

703. **Theories of Personality.** Survey of theories of personality development and functioning.

704. **Social Psychology.** Interpersonal relationships and effects of social environment on social perception and human behavior.

705. **Learning Processes.**

706. Sensory and Perceptual Processes. Sensory physiology; diagnostic techniques for pathophysiology of sensory systems; human psychophysics and principles of perception.

707. Cognition. Attention, memory, learning, and information processing; theoretical issues and evaluation of relevant research.

708. Developmental Psychology. Human development from prenatal period to old age. Genetic and environmental determinants of behavior; linguistic, cognitive, intellectual, personality, social, and emotional development.

709. Theory and Research in Emotion. Contemporary theories of evolutionary, hereditary, behavioral, semantic, and physiological aspects of emotion.

710. Seminar in Contemporary Issues in Developmental Psychology. Weekly forum to discuss issues related to developmental research; ethical issues; professional issues. 1 hour.

711. Seminar in Cognitive Development. Seminar in the development of memory, perception, learning, and thinking throughout the lifespan.

712. Seminar in Social Development. Theoretical models and empirical findings.

714. Developmental Aspects of Sensation and Perception. Theoretical models and empirical findings; life span development of sensory capabilities.

715. Seminar in Emotional Development. Contemporary topics in the development of emotional responsiveness, attachment, perception, and expression.

716. Introduction to Statistics and Lab. Probability, descriptive statistics, sampling distributions, null hypothesis testing, comparisons between means; tests on categorical data, bivariate and multiple regression.

717. Applied Statistical Methods and Lab. Univariate analysis of variance and factorial designs; interpretation of data from multifactor experimental designs.

718. Research Design and Lab. Traditional and nontraditional approaches; includes univariate and multifactor experimental designs, quasi-experimental designs.

719. Multivariate Statistical Methods and Lab. Multiple regression, multivariate analysis of variance and covariance, canonical correlation, principal components, and discriminant analysis.

720. Human Neuropsychology. Structure and function of human brain; human behavior; cognitive functions and personality functions; brain-behavior relationships following neurological impairment.

721. Neuropsychological Assessment. Evaluation of various types and locations of brain damage and human mental impairment; assessment applications.

722. Advanced Human Neuropsychology. Clinical case study and special topic presentation around patients with specific types of neurocognitive deficits. Assessment, intervention, and new research developments.

723. Seminar in Abnormal Child Development.

724. Motor Control After Stroke and Other Neurological Injuries. Analysis of motor deficits after stroke and other neurological injuries; the contribution of excess motor disability to these deficits;

conceptual basis of constraint induction (CI) therapy; methods of CI therapy; new methods for assessing motor deficits with hands-on training with testing and intervention.

725. Developmental Research Methodology. Experimental and correlational, cross-sectional and longitudinal designs; multivariate approaches.

726. Seminar in Advanced Developmental Psychology. Advanced issues in developmental research and theory.

727. Longitudinal Data Analysis (Studies Laboratory). Direct experience analyzing large multivariate, repeated-measures data sets from existing longitudinal studies. Methods range from how to track subjects and adjust for missing and mistimed data to ways to model complex development processes and systems.

728. Seminar in Family Research. Family systems theory and assessment techniques suitable for parents and children at different stages of life; combining objective and subjective data from multiple sources; recent findings about development within the family context.

729. Seminar in Adolescent Development. Theoretical models and empirical findings related to biological, psychological, and sociohistorical changes in adolescent development.

730. Research Seminar in Cognitive Science. Current research, theories, and controversies in cognitive science. Seminar topic changes each term. Prerequisite: Permission of instructor. 1 hour.

731. Health Psychology & Assessment I. Prevention, enhancement, and intervention; environmental factors, marketplace factors, and interpersonal factors.

732. Health Psychology II. Physiological and psychological factors influencing disease and disorders; health psychological assessment and intervention strategies applicable to individuals and groups.

734. Current Trends in Medical Psychology. 1 to 3 hours.

735. Psychology of Addiction. Causative and developmental factors and treatment approaches for all types of addictions (nicotine, alcohol, drugs, etc.).

736. Overview of Cognitive Science. Cognitive science is the interdisciplinary study of mind and intelligence. This course is a comprehensive overview of the historical and conceptual foundations of cognitive science. No previous courses in cognitive science are needed to participate.

739. Seminar Contemporary Issues in Clinical Medical Psychology (1).

740. Psychopathology. Theoretical and research issues in maladaptive behavior; description and classification schemes; theories of etiology and maintenance of psychopathology.

741. Developmental Bases of Personality and Psychopathology Major concepts, issues, and methodologies related to the development of personality and psychopathology. Focuses on concepts of temperament, attachment, and identity development, along with their relationships to disorders with antecedents and/or onset in infancy, childhood and adolescence.

742. Sports Psychology. Psychological factors in athletic performance. Psychological characteristics of successful athletes; anxiety arousal, motivation, attention, cognition, and imagery.

750. Psychopharmacology.

751. Human Psychopharmacology. Neurophysiological underpinnings and clinical applications of psychopharmacology.

752. Neural and Humoral Bases of Behavior. Interaction of central nervous system and peripheral mechanisms, endocrine and autonomic nervous systems; relationship to human disorders. Topics vary.

753. Overview of Behavioral Neuroscience. Neural systems which control behavior will be studied, incorporating knowledge gained from neurobiological and psychological research. Topics will include synaptic communication, regulating behaviors, learning, memory, sensation and perception, movement, emotions, and psychopathology. Prerequisite: Permission of instructor.

755. Human Psychophysiology. Basic and applied research topics.

756. Research Seminar in Behavioral Neuroscience. Discussion of current literature and presentation of ongoing research by students in the program. 1 hour.

757. Topics in Behavioral Neuroscience. Research and methodology in behavioral neuroscience. Topics vary.

758. Developmental Psychobiology. Prenatal and postnatal influences on behavioral and physiologic development; psychobiology of mother-infant interactions during early development; research with human populations, primates, other species.

759. Neural Information Processing Systems for Sensory Coding.

760. Interviewing and Behavioral Observation. Theory and practice of interviewing and behavioral assessment with adult and child populations. 2 hours.

761. Behavioral Assessment. Psychometric and observational procedures, relying largely on behavioral theory, to observe, analyze, and assess human clinical behaviors; development of intervention activities. 2 hours.

762. Psychological Tests and Measurements. Test construction, norming, standardization, and sampling procedures.

764. Psychological Assessment: Cognitive Child & Adult. Cognitive assessment of children and adults focusing on Wechsler scales, Stanford-Binet, and additional cognitive, academic, memory, and learning tests.

765. Psychological Assessment: Personality Assessment I. Objective personality assessment, primarily focusing on Minnesota Multiphasic Personality Inventory. 2 hours.

766. Psychological Assessment: Personality Assessment II. Traditional projective techniques, utilizing Rorschach test following Exner's system. 2 hours.

767. Psychological Assessment: Health Psychology. Use of multiple health-related questionnaires, tests; indices in assessing health behavior, quality of life; traditional psychological tests in health context. 2 hours.

768. Advanced Personality Assessment. Integration of cognitive and personality evaluation techniques in applied clinical practice setting.

769. Cognitive Behavior Psychotherapy. A review of theory-driven manualized cognitive-behavioral therapy interventions with emphasis upon what has been found to work best with what types of patients.

770. Survey of Psychotherapeutic Methods. Procedures for changing maladaptive behavior. Research and methodological issues, factors common to most therapy, and major therapeutic techniques.

771. Interpersonal Psychotherapy. Psychodynamic, humanistic, existential theories of psychotherapeutic intervention.

772. Behavior Therapy. Cognitive and more traditional behavioral approaches in intervention in mental health and medical environment.

773. Behavior Therapy Seminar. Behavioral theory; new and experimental technology for alteration in human behaviors. 1 hour.

774. Family Therapy. Traditional systems theory, intervention strategies, and family dynamics; case examples and group participation.

775. Advanced Seminar in Psychotherapeutic Methods. Intervention modalities; research strategies for outcome evaluation. 2 hours.

776. Child and Adolescent Psychotherapy. Application of child psychopathology knowledge and intervention with child and adolescent population; theoretical and applied issues of verbal and nonverbal psychotherapy. 2 hours.

777. Psychotherapy Practice--Shadowing. Passive exposure to individual and group therapy conducted by faculty clinical psychologists. 1 hour.

778. Psychotherapy Practice--Initial. Initial active exposure to individual and group therapy supervised by faculty clinical psychologist. 2 hours.

780. Rehabilitation Psychology. Rehabilitation of chronic physical disorders; neurological disorders such as cerebrovascular disease, head trauma, and spinal cord injury.

781. Forensic Psychology. Interface between psychology and law; civil and criminal procedure; expert witness; insanity, competency, commitment, and malpractice. Experience in criminal justice settings. 2 hours.

782. Anxiety and Anxiety-Based Disorders. Behavioral syndromes within traditional mental health area and in variety of medical populations. Includes phobias and anxiety-based medical and nonmedical disorders.

783. Developmental Disabilities. Mental retardation, learning disabilities, and other developmental disorders. Research on nature of disabilities and major intervention techniques.

784. Organizational Psychology. Behavioral responses to, or correlates of, organizational structures and processes.

785. Psychology of Aging. Age differences in perception, memory, intelligence, personality, adjustment, and psychopathology.

786. Seminar in Aging. Contemporary topics in aging, including basic science, clinical, and psychosocial issues. 1 hour.

787. The Dynamics of Pain. Comprehensive study of physiology, pharmacology, and anatomy of acute and chronic pain. Emphasis on how medical treatments relieve pain. Topics include: stress-induced analgesia, transcutaneous electrical stimulation, acupuncture, inflammation, and psychological approaches to the treatment of pain.

788. Pediatric Psychology.

789. Social/Ethnic Issues in Therapy.

790. Internship in Clinical Psychology. 9 hours.

791. Special Topics in Psychology. 1-3 hours.

793. Cognitive Neuroscience. Prerequisite: Permission of instructor.

796. Practicum in the Teaching of Psychology. 1-3 hours.

797. Clinical Practicum in Medical Psychology. 1-3 hours.

798. Predoctoral Degree Graduate Research. 1-3 hours.

799. Doctoral Dissertation Research. Prerequisite: Admission to candidacy. 1-6 hours.

Cognitive Science (CGS)

700. Foundations of Cognitive Science. An introduction to the interdisciplinary study of mind and intelligence, embracing philosophy, psychology, computer science, neuroscience, and linguistics; past and future of cognitive science; key concepts and methods.

702-708. Special Topics. Mind/brain; brain mapping and functional imaging; formal languages and neural nets; language development and cross-cultural language studies; select current topics in cognitive science.

710. Proseminar Journal Club in Cognitive Science. Pass/Fail. 1 hour.

712-720. Research Rotation. Cognitive science research as practiced by participating cognitive science faculty. Pass/Fail. 1-3 hours each.

The following departments or programs offer courses available to and recommended for cognitive science graduate students. Further information may be obtained by contacting the Committee on Graduate Study in Cognitive Science.

Anthropology (ANTH)

Biocommunication (BIC)

Biomedical Engineering (BME)

Computer and Information Sciences (CS)

English (Linguistics) (EH)

Neuroscience (NEUR)

Philosophy (PHL)

Psychology (PY)

Physiology and Biophysics (PHY)

Vision Science (VIS)

Public Administration (M.P.A.)

Degree Offered: M.P.A.

Director: Dr. Michael Howell-Moroney
Phone: (205) 934-2339
E-mail: mpa@uab.edu
Web site: <http://www.uab.edu/government/government-graduate-programs>

Faculty

Janet M. Bronstein, Professor (Health Care Organization and Policy): Health services utilization, health policy, community-based organizations; Co-coordinator of M.P.A.-M.P.H. degree program, School of Public Health.

Nevbahar Ertas, Assistant Professor (Government): Public policy, public and nonprofit budgeting, program evaluation.

Donna M. Handley, Associate Professor (Government): Administrative theory, nonprofit management, intergovernmental relations, leadership in public administration.

Akhlaque U. Haque, Associate Professor (Government): Public administration theory, geographic information systems (GIS), information management, technology and governance, health policy.

Michael Howell-Moroney, Associate Professor (Government): Research methodology, statistics, urban policy and administration, community development.

James D. Slack, Professor (Government): Human resource management, ethics and morality, workplace diversity policy, faith-based management.

Adjunct Faculty

Sam Gaston, MPA. City Manager, Mountain Brook: City and county management, state and local government.

Ellyn Grady, MPA. Senior Vice President, Agency Impact and Resource Development, United Way of Central AL: Nonprofit management.

Sarah Newell, MPA. Vice President, Agency Impact Operations, United Way of Central Alabama: Program evaluation.

Joseph Packa, MPA. Service Area Executive (retired), American Red Cross Southeast Area: Nonprofit management and health, strategic planning.

MPA Program Mission

In line with the mission of the University, the MPA program is committed to excellence in graduate education through teaching, research and service. The program focuses on building the next generation of responsible decision makers by enhancing their intellectual capacities through knowledge and skills provided within the NASPAA-based 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 National Association of Schools of Public 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:

- Understand the political, economic, social and legal context of the public service
- Understand and appreciate the transcending values of ethics/morality and diversity in the public service;
- Achieve substantial competence in the public policy-making processes, administrative theory and behavior, human resource management, budgeting, public administration research and information management.

Degree Requirements

Students in the MPA program must complete a total of **39 semester hours** or the equivalent, with an overall grade average of at least B. The curriculum features a 9 course core sequence, plus 4 specialization/elective courses in either of two tracks; Nonprofit Management or Public Management and Planning. 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/MSCJ dual degree**](#) is offered.
- For non-traditional students interested in managing nonprofit organizations the program offers a [**Graduate Certificate in Nonprofit Management**](#).

Admission Requirements

Because of its multi-disciplinary nature, persons from all undergraduate majors are considered for admission to the program. The program adheres to a standardized admission criterion based on the candidate's GPA.

- **Regular Admission** is granted to students with a cumulative undergraduate GPA of 3.2 or above from an accredited institution (or last 60 hours, whichever is higher). Students who have completed a masters degree in another field from an accredited institution with a 3.0 GPA or higher are also eligible for regular admission.
- **Probationary Admission:** is granted to students with an undergraduate GPA (or last 60 hours) of 2.75 to 3.19 from an accredited institution. Probationary admission students must maintain a 3.0 GPA or higher in their first four MPA courses to stay in the program.
- Students with an undergraduate GPA below 2.5 are generally not admitted into the program. Students with an undergraduate GPA between 2.5 and 2.75 may elect to take a designated core course in the fall or spring as a non-degree seeking student. If the student is able to demonstrate good performance in that class on the basis of both individual assignments and the final course grade, the

student may then petition to have their application reconsidered by the faculty at that time.

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	TOEFL and TWE required for international applicants whose native language is not English.

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. In addition, every year at least one MPA student is awarded a cash award for academic excellence from the MPA Alumni Association. Other financial resources are available through the Office of Student Financial Aid.

Curriculum

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. A full time student, taking 3 courses per semester, plus two additional courses over the summer, should be able to complete the program within two years. All courses are offered in the evenings to accommodate working professionals.

Core Courses: All students are required to take the following nine courses:

- | | |
|---------|---|
| MPA 600 | Ethics and Morality in Public Service |
| MPA 601 | The Public Policymaking Process |
| MPA 602 | Administrative Theory and Behavior |
| MPA 603 | Public and Nonprofit Budgeting |
| MPA 604 | Human Resources Management |
| MPA 605 | Information Technology for Government |
| MPA 606 | Foundations of Public Administration Research |
| MPA 607 | Quantitative Methods for Public Administration* |
| MPA 697 | Graduate Research Paper (Capstone)** |

*Pre-requisite MPA 606 (Foundations of Public Administration Research)

**Should be taken last term. Not required for students pursuing thesis option

Specializations

Students should select a specialization based upon their career goals and interests. The specializations are **Nonprofit Management or Public Management & Planning**. Students must take three courses in their specialization. In addition to three specialization courses, students must take one elective course. Generalists must take (2) courses from each specialization.

Nonprofit Management Specialization Requirements (choose 3 courses)

Students interested in improving their organizational management, fundraising and grant management skills for nonprofits should select this specialization. This specialization prepares students for a wide

range of careers within the nonprofit sector including middle and upper management positions, fundraising and development, grant management and program management/evaluation.

MPA 671	Marketing and Fundraising
MPA 672	Nonprofit Management
MPA 673	Nonprofit Health
MPA 674	GIS for Managers
MPA 684	Grants Management
MPA 690	Faith Based Organizations
MPA 691	Community Development

Public Management and Planning Specialization Requirements (choose 3 courses)

Students interested in public management or planning should select this specialization. This specialization prepares students for a wide variety of positions including federal, state and local government management, budget and financial management, planning, economic development, community development, program analysis and evaluation.

MPA 662	State and Local Government Administration
MPA 667	Public and Nonprofit Law
MPA 668	Intergovernmental Relations
MPA 678	Strategic Planning
MPA 681	Local Government Planning
MPA 683	Public Managerial Economics
MPA 689	Program Evaluation
MPA 695	Community Health Mapping

Generalist MPA Degree (2 courses from each specialization)

As an alternative to selecting one of the above specializations, students may pursue a generalist MPA degree. This degree should be chosen if the student desires a broadly based degree and some familiarity with subjects in each of the specializations. Students who desire a public administration education transferable to many different public or nonprofit settings may want to take this course of study. To complete this degree, students must take the core curriculum and at least two (2) required courses from each of the two specializations.

Graduation Research Paper and Thesis Options

During the last semester of study, students opting for the non-thesis (Plan II) must register for MPA 697, Graduation Research Paper, and successfully complete a graduation research paper. Such a paper will require the student to synthesize material learned over the course of the program.

Students taking the thesis option (Plan I) must take three hours of Independent Study under the guidance of the thesis chair and six thesis hours.

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 to, and enroll in, 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 M.P.A. 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/MSCJ Program

The MPA/MSCJ is targeted toward individuals who wish to gain competencies in public management and the theory/practice of criminal justice. Students must apply to, and enroll in, 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 MSCJ 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.

Course Descriptions

Public Administration (MPA)

600. **Ethics and Morality in Public Service.** Ethical and moral foundations of public service behavior. 3 hours.

601. **The Public Policymaking Process.** 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. 3 hours.

602. **Administrative Theory and Behavior.** Theories of organization, management, and administration. Examines both institutional and behavioral elements of organizations as they apply to public, private, and nonprofit agencies. Covers administrative and organization behavior, decision-making and democratic values, along with a treatment of bureaucratic practices and behavior. 3 hours.

603. **Public and Nonprofit Budgeting.** Examines the institutions, principles and techniques of governmental budgeting, including the practices and fundamental concepts of public budgeting, the budgeting process and financial management. 3 hours.

604. Human Resources Management. Examines the major concepts, theories, procedures and themes needed for effective management of human resources in the public and nonprofit sectors. Emphasis is on the urban and sub-national settings. Topics may 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. 3 hours.

605. Information Management for Government. Theory and applications of information management, technology applications and policy. Focus is on social, organizational, political and constitutional impacts of information today. Emphasizes policy and applications related to building knowledge economy, E-government applications and geographic information systems. 3 hours.

606. Foundations of PA Research. An introduction to research methodology presenting quasi-experimental and experimental research designs, exposition of qualitative and basic survey methods, and basic data analysis. 3 hours.

607. Quantitative Methods for PA. Using a pragmatic and applied approach, this course introduces statistical techniques used to analyze data in the social sciences including simple and multiple regression and nonlinear models. Pre-requisite MPA 606. 3 hours.

662. State and Local Government Administration. This course is designed to introduce students to the study of state and local government administration. Introduces keys concepts related to state and local government political structures and institutions; regional, state and county economic performance and state/local government finance. 3 hours.

667. Public and Nonprofit Law. 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. 3 hours.

668. Intergovernmental Relations. The various relations among governments in the U.S. system. Focuses on understanding the interactions, attitudes, and behavior of elected officials and bureaucrats of two or more units of government functioning in their public capacities. 3 hours.

671. Marketing and Fundraising. 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.

672. Nonprofit Management. 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. 3 hours.

673. Nonprofit Health. 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. 3 hours.

674. GIS for Managers. 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. 3 hours.

678. Strategic Planning. Presents the strategic planning process as it is utilized in contemporary settings. Focuses on how the strategic planning process is applied in the public, private, and nonprofit sectors. 3 hours.

681. Local Government Planning. This course examines the historical roots of modern land use planning and explores contemporary issues in planning such as sprawl and smart growth. 3 hours.

683. Public Managerial Economics. 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 the problems. 3 hours.

684. Grants Management. Covers the essentials of grant-writing and the management of grants. 3 hours.

689. Program Evaluation. Analytic tools for evaluating public and nonprofit programs and services. 3 hours.

690. Faith Based Organizations. Examines the nuts and bolts of 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. 3 hours.

691. Community Development. Examines the evolution of the modern community development from its early roots in community organizing. The course presents several models of successful community development and covers many areas of relevant policy and interest including neighborhood revitalization, housing development, social capital formation and urban sustainability. 3 hours.

693. Internship in Public Administration. Supervised field placement in public or nonprofit agency for directed work experience arranged by the MPA Director and as per the guidelines in the internship manual. 3 hours.

695. Special Topics in Public Administration. Special topics seminar based on the research and substantive interests of the MPA faculty and students. 3 hours.

696. Independent Study in Public Administration. One-on-one learning experience between student and an instructor. Permission of Program Director required. 1 - 6 hours.

697. Graduation Research Paper. Graduation Research Paper- Capstone project. Permission of Program Director required. 3 hours.

698. Internship in Public Administration. Supervised field placement in public or nonprofit agency for directed work experience arranged by the internship coordinator and as per the guidelines in the internship manual. Permission of Program Director required. 3 hours.

699. Thesis Research. Credit for research and writing of thesis. Permission of Program Director required. 3-6 hours.

Contact Information

For additional information refer to the web site of the UAB MPA program:

www.uab.edu/government/government-graduate-programs. Inquiries concerning program admission or other questions about the program should be directed to the MPA Program Director:

Dr. Michael Howell-Moroney
Associate Professor and Director
Graduate Studies in Public Administration
Department of Government
University of Alabama at Birmingham
HQB416, 1530 3rd Avenue South
Birmingham, Alabama 35294-3350.
Telephone (205) 934-2339 or email: mpa@uab.edu

Sociology (M.A.), Medical Sociology (Ph.D.)

Degree Offered: M.A., Ph.D. in Medical Sociology

Director: *Needham*

Phone: (205) 934-3307

E-mail: bneedham@uab.edu

Web site: <http://www.uab.edu/sociology-social-work/sociology-graduate-program>

Primary Faculty

Erika Austin, Assistant Professor (Sociology); Medical Sociology, Gender and Sexuality, Methods, Statistics

Casey Borch, Assistant Professor (Sociology); Political Sociology, Social Psychology, Quantitative Methods, Medical Sociology

Jeffrey M. Clair, Associate Professor (Sociology); Medical Sociology, Social Psychology, Policy

William C. Cockerham, Distinguished Professor and Interim Chair (Sociology); Medical Sociology, Theory, Mental Health, International Aspects of Health

Shelia R. Cotten, Associate Professor (Sociology); Information and Communication Technologies, Mental Health, Medical Sociology

Patricia Drentea, Associate Professor (Sociology); Family, Gender, Aging, Methods

Harry Hamilton, Assistant Professor (Sociology)

Sean-Shong Hwang, Professor (Sociology); Statistics and Methodology, Demography, Human Ecology and Urban Sociology

Belinda Needham, Assistant Professor (Sociology); Health Disparities; Medical and Psychiatric Comorbidity; Life Course and Human Development

Becky Trigg,

Gail Wallace, Assistant Professor (Sociology)

Kenneth L. Wilson, Associate Professor (Sociology); Inequality, Adult Development, Social Psychology

Affiliated Faculty

Richard M. Allman, Professor (Medicine; Center for Aging); Gerontology, Doctor-Patient Communication

Heath Copes, Associate Professor (Justice Sciences); Symbolic Interaction; Deviance and Criminal Identity

Michael Flannery, Professor (Lister Hill Library of the Health Sciences); History of Medicine

Mark E. LaGory, Professor Emeritus (Sociology); Urban Ecology, Mental Health, Homelessness, Theory

Jean Ann Linney, Professor (Psychology); Community Psychology

Julie Locher, Associate Professor (Center for Aging, Medicine, Gerontology, Geriatrics and Palliative Care)

Michael Morrisey, Professor (Health Care Organization and Policy); Health Policy

Ferris J. Ritchey, Professor Emeritus (Sociology); Medical Sociology, Statistics, Health Care and Illness among the Homeless

Patricia Sawyer, Associate Professor (Medicine; Center for Aging); Gerontology

John Sloan, Associate Professor (Justice Sciences); Victimization

Rex Wright, Professor (Psychology); Effort and Cardiovascular Health

Sociology M.A. Program

Requirements for the M.A. Degree

Students are not admitted directly into the M.A. program; rather, students pursuing the M.A. degree in Sociology must have been admitted into the Medical Sociology Ph.D. program. To be admitted in good standing, candidates must meet all Graduate School admission requirements. Currently, there is no M.A. degree independently awarded to students outside of the Ph.D. program in Medical Sociology.

Applicants lacking 18 semester hours in social science courses will be evaluated individually for academic deficiencies. Supplemental coursework may be recommended by the graduate faculty.

The program provides a Plan I (thesis) option. The M.A. degree is conferred upon the fulfillment of the requirements outlined below.

All of the following core courses are required for all students:

SOC 701

Methods

<i>SOC 703</i>	<i>Introduction to Sociological Research</i>
SOC 703	Regression Analysis
SOC 705 or SOC 711	Quantitative Methods/Qualitative Methods
SOC 720	Classical Theory
SOC 722	Contemporary Theory
SOC 702 (3 continuous semesters)	Proseminar on the Profession
2 or more substantive courses (these may be in areas outside of sociology, subject to approval by the Sociology graduate program director)	

Additional requirements for the M.A. degree include the following:

- 6 semester hours of thesis research (SOC 699);
- an acceptable research-based thesis; and
- a final oral examination based on the thesis.

Medical Sociology Ph.D. Program

This program is designed to provide students with the coursework and research experiences to become leading researchers 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 patient-practitioner relationships, 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 1150 on the GRE (verbal and 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 receive up to 12 hours of transfer credit that were not used for any other degree program (see graduate school guidelines). 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 Ph.D. 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.

Curriculum

The components of the Ph.D. program are as follows:

1. Required Coursework

Medical Sociology Core (9 hr)

Required:

SOC 780 Medical Sociology

2 of 5 Required Electives:

SOC 734 Global Health

SOC 735 Special Topics in Global Health

SOC 755	Race and Health
SOC 756	Gender and Health
SOC 775	Place and Health
SOC 781	Sociology of Health and Illness
SOC 783	Health Care Delivery Systems
SOC 785	Family and Health
SOC 786	Health Disparities
SOC 787	Sociology of Mental Health
SOC 788	Social Medicine

Theory Core (6 hr)

Required:

SOC 720	Classical Theory
SOC 722	Contemporary Theory

Statistics and Research Core (15 hr)

SOC 701	Introduction to Sociological Research Methods
SOC 703	Regression Analysis
SOC 704	Categorical Data Analysis
SOC 705	Quantitative Methods
SOC 711	Qualitative Methods

Research Hours

Master's Thesis Research Hours (6 hr)
 Doctoral Dissertation Research Hours (24 hr)

Sociology/Health Electives/Transfer Credits (30 hr--up to 15 hours outside department)

Proseminars (3 hr)

Proseminar, SOC 702 - 1 hr Fall Research
 Proseminar, SOC 702 - 1 hr Spring Professionalization and Proposals
 Proseminar, SOC 702 - 1 hr Summer Teaching

2. Graduate Proseminar Functions

The graduate proseminar series (SOC 702) is generally required of all entering 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, and 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, and 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 courses in theory (SOC 707 and 720) and two core methods courses (SOC 701 and SOC 703, or SOC 705 and 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 student's doctoral advisory committee will review the student's transcript, evaluate course transfers, and devise a course plan. This 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 Exams

All doctoral students who enter the program in Fall 2010 or later must take a comprehensive examination no later than the end of the third summer after being admitted to the Ph.D. program.

The comprehensive examination should be taken in a specialty area chosen by the student. The specialty area must be a combination of health and one substantive area reflecting the specialties of the faculty (e.g., aging and health, health behaviors, community health, health and demography, health and family, health inequality, health policy, etc.). The advisory committee will consist of three faculty members

selected by the Graduate Committee. Prior to taking the examination, the student should meet with the advisory committee to develop a reading list based on the specialty area.

The comprehensive examination will include five questions decided by the advisory committee reflecting major theoretical, methodological, and substantive issues in the student's chosen specialty area. The student will answer four of the five questions as a take-home exam, which will be distributed at 4:00 p.m. Friday and will be due the following Monday at 9:00 a.m. The members of the advisory committee will grade the examination on a pass/fail basis. Students who fail the examination but wish to continue in the program must take a make-up examination in the following Fall Semester. Students who fail the make-up examination will be terminated from the Ph.D. program.

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, and 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.

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:	March 1
Number of Evaluation/recommendation Forms Required:	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)
Ph.D. Program in Medical Sociology	http://www.uab.edu/sociology-social-work/sociology-graduate-program

For detailed information, contact Dr. Belinda Needham, Sociology Graduate Program Director, UAB Department of Sociology, HHB 460A, 1401 University Boulevard, Birmingham, Alabama 35294-1152.

Telephone 205-934-3307

E-mail bneedham@uab.edu

Web <http://www.uab.edu/sociology-social-work/sociology-graduate-program>

Course Descriptions

Unless otherwise noted, all courses are for 3 semester hours of credit.

Sociology (SOC)

701. Introduction to Sociological Research Methods. Overview of the methodologies used in social science research; major emphases include 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. Prerequisite: SOC 310 or permission of instructor.

702. Proseminar on the Profession. Introduction to the profession of sociology. 1 hour.

703. Regression Analysis. Bivariate and multivariate statistical analysis. Prerequisite: SOC 701 or equivalent or permission of instructor.

704. Categorical Data Analysis. Analysis with dichotomous, ordinal, and multinomial (polytomous) dependent variables. Topics include contingency table analysis, logistic (logit) models, probit models, Poisson models, negative binomial models, loglinear models, models for counts, and models for limited outcomes. Prerequisite: SOC 701 and SOC 703 or permission of instructor.

705. Quantitative Methods. Prerequisite: SOC 703 or equivalent. Developing sociologically important research questions and identifying appropriate strategies to answer these questions in ways that are scientifically valid.

706. Advanced Longitudinal and Multi-Level Data Analysis. Topics in advanced longitudinal analysis including techniques such as repeated cross-sections, time series regression, event history analysis, and growth curve modeling.

711. Qualitative Methods. 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.

712. Theory Construction. Logic of constructing theories; issues in the philosophy of science.

714. Survey Research Methods. Survey design, sampling, instrumentation, data collection and analysis, and report writing.

716. Social Stratification. Theories of inequality; race and ethnic inequality, gender inequality, and international inequality.

720. Classical Theory. The major works of classical sociological theorists, including Durkheim, Marx, Weber, and Simmel.

722. Contemporary Theory. Recent sociological theories accounting for social conditions in the 21st century, including the work of Beck, Bourdieu, Foucault, Giddens, and the postmodernists.

734. Special Topics in Global Health. Cross-cultural, comparative analysis of health and health care delivery systems in both industrialized and developing countries.

735. Special Topics in International Medical Sociology. Analysis of selected topics in the field of international health and medical sociology.

740. Deviant Behavior. Contemporary social psychological theories of deviant behavior; recent empirical findings.

755. Race/Ethnicity and Health. Race/ethnic differences in mental and physical health.

756. Gender and Health. The health costs and benefits of being female or male in society.

759. Social Gerontology. Structural and behavioral implications of older adulthood; relationship of older adults to political, economic, educational, medical, religious, and other structures in society.

760. Sociology of Death and Dying. Sociological, social psychological and existential perspectives on death and dying; recent trends in definition, distribution, and practices surrounding death and dying.

775. Place and Health. Population distributions and spatial patterns in cities, the ecology of risk, neighborhood disorder and disadvantage and its impact on the health and wellbeing of populations and individuals.

778. Demography. Effect of population processes such as birth, death, migration, and marriage on growth, decline, composition, and distribution of populations.

780. Medical Sociology. Theory and research in medical sociology; systematic overview of relevant literature.

781. Sociology of Health and Illness. Social causes of health and illness.

783. Health Care Delivery Systems. Sociological methods and concepts in health care institutions; health care policy.

785. Family and Health. Effects of family structure and family process on health outcomes.

786. Health Disparities. Prevalence, causes, and consequences of health and mental health problems for disadvantaged populations; the stratification of service delivery systems

787. Sociology of Mental Health. Impact of life events and social supports on depression and other mental disorders; racial minorities, women, elderly, homeless.

788. Social Medicine. Socioenvironmental factors in etiology of disease; social movements and health policy; medical ethics and broad ethical issues; place of social science in medical care.

790-793. Seminar in Sociological Substantive Areas. Prerequisites: Permission of advisor and graduate education director. 3 hours each.

795. HIV/AIDS and Society. The social impact of HIV/AIDS in local, national, and international contexts; how society has responded to and changed as a result of HIV/AIDS, including public health surveillance and interventions, policies and funding for prevention/research, and broader cultural changes.

798. Nonthesis Research. Mentored research. 1-9 hours.

799. Thesis Research. Prerequisite: Admission to M.A. candidacy. 1-6 hours.

798. Nondissertation Research. Mentored research. 1-9 hours.

799. Dissertation Research. Prerequisite: Admission to Ph.D. candidacy. 1-9 hours.

Biomedical Science: Interdisciplinary Themes*

Biochemistry & Structural Biology (Ph.D.)

Degree Offered: Ph.D.
Director: Dr. Tim Townes
Phone: (205) 934-5294
E-mail: ttownes@uab.edu
Web site: <http://www.uab.edu/bsb>

Faculty

Anupam Agarwal, Professor (Medicine); Regulation of heme oxygenase gene expression in kidney and vascular injury

Stephen Aller, Assistant Professor (Pharmacology/Toxicology)

Christie Brouillette, Research Professor (Chemistry)

Ching-Yi Chen, Associate Professor (Biochemistry and Molecular Genetics)

Igor Chesnokov, Assistant Professor (Biochemistry and Molecular Genetics); DNA Replication, Cell Division, Cell Cycle Regulation

Louise T. Chow, Professor (Biochemistry and Molecular Genetics); Human Papillomavirus, Genetics, Keratinocytes, DNA Replication, Electron Microscopy

Chiqito J. Crasto, Assistant Professor (Genetics)

Lawrence J. DeLucas, Professor (Optometry); Protein Crystal Growth

Gabriel A. Elgavish, Professor (Biochemistry and Molecular Genetics); Paramagnetic Probes for NMR Investigation of Membrane Transport

N. Patrick Higgins, Professor (Biochemistry and Molecular Genetics); DNA Topology, Genetic Transposition, DNA Enzymology

Natalia Kedishvili, Assistant Professor (Biochemistry and Molecular Genetics); Regulation of intracellular levels of bioactive retinoids and steroids in human tissues in health and disease

N. Rama Krishna, Professor (Biochemistry and Molecular Genetics); NMR of Biomolecules, Molecular Endocrinology of Peptide Hormones

Elliot J. Lefkowitz, Associate Professor (Microbiology); Microbial Genomics, Viral Evolution, Bioinformatics, and Biodefense

Nita A. Limdi, Assistant Professor (Neurology)

Clinton D. Lothrop, Professor (Biochemistry and Molecular Genetics)

Jin-Biao Ma, Assistant Professor (Biochemistry and Molecular Genetics)

Diana Noah, Volunteer (Medicine)

James W. Noah, (Biochemistry and Molecular Genetics)

Thomas Norton, Professor (Vision Sciences)

Kirill Popov, Associate Professor (Biochemistry and Molecular Genetics); Multienzyme complexes, Protein kinases, Protein phosphatases, Metabolic control

David G. Pritchard, Professor (Biochemistry and Molecular Genetics); Molecular Basis for the Pathogenicity of Gram-Positive Bacteria

Matthew B. Renfrow, Assistant Professor (Biochemistry and Molecular Genetics)

Gavin Rumbaugh, Assistant Professor (Neurobiology)

Thomas M. Ryan, Assistant Professor (Biochemistry and Molecular Genetics); Gene Regulation, Stem Cells, Mouse Models, Mutagenesis, Cell therapies

David A. Schneider, Assistant Professor (Biochemistry & Molecular Genetics)

Bingdong (Ben) Sha, Associate Professor (Cell Biology); Structure and Function of Molecular Chaperones

Jeffrey B. Smith, Professor (Pharmacology and Toxicology); Ubiquitin proteasome system (UPS) in apoptosis; Escape apoptosis by cancer cells; down-regulation of protein kinaseC by UPS; Orphan receptor triggered by the carcinogenic metal cadmium

Tim M. Townes, Professor and Chair (Biochemistry and Molecular Genetics); Regulation of Gene Expression During Development

Janusz Tcholski, Assistant Professor (Psychiatry and Behavioral Neurobiology)

Charles L. Turnbough Jr., Professor (Microbiology); Bacterial Gene Regulation and Structure/Function of the *Bacillus anthracis* Exosporium

Tino Unlap, Associate Professor (Clinical and Diagnostic Sciences); Biotechnology; Recombinant DNA, Protein Chemistry

Dmitry Vassylyev, Professor (Biochemistry and Molecular Genetics); Crystal structure determination including data collection; modification and improvement of the most widely used crystallographic programs (CCP4, CMS, etc.); and development of original crystallographic software; crystallization of proteins, and protein/protein and protein/nucleic acids complexes

Mark R. Walter, Associate Professor (Pharmacology); X-ray Crystallography; Molecular Recognition; Signal Transduction; Cytokine Structure and Function

Hengbin Wang, Assistant Professor (Biochemistry and Molecular Genetics); Histone modification, in particular, methylation, affects the chromatin-based processes such as transcription

Theme Information

Objectives

Biochemistry & Structural Biology is looking for students who have a strong desire to understand life at the molecular level. Our goal is to teach the skills, implant the inspiration, encourage imagination, and nurture the dedication essential for our graduates to become world-class researchers.

Our faculty and students are dedicated to excellence in both coursework and research programs, and we are honored that our team's accomplishments and discoveries have been chronicled in (Nature, Structure, other names here) and other noted journals and publications of record. New students join a select family of faculty and students who work and study together within the Biochemistry and Structural Biology Theme at UAB. We teach you how to think- what questions to ask and where to search for answers. We give you the skills and background necessary to launch a successful scientific career as an independent researcher.

Whether you choose to pursue advanced studies in molecular genetics, stem cell biology, or many of the diverse areas of research within the Biochemistry and Structural Biology theme, you will find the work interesting, challenging and rewarding. It piques the curiosity, sparks the imagination, enlists your resourcefulness and brings a sense of fulfillment that comes from exciting research and exhilarating discover.

Admission Requirements

The BSB theme encourages applications from students interested in receiving a degree in biomedical sciences. Individuals committed to obtaining a graduate education in biomedical sciences. Applications are strongly encouraged from individuals with previous work experience, a master's degree in related area, or a professional degree such as the M.D., D.M.D., D.V.M. or O.D.

Applications will be reviewed by the Graduate Biomedical Sciences Admissions Committee. Acceptance will be based on undergraduate performance (both the curriculum and grade point average), letters of recommendation, GRE scores, a personal statement of research interests, performance in other graduate programs or research activities and, if possible, a personal interview.

Acceptance into the BSB theme requires a bachelor's degree including undergraduate coursework in calculus, general and organic chemistry, and at least one introductory course in zoology or biology by the time of entrance.

The general requirements for acceptance into the program are –

- Minimum GPA of 3.0 on a 4.0 scale
- Combined verbal/quantitative score on the GRE of 1100
- A strong background in biology, chemistry, and/or mathematics. Undergraduate level courses in cell biology, biochemistry, developmental biology, and genetics are strongly encouraged. Undergraduate mathematics through calculus and physics are also recommended.

International students must submit scores from the Test of English as a Foreign Language (TOEFL) earned within the last two years. Applicants with scores of 600 (paper-based) or 250 (computer-based) or higher will be considered.

Overview of the BSB Program

Curriculum

YEAR 1

Laboratory Rotations

Three laboratory rotations - 3 months each

Course Work

August 15 - October 31, 2010

10 week GBS Core Course

8:00 a.m. - 10:00 a.m. every weekday

November - December 2010

6 week BSB Laboratory Methods Course

8:00 a.m. - 10:00 a.m. every weekday

(3 wks) Cloning and Expression of Recombinant Proteins, Protein Purification, Mass Spectrometry, NMR Spectroscopy, Crystallography.

(3 wks) Recombineering to produce knockout and knockin vectors, gene targeting in murine ES cells, microinjection of ES cells into blastocysts, genotyping of knockin/knockout mice, reprogramming of skin fibroblasts into induced Pluripotent Stem Cells (iPS).

January - May 2011

Five BSB courses - 1 month each

January - Molecular Enzymology

February - Molecular Genetics

March - RNA Biology

April - Stem Cell Biology

May - Structural Biology

YEAR 2

Choose Thesis Committee - Mentor plus four faculty members

Qualifying Exam on Thesis Project - Written proposal and defense to committee

by May 31 of Year 2

YEARS 3-5

Thesis Research plus 4 Advanced Courses

Additional Information

Deadline for Entry Term(s):

Consult Program Director for information

Deadline for All Application Materials to be in the Graduate School Office:	Domestic Applications: April 15 International Applications: Jan 15
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:

Ms. Dianne Vickers

Program Coordinator II, UAB
 Biochemistry & Structural Biology Theme
 720 20th Street South, Kaul 540
 Birmingham, AL 35294-0024
 Tel: 205.934.0580
 Fax: 205.975.2188
 E-mail: dvickers@uab.edu

Cancer Biology (Ph.D.)

Degree Offered:	Ph.D.
Director:	Dr. Rosa Serra
Phone:	(205) 934-0842
E-mail:	cancerbio@uab.edu
Web site:	http://www.uab.edu/cancerbio

Faculty – Note that individual faculty may participate in multiple programs, dependent upon their research interests.

Daniel Balkovetz, Associate Professor (Cell Biology, Medicine, Microbiology); Epithelial Cell Biology; Epithelial Cell Signal Regulation; Regulation of paracellular transport across epithelial cell tight junctions

Scott Ballinger, Associate Professor (Pathology); Environmental cardiology, free radical biology, mitochondrial function

Susan Bellis, Associate Professor (Physiology & Biophysics); The Role of Integrin Receptors in Human Biology and Disease

Scott W. Blume, Assistant Professor (Biochemistry & Molecular Genetics, Medicine); Specific regulation of gene expression at the translational level - through sequence-specific RNA-binding proteins and complex 5'-untranslated RNA sequences; dysregulation of gene-specific translational control mechanisms in cancer

Steven Carroll, Professor (Cell Biology, Neurobiology, Pathology); The Role of Neuregulin-1 in Peripheral Nervous System Neoplasia

Chenbei Chang, Assistant Professor (Cell Biology); Signaling Transduction in Development and Diseases

Yabing Chen, Assistant Professor (Pathology); Gene Regulation in the Pathogenesis of Cardiovascular diseases, Osteoporosis and Cancer

Gregory A. Clines, Assistant Professor (Endocrinology)

Randall S. Davis, Associate Professor (Biochemistry & Molecular Genetics, Medicine, Microbiology); Lymphocyte development and mechanisms of lymphomagenesis

Qiang Ding, Assistant Professor (Medicine); Molecular mechanisms of organ fibrosis

Joanne Douglas, Assistant Professor (Medicine, Pathology); Gene Therapy

Isam-Eldin Eltoum, Professor (Pathology); Clinical research in diagnostic cytology and surgical pathology- Tumorigenesis of prostate cancer and chemoprevention - HPV infection

Isao Eto, Associate Professor, (Nutrition Sciences); Nutritional Biochemistry, Folate Metabolism and Interactions, Cancer Biology and Biochemistry

Maaike Everts, Assistant Professor (Pathology); Gene therapy and nanotechnology

Charles Falany, Professor (Pharmacology & Toxicology); Biochemical and physiological properties of human cytosolic sulfotransferases

Xu Feng, Associate Professor (Pathology); Cell Signaling and Gene Expression Regulation in Bone and Cancer Cells

Stuart J. Frank, Professor (Cell Biology, Medicine, Physiology & Biophysics); Growth Hormone Action and GH Receptor Structure and Function

Andra R. Frost, Associate Professor (Cell Biology, Pathology); Fibroblast-Epithelial Cell Interactions and Developmental Pathways in Breast Cancer

Catherine Fuller, Associate Professor (Physiology & Biophysics); ENaC/ASIC Ion Channels

Vithal Ghanta, Professor (Microbiology); Tumor immunology, immune system and aging, CNS immune system interactions

Yancey G. Gillespie, Professor (Cell Biology, Microbiology); Molecular and Viral Therapy of Malignant Primary Brain Tumors

Robert Hardy, Associate Professor (Pathology); Cancer cell metastasis

Zdenek Hel, Assistant Professor (Microbiology, Pathology); HIV-1 pathogenesis and vaccine development. Design of novel strategies for immunotherapy of cancer

Douglas Hurst, Instructor (Pathology); Chromatin regulation of metastasis

Amjad Javed, Assistant Professor (Cell Biology, Pathology); Genetic and Molecular Signaling for Cellular Differentiation and Skeletogenesis

Nirag Jhala, Professor (Pathology); Characterizing utility of endoscopic ultrasound guided fine needle aspiration cytology. Characterizing expression of molecular pathways involved in the development and progression of pancreatic, colorectal adenocarcinoma, hepatocellular carcinoma and cholangiocarcinoma

Kai Jiao, Assistant Professor (Genetics); Hypothalamic Control of Feeding Behavior

Santosh Katiyar, Associate Professor (Dermatology); Prevention of skin cancer by dietary antioxidants

Bob Kesterson, Associate Professor (Genetics); Hypothalamic Control of Feeding Behavior

Peter King, Professor (Physiology & Biophysics); Mechanisms of Growth Factor mRNA Stabilization in Cancer

Christopher Klug, Associate Professor (Biochemistry & Molecular Genetics, Genetics, Medicine Microbiology, Pathology); Hematopoietic Stem Cell Biology and Acute Leukemias

Bruce Korf, Professor and Chair (Genetics); Neurofibromatosis Type 1

Rama N. Krishna, Professor (Biochemistry & Molecular Genetics); Structural Biology and Biomolecular NMR Spectroscopy

Coral Lamartiniere, Professor (Pharmacology & Toxicology); Cause and Prevention of Breast and Prostate Cancers; Developmental and Reproductive Toxicology

Jack Lancaster, Professor (Physiology & Biophysics); The Biophysics and Biochemistry of Nitric Oxide

Aimee Landar, Assistant Professor (Pathology); Cellular effects of post-translational modification of protein thiols by reactive species in cancer and cardiovascular disease

Yi-Ping Li,

Fang-Tsyr Lin, Assistant Professor (Cell Biology); Mechanisms of the LPA Receptor Actions

Weei-Chin Li,

Robin Lorenz, Professor (Microbiology, Pathology); Cellular and Molecular Immunology of the Gastrointestinal Tract

Jin-Biao Ma, Assistant Professor (Biochemistry & Molecular Genetics); Structure and mechanism of proteins-RNA recognition in small RNA biogenesis and regulation

Upender Manne, Associate Professor (Anatomic Pathology)

James Markert, Professor (Cell Biology, Physiology & Biophysics); Engineering Herpes Simplex Viruses for the Therapy of Cancer

Jay McDonald, Professor (Cell Biology, Pathology); Cellular Life and Death Signals in Cancer, Aids and Bone Disease

Michael A. Miller, Assistant Professor (Cell Biology); Function and evolution of intercellular communication mechanisms

Joanne Murphy-Ullrich, Professor (Cell Biology, Pathology); Extracellular Matrix Control of Cell and Growth Factor Function

Thomas T. Norton, Professor (Vision Sciences); Animal Models of Myopia - Retinal Control of Eye Size

Boris Pasche, Professor and Director (Cell Biology, Medicine); The role of Transforming Growth Factor Beta (TGF-beta) in cancer development and progression, The biological effects of amplitude-modulated electromagnetic fields, The role of variants of the adiponectin pathway in cancer development

Rakesh Patel, Associate Professor (Pathology); Modulation of Inflammation by Reactive Species

Selvarangan Ponnazhagan, Professor (Pathology); Adeno-associated virus gene therapy

Meredith Preuss, Assistant Professor (Medicine)

Kevin P. Raisch, Assistant Professor (Radiation Oncology);

Matthew B. Renfrow, Assistant Professor (Biochemistry & Molecular Genetics);

Kevin Roth, Professor and Chair (Pathology); Molecular Regulation of Neuronal Cell Death

Ralph D. Sanderson, Professor (Pathology); Role of Heparan Sulfate and Heparanase in Regulating the Tumor Microenvironment

Rosa Serra, Professor (Cell Biology); Mechanism of TGF- β Action in Developmental and Disease Processes

Bingdong Sha, Professor (Cell Biology); Structural and functional studies of proteins involved in protein folding and translocations

Sadeep Shrestha, Assistant Professor (Epidemiology); Infectious Disease Epidemiology, Genetic Epidemiology

Gene Siegal, Endowed Professor (Cell Biology, Pathology); Gene therapy of solid tumors

Jeffrey Smith, Professor (Pharmacology & Toxicology); Integration of Prodeath and Prosurvival Signals by the Ubiquitin Proteasome System (UPS)

Yuhua Song, Assistant Professor (Biochemistry & Molecular Genetics); Multiscale Modeling in Biology and Biomechanics

Theresa Strong, Associate Professor (Biochemistry & Molecular Genetics, Genetics, Medicine); Identification of Tumor Antigens and Development of Cancer Vaccines

Jianming Tang, Associate Professor (Medicine, Microbiology); Genetic and Epigenetic Correlates of Infection and Immunity

Jaideep V. Thottassery, Assistant Professor (Pathology)

Laura Timares, Assistant Professor (Cell Biology, Pathology); Engineering Dendritic Cells for Immunotherapy

Hengbin Wang, Assistant Professor (Biochemistry & Molecular Genetics); Role of Histone Modification in Chromatin Function

Hui Xu, Associate Professor (Dermatology, Pathology); contact hypersensitivity, mechanisms of elicitation

Yang Yang, Assistant Professor (Pathology); Targeting heparan sulfate for myeloma therapy

Nabiha Yusuf, Instructor (Dermatology)

Majd Zayzafoon, Assistant Professor (Pathology, Physiology & Biophysics); The Role of Calcium Signaling in the genetic and epigenetic pathogenesis of disease

Theme Information

The goal of the Cancer Biology Program is to train the next generation of cancer biologists so that they will make significant contributions to basic and clinical research. Students will receive training over a broad base—integrating molecular, cellular, biochemical and biological experimental approaches. Combinations of courses, seminars, small group discussions and hands-on research provide each student with a customized dissertation experience. Students will have opportunities to work with outstanding investigators throughout the UAB campus in the areas of tumor microenvironment, metastasis, cancer genetics, stem cells, gene therapy of cancer, pharmacology/toxicology, signaling and tumor immunology. Successful graduates will have a firm foundation upon which they can build careers in academia, research institutions, industry or government.

Students are expected to complete the entire program in four or five years. During the first year, students will participate in the GBS core curriculum and will begin more specialized training by exploring potential laboratories in which they may do their dissertation research as well as courses representing the multiple disciplines involved in cancer research. A course focusing on "classic papers" in cancer research will set the stage for modern approaches to studying the disease. Following three laboratory rotations, each student will select a mentor for his/her dissertation research. Following the core curriculum, students will begin specialized cancer research electives.

During the second year, students will complete their specialized courses and will participate in journal clubs and special topics curricula. After the second year, cancer biology students will write a proposal for their dissertation research and presented to their graduate advisory committee for approval. The focus following advancement to candidacy is hands-on research, although students can elect to participate in other advanced courses that will round out their education or provide opportunities to expand the research.

Admission Requirements

A baccalaureate degree in the natural or physical sciences is required. Undergraduate level courses in organic and analytical chemistry, cell biology, biochemistry and genetics are strongly encouraged. Undergraduate mathematics through calculus and physics are also recommended. See individual Program Admissions information for program-specific required or recommended courses.

The Graduate School recommends that entering students have a minimum grade point average (**>GPA**) of 3.0 on a 4.0 scale and a minimum combined verbal/quantitative score on the Graduate Record Exam (**>GRE**) of 1100.

International students must submit scores from the Test of English as a Foreign Language (**>TOEFL**) earned within the last two years. Applicants with scores of 600 (paper-based) or 250 (computer-based) or higher will be considered.

Undergraduate or postgraduate **>research experience** is extremely helpful.

Applications are reviewed by the GBS Admissions Committee, representing all GBS thematic programs. **>Acceptance** will be based on a combination of factors including:

- Undergraduate performance (both the curriculum and grade point average)

- Letters of recommendation
- GRE scores
- A personal statement of research and career interests
- Previous research experience
- Personal interview, at program expense (international applicants may be interviewed by phone or video conference)

Admission to our Programs is very competitive and the number of positions is limited; thus not every qualified applicant can be offered a position.

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 through VIVA Health UAB.

The annual stipend for the 2009-2010 academic year is \$25,000. The total annual award value, including stipend, tuition, fees and health insurance is \$35,700. Stipends are reviewed and updated regularly.

First-year students are funded through their entry programs by Graduate School Fellowships and occasionally by other national and University fellowships. In subsequent years students are supported through their advisor's research grants, institutional funds or training grants. In addition, highly qualified students are encouraged to apply for individual fellowship awards, with the guidance of their advisors. See [Fellowships and Awards](#) for additional fellowship information and resources.

Additional Information

Deadline for Entry Term(s):	Consult Program Director for information
Deadline for All Application Materials to be in the Graduate School Office:	Domestic Applications: April 1 International Applications: Jan 31
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:

Rosa Serra, Ph.D.

Director, UAB Cancer Biology Graduate Program

205.934.0842 (office)

205.975.5648 (fax)

rserra@uab.edu

Randy L. Seay, M.A., M.P.H.

Program Manager, UAB Cancer Biology Graduate Program

205.934.7810

205.996.6749

rseay@uab.edu

Cell, Molecular, and Developmental Biology (Ph.D.)

Degree Offered:	Ph.D.
Director:	Dr. Bradley K. Yoder
Phone:	(205) 934-0994
E-mail:	byoder@uab.edu
Web site:	www.uab.edu/cmdb

Faculty

Anupam Agarwal, M.D., Professor; Medicine; Regulation of heme oxygenase gene expression in kidney and vascular injury

G. M. Anantharamaiah, Ph.D., Professor; Medicine; Apolipoproteins, Amphipathic Helices and Atherosclerosis

Daniel Balkovetz, M.D., Ph.D., Associate Professor; Medicine; Epithelial Cell Biology; Epithelial Cell Signal Regulation; Regulation of paracellular transport across epithelial cell tight junctions

Scott Ballinger, Ph.D., Associate Professor; Molecular and Cellular Pathology; Environmental cardiology, free radical biology, mitochondrial function

Marcas Bamman, Ph.D., Associate Professor; Physiology & Biophysics; skeletal muscle mass regulation

Zsuzsanna Bebok, M.D., Assistant Professor; Cell Biology; Membrane protein biogenesis in epithelial cells (CFTR as model); Unfolded protein response

David Bedwell, Ph.D., Professor; Microbiology; Mechanism of Translation Termination and Therapies to Suppress Stop Mutations

Etty Beneviste, Ph.D., Cell Biology; Understanding how the immune system and central nervous system communicate with each other.

Bakhrom Berdiev, M.D., Ph.D., Assistant Professor; Cell Biology; The CFTR Chloride Channel control of Epithelial Sodium Channel under physiological and pathological conditions

Mark Bevensee, Ph.D., Assistant Professor; Physiology and Biophysics; Cellular and Molecular Physiology of Acid-base Transporters and pH Regulation

Michael Brenner, Ph.D., Professor; Neurobiology; Molecular Studies of Astrocytes in Health and Disease

Peter Burrows, Ph.D., Professor; Microbiology; Lymphocyte Development and Function

Chenbei Chang, Ph.D., Assistant Professor; Cell Biology; Signaling Transduction in Development and Diseases

John Chatham, D. Phil., Associate Professor; Medicine; Cardiomyocyte function and metabolism in diabetes and ischemic heart disease

Ching-Yi Chen, Ph.D., Assistant Professor; Biochemistry & Molecular Genetics; Mechanism and Regulation of Mammalian mRNA Turnover

Yabing Chen, Ph.D., Assistant Professor; Pathology; Gene Regulation in the Pathogenesis of Cardiovascular diseases, Osteoporosis and Cancer

Igor Chesnokov, Ph.D., Assistant Professor; Biochemistry and Molecular Genetics; DNA Replication and Cell Cycle in Eukaryotes

Louise Chow, Ph.D., Professor; Biochemistry and Molecular Genetics; Human papillomavirus DNA replication and pathogenesis

Jame Collawn, Ph.D., Professor; Cell Biology; Cystic Fibrosis; Endocytosis; Protein Trafficking

Yingzi Cong, Ph.D., Assistant Professor; Medicine; Host mucosal immune response to commensal bacterial antigens and the pathogenesis of inflammatory bowel diseases

Rita Cowell, Ph.D., Assistant Professor; Psychiatry & Behavioral Neurobiology; Transcriptional regulation of early postnatal brain development: Insights into the pathology of Autism and Schizophrenia

Lawrence DeLucas, O.D., Ph.D., Professor; Optometry; Protein Crystallography/Protein Crystal Growth

Patrizia DeSarno, Ph.D., Assistant Professor, Psychiatry and Behavioral Neurobiology; the role of glycogen synthase kinase-3 (GSK3) in Experimental Autoimmune Encephalomyelitis

Qiang Ding, Ph.D., Assistant Professor; Medicine; Molecular mechanisms of organ fibrosis

Charles O. Elson, III, M.D., Professor; Medicine; Regulation of mucosal immune responses

Charles Falany, Ph.D., Professor; Pharmacology & Toxicology; Biochemical and physiological properties of human cytosolic sulfotransferases

Michelle Fanucchi, Ph.D., Associate Professor; Environmental Health Sciences; Pulmonary cell biology and toxicology. Cell-to-cell interactions in the developing lung as well as in repair after lung injury and disease in children. The role of biochemical defense mechanisms native to pulmonary cells. Childhood lung disease and its etiology. Drug metabolism.

Stuart J. Frank, M.D., Professor; Medicine; Growth Hormone Action and GH Receptor Structure and Function

Andra R. Frost, M.D., Associate Professor; Pathology; Fibroblast-Epithelial Cell Interactions and Developmental Pathways in Breast Cancer

Kohtaro Fujihashi, D.D.S, Ph.D., Professor; Pediatric Dentistry; The Cellular and Molecular Mechanisms for Mucosal Immunity in the Elderly; Molecular and Cellular Mechanisms for the Induction and Regulation of Mucosally Induced Tolerance; A Mucosal Internet Of gd, ab T Cells and Epithelial Cells for Mucosal Immunity

Paul Gamlin, Ph.D., Professor; Vision Sciences; Studies of the Neural Bases of Vision & Eye Movements

Mark Garfinkel, Ph.D., Assistant Professor; Environmental Health Sciences; Drosophila

W. Timothy Garvey, M.D., Professor; Nutrition Sciences; molecular, metabolic, and genetic basis of type 2 diabetes mellitus, insulin resistance, and obesity

James George, Ph.D., Associate Professor; Surgery; Immune regulation of post-transplant vascular disease and allograft rejection

G. Yancey Gillespie, Ph.D., Professor; Surgery; Molecular and Viral Therapy of Malignant Primary Brain Tumors

Alecia K. Gross, Ph.D., Assistant Professor; Vision Sciences; Rhodopsin trafficking in rod cells and rhodopsin-mediated retinal degenerations

Lisa Guay-Woodford, M.D., Professor; Genetics; Genetics of renal disease, particularly polycystic kidney disease

John Hablitz, Ph.D., Professor; Neurobiology; Cellular Mechanisms of Neurotransmission

John L. Hartman, IV, M.D., Assistant Professor; Genetics; Quantitative analysis of genotype-phenotype interaction networks in yeast models of human disease

Hui-Chen Hsu, Ph.D., Assistant Professor; Clinical Immunology, Rheumatology; The BXD2 autoimmune mouse model of lupus and erosive arthritis

Amjad Javed, Ph.D., Assistant Professor; Oral and Maxillofacial Surgery; Genetic and Molecular Signaling for Cellular Differentiation and Skeletogenesis

Kai Jiao, M.D., Ph.D., Assistant Professor; Genetics; TGF-beta/Bmp signaling during cardiogenesis

Rajesh K. Kana, Ph.D., Assistant Professor; Psychology; the neural substrates of social cognition and the impact of social cognition on language, communication and other cognitive functions

Natalia Y. Kedishivli, Ph.D., Assistant Professor; Biochemistry and Molecular Genetics; Regulation of retinoic acid homeostasis

Bob Kesterson, Ph.D., Associate Professor; Genetics; Hypothalamic Control of Feeding Behavior

Jeonga Kim, Ph.D., Assistant Professor, Medicine; Cross-talk between inflammation and insulin signaling

Kevin Kirk, Ph.D., Professor; Physiology and Biophysics; The CFTR Chloride Channel

Christopher Klug, Ph.D.; Microbiology; understanding the underlying mechanisms regulating hematopoietic stem cell (HSC) self-renewal and how normal HSC developmental programs are subverted in the context of acute myeloid leukemia (AML)

Jack Lancaster, Ph.D., Professor; Anesthesiology; The Biophysics and Biochemistry of Nitric Oxide

Mathieu Lesort, Ph.D., Assistant Professor; Psychiatry; Pathogenesis of Huntington's Disease: from models to therapeutic targets

Xiaohua Li, M.D., Ph.D., Associate Professor; Psychiatry & Behavioral Neurobiology; Neurobiology of mood disorders

Yonghe Li,

Yuqing Li, Ph.D., Associate Professor; Neurology; Pathophysiology and experimental therapeutics of dystonia and related movement disorders; Basal ganglia function and dysfunction; Molecular and cellular mechanism of learning and synaptic plasticity

Fang-Tsyr (Fannie) Lin, M.D., Ph.D., Assistant Professor; Cell Biology; Mechanisms of the LPA Receptor Actions

Rui-Ming Liu, M.D., Assistant Professor; Environmental Health Sciences; Glutathione, aging, age-related diseases, fibrosis, cancer

Farah Lubin, Ph.D., Assistant Professor; Neurobiology; Molecular Transcriptional Mechanisms in Learning/Memory and Neurological Disorders

Jin-Biao Ma, Ph.D., Assistant Professor; Biochemistry and Molecular Genetics; Structure and mechanism of proteins-RNA recognition in small RNA biogenesis and regulation

James Markert, M.D., Professor; Surgery; Engineering Herpes Simplex Viruses for the Therapy of Cancer

Guillermo Marques, Ph.D., Assistant Professor; Cell Biology; TGF- β Signaling in Nervous System Development and Function

Joseph L. Messina, Ph.D., Professor; Pathology; Insulin and Growth Hormone (GH) Action, Insulin and GH Resistance Following Trauma and Infection

Michael A. Miller, Ph.D., Assistant Professor; Cell Biology; Function and evolution of intercellular communication mechanisms

John Mountz, M.D., Ph.D., Professor; Medicine; Gene Therapy, T-cell Aging, Immunogenetics, and T-cell Imaging

Joanne Murphy-Ullrich, Ph.D., Professor; Pathology; Extracellular Matrix Control of Cell and Growth Factor Function

Diana Noah, Ph.D., Research Virologist; Biochemistry/SRI; understanding of influenza virus pathogenesis, including the mechanisms utilized by the highly pathogenic avian influenza strains causing deaths throughout Asia

Thomas T. Norton, Ph.D., Professor; Vision Sciences; Animal Models of Myopia – Retinal Control of Eye Size

Susan Nozell, Ph.D., Assistant Professor; Cell Biology

Suzanne Oparil, M.D., Professor; Medicine; Molecular and Cellular Mechanisms of Cardiovascular Disease

Vladimir Parpura, M.D., Associate Professor; Neurobiology; The role of glial cells in physiology of nervous system

Boris Pashe, M.D., Ph.D., Professor; Medicine; common gene variants that impact cancer risk and other outcomes in breast and colorectal cancer patients

Andrew J. Paterson, Ph.D., Assistant Professor; Medicine; the regulation of growth factor gene expression

Ji-Bin Peng, Ph.D., Assistant Professor; Medicine; Calcium transport proteins and their roles in health and disease

Selvarangan Ponnazhagan, Ph.D., Professor; Pathology; Adeno-associated virus gene therapy

Kirill M. Popov, Ph.D., Associate Professor; Biochemistry and Molecular Genetics; Regulation of pyruvate dehydrogenase complex

Edward M. Postlethwait, Ph.D., Professor; Environmental Health Sciences; Environmental Induction of pulmonary epithelial injury

Lucas Pozzo-Miller, Ph.D., Associate Professor; Neurobiology; Neurotrophins, Ca²⁺ Signaling, Synapse Development and Plasticity, Mental Retardation, Rett Syndrome

Peter Prevelige, Jr., Ph.D., Professor; Microbiology; Structural Biology of Viral Assembly and Infection

Chander Raman, Ph.D., Associate Professor; Medicine; Lymphocyte activation, immune tolerance and autoimmunity tolerance and autoimmunity

Erik Roberson, M.D., Ph.D., Assistant Professor; Neurology; Neurobiology of Alzheimer's Disease and Frontotemporal Dementia

James Schafer, Ph.D., Professor Emeritus; Physiology & Biophysics; Regulation of Salt and Water Reabsorption by the Distal Nephron

David Schneider, Ph.D., Assistant Professor; Biochemistry & Molecular Genetics; Control of RNA polymerase I transcription in the model eukaryote *Saccharomyces cerevisiae*

Harry Schroeder, M.D., Ph.D., Professor; Medicine; The Development and Function of Lymphocyte Antigen Receptors. & Genetics of Primary Immune Deficiency Diseases

Lisa Schwiebert, Ph.D., Associate Professor; Physiology & Biophysics; Airway inflammation; lung function; asthma and exercise

Rosa Serra, Ph.D., Professor; Cell Biology; Mechanism of TGF-β Action in Developmental and Disease Processes

Bingdong Sha, Ph.D., Professor; Cell Biology; Structural and functional studies of proteins involved in protein folding and translocations

John Shacka, Ph.D., Assistant Professor; Pathology; Regulation of Neuron Death by the Autophagy Lysosome Pathway

Sadeep Shrestha, Ph.D., Assistant Professor; Epidemiology; Infectious Disease Epidemiology, Genetic Epidemiology

Peter Smith, Ph.D., Associate Professor; Physiology and Biophysics; The role of the membrane cytoskeleton in regulating the cell surface expression of epithelial transport proteins

Harald Sontheimer, Ph.D., Professor; Neurobiology; The Role of Neuroglia in Brain Function and Disease

Giuseppe L. Squadrito, Research Associate Professor; Environmental Health Sciences; Development, design and evaluation of dynamic multi-component molecular systems that can be used to understand

David G. Standaert, M.D., Ph.D., Endowed Professor; Medicine/Neurology; the effects of oxidants in biological systems of various degrees of complexity

David Sweatt, Ph.D., Professor; Neurobiology; Signal Transduction Mechanisms in Learning and Memory

Elizabeth Sztul, Ph.D., Professor; Cell Biology; Membrane Traffic; Protein Degradation

Anne Theibert, Ph.D., Associate Professor; Neurobiology; Role of phosphoinositides in developmental neurobiology

Sunnie Thompson, Ph.D., Assistant Professor; Microbiology; Translation initiation during viral infection, tumorigenesis, or under stress.

Janusz Tucholski, Ph.D., Assistant Professor; Psychiatry & Behavioral Neurobiology; Cellular and molecular biology of neuroblastoma. Response of neuronal cells and neurons to stress

Thomas Van Groen, Ph.D., Associate Professor; Cell Biology; Amyloid angiopathy in cognitive dysfunction and Alzheimer's disease

Jacques Wadiche, Ph.D., Assistant Professor; Neurobiology; Synaptic transmission and glutamate transporters

Linda Wadiche, Ph.D., Assistant Professor; Neurobiology; The function of adult generated neurons

Mei Wan, Ph.D., M.D., Associate Professor; Pathology; Protein degradation mechanisms of tumor suppressor Smad4/DPC4 in cancers

Qin Wang, M.D., Ph.D., Assistant Professor; Physiology & Biophysics; Regulation of GPCR cellular responses and in vivo functions

Hengbin Wang, Ph.D., Assistant Professor; Biochemistry and Molecular Genetics; Role of Histone Modification in Chromatin Function

Jianbo Wang, Ph.D., Assistant Professor; Cell Biology; Currently, we are focused on a novel signaling pathway termed planar cell polarity (PCP) pathway and how this pathway regulates morphogenesis in mammals.

Andrew B. West, Ph.D., Assistant Professor; Neurology; Genetic and biochemical mechanisms in neurological disorders

C. Roger White, Ph.D., Associate Professor; Medicine/Cardiovascular Disease; Oxidant Stress and Endothelial Dysfunction

Scott Wilson, Ph.D., Assistant Professor; Neurobiology; Mouse Models of Neurodegeneration

Anne Woods, Ph.D., Professor; Cell Biology; Syndecan Proteoglycans in Cell Adhesion and Matrix Assembly

Jianming Wu, D.V.M., Ph.D., Assistant Professor; Medicine; Molecular Immunology and Genetics of Human Autoimmune Diseases

J. Michael Wyss, Ph.D., Professor; Cell Biology; Neuroplasticity in aging and neuro cardiovascular control

Qinglin Yang, M.D., Ph.D., Associate Professor; Nutrition Sciences; exploring molecular mechanisms underlying the development and progression of heart failure

Yang Yang, M.D., Ph.D., Assistant Professor; Molecular & Cellular Pathology; Targeting heparan sulfate for myeloma therapy

Bradley Yoder, Ph.D., Associate Professor; Cell Biology; Cilia Signaling and Dysfunction in Development and Disease

Nabiha Yusuf, Ph.D., Instructor; Dermatology; environmental influences such as chemical carcinogens and ultraviolet light on the skin and on the immune system

Majd Zayzafoon, M.D., Ph.D., Assistant Professor; Pathology; The Role of Calcium Signaling in the genetic and epigenetic pathogenesis of disease

Jianhua Zhang, Ph.D., Assistant Professor; Pathology; cell and molecular mechanisms, and mouse models of autophagy in development, neurological and psychiatric diseases

Theme Information

Objectives

The Cell, Molecular, and Developmental Biology (CMDB) graduate theme is part of an umbrella graduate program in Biomedical Sciences that focuses on basic process in cell, molecular and developmental biology and how defects in these processes result in human diseases and birth defects. CMDB students will receive comprehensive training and instruction in cell, molecular, and developmental biology using modern tools and approaches as well as a wide range of model organisms and cell culture systems. The overall goal of the theme is to develop well-rounded scholars with expertise applicable to multiple fields pertinent to a productive research and teaching career in academic science centers, research institutions, and industry.

Admission Requirements

Students are admitted into UAB Graduate Biomedical Sciences (GBS) umbrella program and indicate a theme preference. Applicants to the UAB Graduate School are reviewed by the GBS Admissions Committee and will be evaluated on the basis of their undergraduate performance (both the curriculum and grade point average), letters of recommendation, GRE scores, a personal statement of research interests, performance in other graduate programs or research activities and, if possible, a personal interview. Although students select a theme on admission into the GBS program, they may change theme affiliation at anytime; however changes that occur late in the doctoral program may require additional fundamental course work related to the specific theme.

Acceptance into CMDB requires a bachelor's degree including undergraduate coursework in calculus, general and organic chemistry, and at least one introductory course in zoology or biology by the time of entrance. The CMBD theme invites applications from individuals committed to obtaining a graduate education in biomedical sciences. Once accepted into GBS, students must complete the GBS core curriculum and three scientific research rotations in GBS laboratories. CMDB students will then begin course work in areas related to his/her research interests and training needs determined through the advice of faculty mentors and staff.

Overview of the CMDB Theme

The CMDB theme is comprised of over 60 primary and secondary faculty members with appointments in many of the academic departments and Centers at UAB including Cell Biology, Genetics, Biochemistry, Neurobiology, Medicine, Oral and Maxillofacial Surgery, Nutrition Sciences, Cardiovascular Disease, Clinical Immunology, Rheumatology, Pathology, Environmental Health Sciences, Physiology and Biophysics, Psychiatry & Behavioral Neurobiology, Vision Sciences and Optometry. The scientific interests of the faculty are very diverse and interdisciplinary in nature. As such, the CMDB theme can provide students an individually tailored, comprehensive training program in cell, molecular, and developmental biology using modern tools and approaches in a wide range of model organisms. The research conducted by CMDB faculty addresses fundamental cellular and molecular questions that provide the basis for understanding and treating human disease.

In the first semester, all students accepted into the GBS program will complete a ten week core course covering fundamentals in biochemistry, metabolism, genetics, molecular and cellular biology. After completion of the core GBS curriculum, CMDB students will complete a course entitled Introduction to Experimental Medicine that will introduce students to fundamental questions in biomedical sciences and the research approaches and model systems used to address them.

In addition, starting early in the first semester each student will obtain research experience through three laboratory rotations that will be completed by the end of the first year. Laboratory rotations are for ten weeks and are an integral part of the first year curriculum. They are the first opportunity to truly experience what graduate level scientific research is all about. These rotations are highly structured and are meant for you to become acquainted with the laboratory and the mentor and to gain practical experience in a variety of the techniques and types of scientific questions being addressed within the different theme areas. At the end of each rotation the students will present their research in the form of a poster presentation that is open to the GBS community. After completion of the rotations, students choose a mentor and laboratory for their dissertation research.

In the second semester, CMDB students must attend Methods and Scientific Logic, a journal club designed to demonstrate how to critically evaluate data and experimental design in the scientific literature and research. In addition, beginning in the second semester CMDB students will complete a series of one month modules in areas related to cell, molecular and developmental biology that are in the general research and scientific interest of the individual student. The CMDB curriculum is tailored to the student's research and scientific interests. As such, the student will be able to select from modules in the CMDB theme as well as from other GBS themes approved by the student's mentor and the CMDB theme directors. The student must complete eight modules, five of which should be listed as a CMDB course. Additional course work may be required to fill gaps in the student's knowledge based on the recommendation of the mentor and the student's thesis committee.

In the summer of the first year, all CMDB students must complete course in Biostatistics and Bioethics as well as conduct non-dissertation research in their selected laboratories.

At the beginning of the second year, students will assemble a thesis committee in consultation with their mentors. This committee will be formed by anywhere between 4 and 6 members, 3 of which should be faculty associated with the CMDB theme.

In the second year, students continue non-dissertation laboratory research and take module course work to fulfill the requirements described above. By the beginning of the third year, CMDB students must complete their qualifying examination consisting of a written dissertation research proposal in the format of an NIH style grant and an oral defense. The examination will evaluate whether the student has gained a sufficiently broad knowledge necessary for successful academic research. To help in this process, the second year curriculum will include a course in scientific writing and grantsmanship with a mock NIH grant review session. After successful completion of the exam the proposal will be submitted to a funding agency (if applicable) for possible support.

After the second semester, all students must participate in a CMDB approved Departmental Seminar Series and a weekly journal club until completion of the doctoral degree.

The curriculum of each Ph.D. candidate usually requires five years of training and is individually tailored to the interests and needs of the student by the advisor and a graduate committee chosen by the student. The Ph.D. degree is awarded upon successful defense of your dissertation, which includes an oral presentation of original, creative scientific investigations, and a written dissertation which is expected to include published manuscripts or manuscripts in preparation. Because pursuit of the Ph.D. degree is a full-time activity, all graduate students are supported by monetary stipends and do not have any required teaching duties. The level of activity required does not permit outside jobs or excessive extracurricular activities. Continuous registration and satisfactory academic standing during all terms is required.

Additional Information

Deadline for Entry Term(s):	Fall Semester
Deadline for All Application Materials to be in the Graduate School Office:	Domestic: April 30 (early submission is strongly encouraged for priority processing)

	International: January 15
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE

For detailed information see Web www.uab.edu/cmdb or contact:

Dr. Bradley K. Yoder

Professor

McCallum Building, Room 688
1918 University Blvd.
Birmingham, AL 35294-0005

byoder@uab.edu

Nan Travis

Program Manager

Shelby Building, Room 120B
1825 University Boulevard
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Course Descriptions - Cell, Molecular and Developmental Biology

Cell Signaling - This course covers major extracellular and intracellular signal transduction cascades that regulate animal development and physiology. The class meets every day for 2 hours and consists of two exams.

Introduction to Experimental Medicine – This six week course will consist of interactive lectures, discussions, and scientific literature reviews demonstrating general principles in biomedical sciences and how defects in these processes are related to human disease or birth defects. Faculty will discuss scientific rationale, logic, and approaches to investigate these processes and provide examples from the primary literature or research ongoing in their laboratories. Students will be evaluated based on written assignments, participation in discussions, and on a class presentation.

Cellular Membranes and Organelles - This class will cover molecular and cellular processes that are involved in the assembly and maintenance of membranes and organelles and how defects in these processes contribute to human disease.

Cell and Molecular Aspects of Developmental Biology - 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.

Developmental Neuroscience- 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.

Stem Cell Biology - 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. Students will be evaluated based upon their journal article presentations, participation in class discussions, quizzes, and attendance.

Development and Evolution – This course will cover the developmental mechanisms that drive evolutionary change and how body plans evolve through natural selection. The course consists of lectures and scientific literature discussions that will demonstrate developmental biology principles.

Skeletal Development and Disease - The primary goal of this course is to introduce graduate students to the basic and translational knowledge about development, maintenance and homeostasis of the mineralized tissues. Lectures in this course will focus on approaches and techniques that are utilized for understanding cellular and molecular mechanisms essential for the normal development, remodeling and patho-physiology of skeleton.

Cell and Matrix Interactions in Disease & Development - This course will cover a combination of basic mechanisms underlying extracellular matrix interactions with cells, and how these go wrong in several disease processes. It will be a series of seminars, followed in the final week with oral student presentations on the disease of their choice and submission of a one-page summary.

Mechanisms of Birth Defects - This class will provide an overview of the mechanisms of common birth defects. A review of the development of each organ system is followed by a discussion of molecular mechanisms leading to alterations in normal development. Genetic and environmental mechanisms are discussed. A recent paper on each topic is presented as part of the class. Depending on the number of students enrolled, each student will be required to present one or two papers.

Grantsmanship and Scientific Writing – 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.

Laboratory Rotations. Concurrent with the first year of course work, each student will perform laboratory research with mentors of his/her choosing in any of the GBS themes. Laboratory rotations are meant help students become acquainted with the laboratory and the mentor and to gain practical experience in a variety of the techniques and types of scientific questions being addressed within the different theme areas. Laboratory rotations last approximately ten weeks and each student will complete three rotations by the end of their first year. At the end of each rotation the students will present their research in the form of a poster. The performance in the laboratory and the poster presentation will be graded by the mentor of the laboratory and by two GBS faculty members respectively. A passing grade is required for all laboratory rotations. 1-6 hours.

Non-Dissertation Research. Laboratory research performed prior to admission to candidacy. 1-12 hours.

Dissertation Research. Prerequisite: Admission to candidacy. 1-12 hours.

CMDB Approved Seminar Series – All CMDB students must attend one of the weekly departmental based seminar series within the scientific interest of the student. The seminar series feature prominent speakers from both inside and outside of UAB and attendance is mandatory. Current approved seminar series include: Cell Biology, Neuroscience, Genetics, and Biochemistry. Additional seminar series may be included upon approval of CMDB and the mentor.

CMDB Journal Clubs - In the beginning of the second year until completion of the thesis defense, all CMDB students must participate in a journal club related to the student's research interests and to the CMDB theme. The purpose of the journal club is to give students valuable experience in critical assessment of the scientific literature and to keep up-to-date on the research activities emerging from CMDB related research. Current journal clubs associated with the CMDB theme are: Autophagy and Cell Death, Cell Biology, Cell-Matrix Interactions, Cancer and Developmental Biology, and Stem Cell Biology. Additional journal clubs may be included upon approval of CMDB and the mentor.

Genetics and Genomic Sciences (Ph.D.)

Degree Offered:	Ph.D.
Director:	Dr. Daniel C. Bullard, Ph.D.
Phone:	(205) 934-7768
E-mail:	dcbullard@uab.edu
Web site:	www.uab.edu/ggs

Faculty

Aissani, Brahim, Ph.D., Research Assistant Professor; Cancer control and population science

Allison, David, Ph.D., Professor; Obesity, quantitative genetics, clinical trials, and statistical and research methodology

Arnett, Donna, Ph.D., M.S.P.H., Professor; Genetic Epidemiology, Pharmacogenetics

Beasley, Mark, Ph.D., Associate Professor; Methodological problems in statistical genetics and bioinformatics

Bebok, Zsuzsanna, M.D., Assistant Professor; Protein folding disorders; Cystic fibrosis; Gene expression regulation by cellular stress responses

Bedwell, David, Ph.D., Professor; Translation termination, mRNA turnover

Bevensee, Mark, Ph.D., Assistant Professor; Cellular and Molecular Physiology of Acid-base Transporters and pH Regulation

Blume, Scott, M.D., Assistant Professor; Specific regulation of gene expression at the translational level - through sequence-specific RNA-binding proteins and complex 5'-untranslated RNA sequences; dysregulation of gene-specific translational control mechanisms in cancer.

Bray, Molly, Ph.D., Professor; Molecular and genetic basis of obesity; genetic analysis of complex traits; gene-environment interaction; physical activity/exercise physiology; adipogenesis; genetics of response to obesity interventions

Bridges, S. Louis, M.D., Professor; Genetic Influences on Treatment Responses in Rheumatoid Arthritis, particularly in African-Americans, and pharmacogenetics of rheumatoid arthritis

Briles, David, Ph.D., Professor; Bacterial pathogenesis; virulence; immunity; pneumococcus

Brown, Elizabeth, Ph.D., Assistant Professor; Immunogenetics of autoimmune disease, infectious disease and virally-associated cancers

Bullard, Daniel C., Ph.D., Associate Professor; Regulation of Inflammatory Responses , Pathogenesis of Lupus and Vasculitic Disorders

Burrows, Peter, Ph.D., Professor; Lymphocyte Development and Function

Carroll, Steven, M.D., Ph.D., Professor; The Role of Neuregulin-1 in Peripheral Nervous System Neoplasia

Chesnokov, Igor, Ph.D., Assistant Professor; DNA Replication and Cell Cycle in Eukaryotes

Crasto, Chiquito, Ph.D., Assistant Professor; Bioinformatics, Olfactory receptors, Protein modeling, Neurological disorders

Cui, Xiangqin, Ph.D., Research Assistant Professor; Splicing array design ; Equivalence tests for large dimension data produced by microarrays

Detloff, Peter, Ph.D., Associate Professor; Mouse Models of Human Genetic Disorders

Dybvig, Kevin, Ph.D., Professor; Pathogenic mechanisms of mycoplasmas

Edberg, Jeffery, Ph.D., Associate Professor; Genetic Polymorphisms in Wegener's Granulomatosis

Eltoum, Isam, M.D., M.B.A.; Clinical research in diagnostic cytology and surgical pathology; tumorogenesis of prostate cancer and chemoprevention; HPV infection

Fernandez, Jose, Ph.D., Associate Professor; Identification of genes contributing to racial differences in obesity, diabetes, and cancer: the genetic admixture approach

Frank, Stuart, M.D. , Professor

Gross, Alecia, Ph.D., Assistant Professor; Rhodopsin-mediated retinal degeneration, mechanisms of photoreceptor membrane biogenesis

Guay-Woodford, Lisa, M.D., Professor; Genetics of renal disease, particularly polycystic kidney disease

Hartman, John, M.D., Assistant Professor; Quantitative analysis of genotype-phenotype interaction networks in yeast models of human disease

Higgins, Patrick, Ph.D., Professor; Genetic and Biochemical Studies of Chromosome Dynamics

Hollingshead, Susan, Ph.D., Professor; Mechanisms of Variation in Microbial Pathogenesis

Javed, Amjad, Ph.D., Associate Professor; Genetic and Molecular Signaling for Cellular Differentiation and Skeletogenesis

Jiao, Kai, M.D., Ph.D., Assistant Professor; TGF-beta/Bmp signaling during cardiogenesis

Kaslow, Richard, M.D., Professor; Epidemiology of Infection and Immunity

Kesterson, Robert A., Ph.D., Associate Professor; Hypothalamic Control of Feeding Behavior

Kimberly, Robert, M.D., Professor; Autoimmunity, Molecular Mechanisms and Genetic Risk

Klug, Christopher, Ph.D., Professor; Hematopoietic stem cell development

Korf, Bruce, M.D., Ph.D., Professor; Neurofibromatosis Type 1

Lefkowitz, Elliot J., Ph.D., Associate Professor; Viral and Microbial Genomics, Evolution, and Bioinformatics

Lesort, Matheiu, Ph.D., Assistant Professor; Pathogenesis of Huntington's disease

Limdi, Nita, Ph.D., Assistant Professor; Genetic and environmental regulation of warfarin and other drug responses

Liu, Nianjun, Ph.D., Assistant Professor; genetic linkage and association analysis, disequilibrium mapping, population genetics, bioinformatics, machine learning methods and longitudinal data analysis and their applications in genetics and bioinformatics

Lothrop, Clint, Ph.D., Professor; Allograft rejection, novel therapies for blood disorders

Marques, Guillermo, Ph.D., Assistant Professor; TGF- β Signaling in Nervous System Development and Function

Messiaen, Ludwine, Ph.D., Professor; Molecular genetics testing in hereditary disorders; molecular dissection of the variant forms of NF1

Messina, Joseph, Ph.D., Professor; Insulin and Growth Hormone (GH) Action, Insulin and GH Resistance Following Trauma and Infection

Miller, Michael, Ph.D., Assistant Professor; Function and evolution of intercellular communication mechanisms

Norton, Thomas T., Ph.D., Professor; Juvenile eye development, mechanisms leading to myopia or hyperopia

Olsen, Michelle, Assistant Professor

Pasche, Boris, M.D., Ph.D., Professor; TGF-beta in cancer development and progression, biological effects of amplitude-modulated electromagnetic fields, role of variants of the adiponectin pathway in cancer development.

Peng, Ji-Bin, Ph.D., Assistant Professor; Calcium transport proteins and their roles in health and disease

Pittler, Steven, Ph.D., Professor; Characterization of Photoreceptor Metabolism and Retinal Degeneration

Popov, Kirill, Ph.D., Associate Professor; Regulation of pyruvate dehydrogenase complex

Pozzo-Miller, Lucas, Ph.D., Associate Professor; Regulation of synaptic transmission and plasticity

Roth, Kevin, M.D., Ph.D., Professor; Molecular Regulation of Neuronal Cell Death

Ryan, Tom, Ph.D., Assistant Professor; Stem cell therapies in animal models of human disease

Schneider, David, Ph.D., Assistant Professor; Control of RNA polymerase I transcription in the model eukaryote *Saccharomyces cerevisiae*

Schroeder, Harry, M.D., Ph.D., Professor; The Development and Function of Lymphocyte Antigen Receptors. &Genetics of Primary Immune Deficiency Diseases

Serra, Rosa, Ph.D., Professor; Mechanism of TGF- β Action in Developmental and Disease Processes

Shrestha, Sadeep, Ph.D., Assistant Professor; Interplay of human genetics with behavioral and environmental factors in the natural history and pathogenesis of infectious diseases (HIV, HBV, HCV, HPV, HTLV) and chronic disorders such as Kawasaki disease and coronary heart disease

Sodhi, Monsheel, Ph.D., Assistant Professor; Contribution of genetic and post-transcriptional variation to the etiologies of psychosis, depression and suicide,

Sorscher, Eric, M.D., Professor; Cystic Fibrosis and Molecular Genetics; Patient Oriented Research

Standaert, David, M.D., Ph.D., Professor; Translational Research in Neurodegenerative Diseases

Steyn, Adrie, Ph.D., Assistant Professor; Mechanism of *Mycobacterium tuberculosis* virulence

Strong, Theresa, Ph.D., Associate Professor; Identification of Tumor Antigens and Development of Cancer Vaccines

Sweatt, David, Ph.D., Endowed Professor; Signal Transduction Mechanisms in Learning and Memory

Szalai, Alex, Ph.D., Associate Professor; Inflammation, innate immunity, and the acute phase proteins in health and disease

Tang, Jianming, Ph.D., Associate Professor; Genetic and Epigenetic Correlates of Infection and Immunity

Theibert, Anne, Ph.D., Associate Professor; Role of phosphoinositides in developmental neurobiology

Thompson, Sunnie, Ph.D., Assistant Professor; Translation initiation and replication of RNA viruses

Tiwari, Hemant, Ph.D., Associate Professor; Genetic Linkage Analysis, Disequilibrium Mapping, Population Genetics, Molecular Evolution, Bioinformatics, and Genetics of Infectious Diseases

Unlap, M. Tino, Ph.D., Associate Professor; Role of the Na⁺/Ca²⁺ exchanger in mediating the effects of oxidative stress in hypertension, cancer and alzheimer's disease

Wang, Jianbo, Ph.D., Assistant Professor; Metabolic diseases

West, Andrew, Ph.D., Assistant Professor; Genetic and biochemical mechanisms in neurological disorders

Wilson, Scott, Ph.D., Assistant Professor; Mouse Models of Neurodegeneration

Wyss, J. Michael, Ph.D., Professor; Genetic and biochemical mechanisms in neurological disorders

Yacoubian, Talene, Ph.D.,

Yi, Nengjun, Ph.D., Associate Professor; Development of statistical and computational methods for identifying multiple interacting genes for complex traits

Yoder, Brad, Ph.D., Professor; Cilia Signaling and Dysfunction in Development and Disease

Yother, Janet, Ph.D., Professr; Capsular polysaccharides of *Streptococcus pneumoniae*

Zhang, Jianhua, Ph.D., Assistant Professor; Cell and molecular mechanisms, and mouse models of autophagy in development, neurological and psychiatric diseases

Zhang, Kui, Ph.D., Associate Professor; Development of methodologies for linkage, disequilibrium, haplotype, and microarray analysis.

Theme Information

Objectives

The main goal of the **Genetics and Genomic Sciences Graduate Program (GGS)** is to provide students with an outstanding, flexible, didactic training experience to prepare them for independent and innovative careers in research. The Program emphasizes a broad approach to the fundamental principles of genetics and genomics, and offers a large pool of mentors with expertise in a wide variety of areas. The GGS offers close day-to-day interactions between students and faculty, both in the classroom and the laboratory.

The research interests of our program faculty span the fields of genetics, genomics, cancer, biochemistry, cell biology, and developmental biology. Modern molecular approaches are used to study gene structure, expression, and function in diverse experimental systems including humans, mice, *Drosophila*, *C. elegans*, and other organisms such as bacteria. The GGS is also designed to permit close collaborations during the Ph.D. training period between graduate students, postdoctoral fellows, and faculty, while also encouraging full participation in the larger community of biological scientists at UAB.

Admission Requirements

Students are admitted into UAB Graduate Biomedical Sciences (GBS) umbrella program and indicate a theme preference. Applicants to the UAB Graduate School are reviewed by the GBS Admissions Committee and will be evaluated on the basis of their undergraduate performance (both the curriculum and grade point average), letters of recommendation, GRE scores, a personal statement of research interests, performance in other graduate programs or research activities and, if possible, a personal interview. Although students select a theme on admission into the GBS program, they may change theme affiliation at anytime; however changes that occur late in the doctoral program may require additional fundamental course work related to the specific theme. Acceptance into GGS requires a bachelor's degree including undergraduate coursework in calculus, general chemistry, organic chemistry, and at least one introductory course in zoology or biology by the time of entrance. Doctoral students will receive financial aid in the form of a stipend/fellowship plus full payment of tuition, fees, and their insurance premium. Current stipend/fellowships are \$25,000 per year for 2009-2010 entering students.

The GGS theme invites applications from individuals committed to obtaining a graduate education in fields related to genetics or genomics. We recommend that applicants take prior courses covering basic concepts in genetics and biochemistry if possible; however, this is not required for admission.

Applications are strongly encouraged from individuals with previous research experience, a master's degree in related area, or a professional degree such as the M.D. or D.V.M. Once accepted into GBS, students must complete the GBS core curriculum and three scientific research rotations in GBS laboratories. GGS students will then begin course work in areas related to his/her research interests and training needs determined through the advice of faculty mentors and staff.

Overview of the GGS Program

The GGS theme is comprised of over 60 primary and secondary faculty members with appointments in many of the academic departments and Centers at UAB including Genetics, Cell Biology, Microbiology, Biochemistry, Neurobiology, Medicine, Pathology, Epidemiology, Biostatistics, Nutrition Sciences, Vision Sciences, and others. The scientific interests of the faculty are very diverse and interdisciplinary in nature.

As such, the GGS theme can provide students an individually tailored, comprehensive training program in genetics and genomics through use of modern tools and approaches in a wide range of model organisms. The research conducted by GGS faculty addresses fundamental cellular and molecular questions that provide the basis for understanding and treating human disease.

In the first semester, all students accepted into the GBS program will complete a ten week core course covering fundamentals in biochemistry, metabolism, genetics, molecular and cellular biology. After completion of the core GBS curriculum, GGS students will complete the *Introduction to Experimental Medicine course* that will introduce students to fundamental questions in biomedical sciences and the research approaches and model systems used to address them. Students are also expected to attend the Department of Genetics Seminar Series and journal club during all years of their graduate training. These weekly events generally start in September and run through May of each academic year.

In addition, starting early in the first semester each student will obtain research experience through three laboratory rotations that will be completed by the end of the first year. Laboratory rotations are for ten weeks and are an integral part of the first year curriculum. They are highly structured and allow the student to become acquainted with the laboratory and the mentor, gain practical experience in a variety of the techniques, and to learn about the different scientific questions being investigated within the GGS theme. At the end of each rotation, the students will present their research in the form of a poster presentation that is open to the GBS community. After completion of all three rotations, students choose a mentor and laboratory for their dissertation research.

In the second semester, GGS students will complete a series of one month modules that cover a wide variety of subjects including genome structure, Mendelian and nonmendelian inheritance, linkage and association analyses, bioinformatics, animal models for genetic analyses, and biochemical genetics. In the summer of the first year, all GGS students must complete course in Biostatistics and Bioethics and conduct non-dissertation research in their selected laboratories.

During the subsequent years of the program, GGS students will focus on their laboratory research, as well as take a small number of specialized courses related to genetics and genomic sciences, or their specific areas of investigation. At the end of the second year of graduate training, students will assemble a thesis committee in consultation with their mentors. This committee will be formed by anywhere between 4 and 6 members, 3 of which should be faculty associated with the GGS theme. By the beginning of the third year, GGS students must complete their qualifying examination consisting of a written dissertation research proposal in the format of an NIH style grant and an oral defense. The examination will evaluate whether the student has gained a sufficiently broad knowledge necessary for successful academic research. To help in this process, the second year curriculum will include a course in scientific writing and grantsmanship with a mock NIH grant review session. After successful completion of the exam the proposal will be submitted to a funding agency (if applicable) for possible support. After passing the qualifying exam and the necessary advanced coursework, GGS students are accepted to candidacy for the Ph.D. degree.

The curriculum of each Ph.D. candidate usually requires five years of training and is individually tailored to the interests and needs of the student by the advisor and a graduate committee chosen by the student. The Ph.D. degree is awarded upon successful defense of your dissertation, which includes an oral presentation of original, creative scientific investigations, and a written dissertation which is expected to include published manuscripts or manuscripts in preparation. The pursuit of the Ph.D. degree is a full-time activity, therefore all graduate students are supported by monetary stipends and do not have any required teaching duties. The level of activity required does not permit outside jobs or excessive extracurricular activities. Continuous registration and satisfactory academic standing during all terms is required.

Additional Information

Deadline for Entry Term(s):	Fall Semester
Deadline for All Application Materials to be in the	Domestic Applications: April 30 (early submission is strongly encouraged for priority processing)

Graduate School Office:	International Applications: Jan 15
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE or MCAT

For detailed information, contact:

Nan Travis

GGS Graduate Program Manager
 UAB, Graduate Biomedical Sciences Office
 Shelby Building, Room 120B
 1825 University Boulevard
 Birmingham, AL 35294-2182
 Telephone: (205) 934-1033
 Fax: (205) 996-6749
 E-mail: ntravis@uab.edu

Or

Daniel C. Bullard, Ph.D.
 GGS Program Director
 Department of Genetics
 KAUL 602B
 University of Alabama at Birmingham (UAB)
 720 South 20th Street, Birmingham, Alabama 35294-0024
 Telephone: (205) 934-7768
 Fax: (205) 975-4416
 E-mail: dcbullard@uab.edu

Course Descriptions for Genetics and Genomic Sciences

Genome Structure and Function. 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.

Linkage Concepts and Genome Wide Association Analyses. Lectures for this course will focus on basic and advanced concepts in population genetics, linkage, genome-wide association analyses, admixture, genotype/phenotype correlation, and other related topics.

Bioinformatics. This course will cover a wide variety of different bioinformatics applications, which will be taught through use of available on-line bioinformatics resources. 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, ORF-Finder and GENSCAN, Multiple Sequence Analysis, gene identification in DNA and an introduction to the Human Genome Project; resources that are used in Microarray Data Analysis; Protein sequence analysis using Pfam, Prosite, Prints, Blocks, Protein structure analysis using SCOP, CATH; structural bioinformatics, secondary structure calculation, homology modeling, structure prediction, protein folding, protein-ligand docking and molecular dynamics.

Animal Model Systems for Genetic and Genomic Analyses. The course will provide students with an in-depth knowledge of the different animal models used for analyses of gene function and genetic pathways. Topics include transgenic and knockout mouse technologies and strategies, large scale genetic screens in *C. elegans* and *Drosophila*, and modeling human genetic diseases in zebrafish.

Advanced Medical Genetics. 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.

Epigenetics. This course will address the basic principles of epigenetics and its involvement in many different biological/pathological processes. Epigenetic regulation refers to mechanisms that regulate gene expression without altering DNA sequences. Elucidation of epigenetic regulatory mechanisms has received great attention in the post genomic era. Topics include imprinting, X-inactivation, epigenetic mechanisms of gene regulation, and cancer epigenetics.

Systems Biology. Lectures will consider systems biology approaches in the context of the human genome project, and with an emphasis on simple model systems. Technologies, biological concepts, and the underlying motivation for this emerging area will be discussed using examples available in the literature. The central focus of systems biology is to acquire a more global and quantitative understanding of how living organisms function as complex genetic systems, and how this might provide a more complete understanding of phenotypic traits.

Grant Proposal Writing. 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.

Department of Genetics Seminar. The Department of Genetics Seminar series meets once a week from September through May of each academic year. This is a forum in which invited speakers from other institutions, as well as UAB faculty members, postdoctoral fellows, and advanced graduate students present and discuss their research.

Medical Genetics Journal Club. Faculty, students, and postdoctoral fellows meet once a week and present papers on a wide variety of topics related to genetics and genomics.

Laboratory Rotations. Concurrent with the first year of course work, each student will perform laboratory research with mentors who are part of the GGS theme. Laboratory rotations last approximately ten weeks and each student will complete three rotations by the end of their first year. At the end of each rotation the students will present their research in the form of a poster. The performance in the laboratory and the poster presentation will be graded by the mentor of the laboratory and by two GBS faculty members respectively. A passing grade is required for all laboratory rotations.

Immunology (Ph.D.)

Degree Offered: Ph.D.

Director: Dr. Peter Burrows

Phone: (205) 934-6529

E-mail: peterb@uab.edu

Web site:

Faculty

William W. Andrews, Professor

T. Prescott Atkinson, Professor

Scott R. Barnum, Professor; Neuroimmunology, complement, EAE

Khurram Bashir, Associate Professor

Etty Benveniste, Professor

J. Edwin Blalock, Professor

Suresh Boppana, Professor

S. Louis Bridges, Jr., Professor; Genetics of rheumatoid arthritis

David E. Briles, Professor

Elizabeth E. Brown, Assistant Professor; epidemiology of immune disease

Donald Buchsbaum, Professor; Cancer immunotherapy

R. Pat Bucy, Professor; T cell immunology

Daniel C. Bullard, Associate Professor

Peter D. Burrows, Professor; B cell development and function

David D. Chaplin, Professor; Lymphoid tissue development

Noel K. Childers, Professor

James Collawn, Professor

Yingzi Cong, Assistant Professor; Mucosal immunology

Randy Cron, Associate Professor; Immunootherapy

Randall S. Davis, Associate Professor; Fc receptors, lymphocyte development

Jeffrey C. Edberg, Associate Professor; Fc receptors, rheumatoid arthritis

Craig A. Elmets, Professor

Charles O. Elson, III, Professor; Mucosal immunology

David O. Freedman, Professor

Kohtaro Fujihashi, Professor; Mucosal immunology

James F. George, Associate Professor; Transplantation

Vithal K. Ghanta, Professor; Cancer biology

Paul Goepfert, Associate Professor; Immune responses to HIV

Laurie E. Harrington, Assistant Professor; T cell memory

Zdenek Hel, Assistant Professor; HIV pathogenesis

Susan Hollingshead, Professor

Hui-Chen Hsu, Associate Professor; Autoimmunity

Louis B. Justement, Professor; Lymphocyte signaling

Janusz Kabarowski, Assistant Professor

Judith A. Kapp, Professor

Richard A. Kaslow, Professor

John F. Kearney, Professor; B cell development

Robert P. Kimberly, Professor; Fc receptors, rheumatoid arthritis

Christopher A. Klug, Professor; Hematopoietic stem cells

Hiromi Kubagawa, Professor; Immunopathology

Richard D. Lopez, Associate Professor; gamma/delta T cells

Robinna G. Lorenz, Professor; Mucosal immunology

Sadis Matalon, Professor

Jiri Mestecky, Professor; Mucosal immunology

Suzanne M. Michalek, Professor; Mucosal immunology

John D. Mountz, Professor; T cells in autoimmunity

Moon Nahm, Professor; Immunity to pneumococci

Jan Novak, Associate Professor; Glycosylation in immune responses

Hongwei Qin, Assistant Professor; Immune signaling

Raghavan Raju, Associate Professor; Acute inflammation

Chander Raman, Associate Professor; T cell immunology

David Randolph, Assistant Professor; T cell immunology

Russell W. Read, Associate Professor; Ocular immunology

Harry W. Schroeder, Jr., Professor; Immunogenetics

Lisa M. Schwiebert, Associate Professor; Asthma

Chad Steele, Associate Professor; Pulmonary immunology

Alexander J. Szalai, Associate Professor; C-reactive protein, innate immunity

Jianming Tang, Associate Professor

Laura Timares, Assistant Professor; Dendritic cell biology

Hubert Tse, Assostamt Professor

Mark R. Walter, Professor

Casey T. Weaver, Professor; T cell immunology

Douglas A. Weigent, Professor; Neuroimmunology

Jianming Wu, Assistant Professor; Autoimmune disease

Hui Xu, Associate Professor; Immunoregulation

Janet Yother, Professor

Nabiha Yusuf, Instructor; Environmental immunology

Allan J. Zajac, Associate Professor; Immunovirology

Huang-Ge Zhang,

Tong Zhou, Professor

Theme Information

Objectives

The Immunology Graduate Theme is a part of the [UAB Graduate Biomedical Sciences Program](#). We are an interdisciplinary program emphasizing the study of multiple aspects of the immune system, from basic molecular mechanisms to whole animal studies and human translational research. The remarkable breadth of our program can be seen in the primary departments of the almost fifty theme faculty members. Faculty from the Departments of [Microbiology](#), [Cell Biology](#), [Biochemistry and Molecular Genetics](#), [Genetics](#), [Biology](#), [Pathology](#), [Physiology and Biophysics](#), [Medicine](#), [Pediatrics](#), [Environmental Health Sciences](#), [Epidemiology](#), [Surgery](#), [Ophthalmology](#), [Dermatology](#), and [Dentistry](#) are involved in internationally recognized research and in the training of PhD-level graduate students and postdoctoral fellows. Currently, forty-five students are in training in the laboratories of our immunology faculty. Primary areas of research include: Allergy, Autoimmunity, Cancer Immunology, Clinical/Translational, Developmental Immunology, Host Defense, Immunodeficiency, Immunogenetics, Inflammation, Mucosal and Ocular Immunology, Neuroimmunology, Structural Immunology, and Transplantation Immunology. Students obtaining a PhD in the Immunology Graduate Theme will be well-versed in modern immunology and have the option to pursue diverse career pathways.

Admission Requirements

Acceptance is based on undergraduate record (curriculum and grade point average [GPA]), Graduate Record Exam (GRE) scores, letters of recommendation, a personal statement of research and career interests, and past research activities. Domestic candidates who pass the first round of selection will be invited to visit UAB and meet the Immunology faculty and students.

The general requirements for acceptance into the Theme are:

- minimum GPA of 3.0 on a 4.0 scale
- combined verbal/quantitative GRE score ≥ 1100
- a strong background in biology, chemistry, and/or mathematics. Undergraduate level courses in immunology, cell biology, biochemistry, physics, genetics, organic and analytical chemistry are strongly encouraged. Undergraduate mathematics through calculus is also recommended.

International students must submit scores from the Test of English as a Foreign Language (**TOEFL**) earned within the last two years. Applicants with scores of 600 (paper-based) or 250 (computer-based) or higher will be considered.

All students in the program receive a stipend (currently \$25,000), tuition and fees, and single coverage health insurance. Support is provided by the Theme, by the student's mentor, or through one of many fellowship programs.

Overview of the Theme

The Theme emphasizes interdisciplinary training in all areas of modern immunology. The first year of the program involves fundamental coursework and three research-based rotations in laboratories of the student's choosing. A qualifying examination and admission to candidacy take place in the second year. Advanced coursework, journals clubs, and dissertation research occur in the second and subsequent years. It is expected that completion of the PhD will require five to six years.

To broaden their training experience, students are introduced to research at the national and international levels through seminars presented by outside speakers and by attendance at national and international scientific meetings. Students take an active role in inviting and hosting speakers at UAB, and they are strongly encouraged to present their own results at outside meetings. An annual retreat held off-campus allows students to present their research and fosters collegiality among students, postdoctoral fellows, and faculty.

Additional Information

Deadline for Entry Term(s):	Consult Theme Director for information
Deadline for All Application Materials to be in the Graduate School Office:	Domestic Applications: Jan 31 International Applications: Jan 15
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE

For detailed information, contact Dr. Peter Burrows, Theme Director, UAB Immunology Graduate Theme, SHEL 406, 1825 University Blvd., Birmingham, Alabama 35294-2182.

Telephone (205)934-6529

Fax (205) 996-6749

E-mail peterb@uab.edu

Course Descriptions

Core Curriculum

BLOCK 1 - BIOCHEMISTRY/METABOLISM

- Amino acids and primary protein structure
- Protein secondary and tertiary structure
- Posttranslational modifications and allosteric changes
- Glycobiology
- Lipid structure and metabolism
- Thermodynamic principles of biochemical reactions
- Enzyme kinetics
- Enzyme mechanisms and regulation
- Amino acid/nitrogen metabolism
- Glycolysis, gluconeogenesis and citric acid cycle
- Glycogenesis, glycogenolysis and pentose phosphate pathway
- Electron transport/oxidative phosphorylation

BLOCK 2 - GENETICS/MOLECULAR BIOLOGY

- DNA recombination
- Nucleic acids & DNA replication
- Prokaryotic transcription
- Prokaryotic translation
- Prokaryotic gene regulation
- Eukaryotic genome organization
- Eukaryotic DNA replication
- Eukaryotic transcription
- Eukaryotic translation
- Eukaryotic gene regulation I
- Eukaryotic gene regulation II
- Mendelian inheritance
- Genetic variation and polymorphisms

BLOCK 3 - BIOLOGICAL ORGANIZATION

- Integrated systems: From organelles to organs
- Membrane structure/function
- Cytoskeleton
- Secretion
- Endocytosis, lysosomal targeting, protein degradation
- Biochemistry of signal transduction

- Cell cycle
- Cell-cell junctions and polarity
- ECM and ECM-cell interactions
- Cell motility
- Apoptosis
- Discipline of pharmacology
- Pharmacokinetics

Theme Specific Courses

Introductory Immunology. 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. Students actively participate in the course through weekly presentations of selected immunology topics based on the current literature.

Lymphocyte Biology. The objective of this class 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.

Dendritic Cell Biology. Understanding the biology and function of the immune system's professional antigen presenting cells, the dendritic cells, is a fast moving challenge. The course will cover the seminal papers in the field that have laid the groundwork for our current understanding of this group of complex cells. The major component of the class will emphasize student presentations of assigned reviews and journal articles. Presentations will include an overview (provided by the review article) and 2-3 papers per class.

History of Immunology. This course will examine the concepts that have shaped what we now consider pillars in our knowledge of the immune system. The course will cover the major events and discoveries that led to these established concepts and, where possible, the advent of technologies that facilitated these advances. The course will involve student participation in the form of presentations in selected areas as well as lectures by some individuals who were part of this history.

Innate Immunity. The study of innate immunity has made a resurgence in recent years and its critical role, not only in host defense against invading pathogens, but in the development of adaptive immune responses is now appreciated. This course will provide an in-depth look at selected aspects of the innate immune response including the cellular and molecular components critical to its development. The course will involve student presentations on selected topics.

Mucosal Immunology. 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.

Journal Clubs

[MIC 797-00: Cellular and Molecular Immunology Journal Club](#)

[MIC 796-00: Neuroimmunology Journal Club](#)

[MIC 737-VT: Mucosal Immunology Journal Club](#)

[MIC 772-VT: Bacterial Pathogenesis Journal Club](#)

[MIC 724-VT: Virology Journal Club](#)

[MIC 785-00: Post-Transcriptional Regulatory Mechanisms](#)

[MIC 786-00: Retrovirology Journal Club](#)

[MIC 789-00: Journal Club in Biological Crystallography](#)

Microbiology (Ph.D.)

Degree Offered: Ph.D.

Director: Dr. Janet Yother

Phone: (205) 934-9531

E-mail: jyother@uab.edu

Web site: www.uab.edu/micro

Faculty

G.M. Anantharamaiah, Professor; Medicine; Apolipoproteins, Amphipathic Helices and Atherosclerosis

Prescott Atkinson, Associate Professor; Mycoplasma; Asthma; Signal transduction in lymphocytes

David Bedwell, Professor; Translation termination; treatment of genetic diseases

Jorge Benitez, Associate Professor

Suresh Boppana, Professor; Pediatric viral infectious diseases

David Briles, Professor; Bacterial pathogenesis; virulence; immunity; pneumococcus; tuberculosis

Bill Britt, Professor

David Chaplin, Professor

Louise Chow, Professor; Molecular and Cell Biology of Human Papillomaviruses

Jim Collawn, Professor; Cell surface receptors & epithelial cell biology

Terje Dokland, Associate Professor; Structure and assembly of viruses

Kevin Dybvig, Professor; Mycoplasmas; genetics; phenotypic switching; DNA rearrangements

Elena Frolova, Assistant Professor; Alphavirus-host interaction

Ilya Frolov, Professor; Replication and pathogenesis of positive-strand RNA viruses

Kohtaro Fujihashi, Professor; Mucosal immunity; periodontal disease; inflammatory disease

G. Yancey Gillespie, Professor; Molecular & viral therapy of malignant primary brain tumors

Paul Goepfert, Associate Professor; Virology; vaccines

Laurie Harrington, Assistant Professor; Chronic inflammatory disorders; CD4 T-cell memory

N. Patrick Higgins, Professor; Mobile DNA: Structure, Enzymology and Regulation

Susan Hollingshead, Professor; Mechanisms of variation in microbial pathogenesis

John Kappes, Associate Professor

N. Rama Krishna, Professor; Structural Biology and Biomolecular NMR Spectroscopy

Elliot Lefkowitz, Associate Professor; Viral genomics, Evolution, Bioinformatics, and Biodefense

Ming Luo, Professor; Structure-based approaches to anti-infectious agents

Suzanne Michalek, Professor; Vaccine delivery systems; mucosal

Casey Morrow, Professor; Viral morphogenesis and replication; gene therapy and vaccines

Moon Nahm, Professor; Vaccines; *Streptococcus pneumoniae*; bacterial pathogenesis; immunity

Michael Niederweis, Associate Professor; Role of porins in outer membrane permeability & drug resistance of mycobacteria

Jan Novak, Associate Professor; Immunoglobin glycosylation; IgA nephropathy

Robert Novak, Professor; Malaria, mosquito-borne viruses

Peter Prevelige, Professor; Viral capsid self-assembly

David Pritchard, Professor; Biochemical characterization of virulence factors of gram positive bacteria

Matthew Renfrow, Assistant Professor; High resolution mass spectrometry in biomedical research

Jamil Saad, Assistant Professor; Biochemistry and structural biology of retroviruses

David Schneider, Assistant Professor; Regulation of RNA polymerase I transcription initiation and elongation

George Shaw, Professor; Human retroviruses; molecular virology and pathogenesis

Yuhua Song, Assistant Professor; Modeling of biological systems

Chad Steele, Associate Professor; Lung immunology and fungal host defense

Adrie Steyn, Assistant Professor; Mechanism of Mycobacterium tuberculosis virulence

Sunnie Thompson, Assistant Professor; Translation, Molecular virology

Charles Turnbough, Professor; Gene expression and regulation

Mark Walter, Associate Professor; X-ray crystallography; cytokine structure/function

Richard Whitley, Professor; Herpes simplex virus; varicella zoster virus

Hui Wu, Associate Professor; Genetics and pathogenesis of oral infectious diseases

Janet Yother, Professor; *Streptococcus pneumoniae* genetics and pathogenesis; Capsular polysaccharides

Nabiha Yusuf, Instructor; Environmental influences on immune system

Allan Zajac, Associate Professor; Anti-viral immunity; T-cell responses

Theme Information

Objectives

The Microbiology Graduate Program is a part of the [UAB Graduate Biomedical Sciences Program](#). We are an interdisciplinary program emphasizing the study of bacteria, viruses, fungi, and parasites. Over 40 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 Ph.D.-level graduate students. Currently, more than 70 students are in training in the laboratories of our faculty. Primary areas of research interest include the genetics, physiology, and molecular biology of microbes and how microbial pathogens cause disease. Basic cellular processes, host-pathogen interactions, and the design of innovative strategies for the prevention and treatment of infectious diseases are under study in the laboratories of our faculty. Students graduating from the Program are well-versed in modern microbiology and have the experience to pursue a diversity of career opportunities.

Admission Requirements

Acceptance is based on undergraduate record (curriculum and grade point average [GPA]), Graduate Record Exam (GRE) scores, letters of recommendation, a personal statement of research and career interests, and past research activities. Domestic candidates who pass the first round of selection will be invited to visit UAB and meet the Immunology faculty and students.

The general requirements for acceptance into the Theme are:

- minimum GPA of 3.0 on a 4.0 scale
- combined verbal/quantitative GRE score ≥ 1100
- a strong background in biology, chemistry, and/or mathematics. Undergraduate level courses in immunology, cell biology, biochemistry, physics, genetics, organic and analytical chemistry are strongly encouraged. Undergraduate mathematics through calculus is also recommended.

International students must submit scores from the Test of English as a Foreign Language (**TOEFL**) earned within the last two years. Applicants with scores of 600 (paper-based) or 250 (computer-based) or higher will be considered.

All students in the program receive a stipend (currently \$25,000), tuition and fees, and single coverage health insurance. Support is provided by the Theme, by the student's mentor, or through one of many fellowship programs.

Overview of the Program

The program emphasizes interdisciplinary training in all areas of modern microbiology. The first year of the program involves fundamental coursework and three research-based rotations in laboratories of the student's choosing. A qualifying examination is held in the second year. Advanced coursework, journals clubs, and dissertation research occur in the second and subsequent years. It is expected that completion of the program will require five to six years.

To broaden their research experience, students are introduced to research at the national and international levels through seminars presented by outside speakers and by attendance at national and international scientific meetings. Students take an active role in inviting and hosting speakers at UAB, and they are strongly encouraged to present their own results at outside meetings. An annual retreat held off-campus allows students to present their research and fosters collegiality between students, postdoctoral fellows, and faculty.

Additional Information

Deadline for Entry Term(s):	Consult Program Director for information
Deadline for All Application Materials to be in the Graduate School Office:	Domestic Applications: Jan 31 International Applications: Jan 15
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE

For detailed information, contact Dr. Janet Yother, Program Director, UAB Microbiology Graduate Theme, University of Alabama at Birmingham, BBRB 661, Birmingham, Alabama 35294-2170.

Telephone (205)934-9531

Fax (205)996-6749

E-mail jyother@uab.edu

Web www.uab.edu/micro

Course Descriptions

Microbiology Theme

Graduate Biomedical Sciences Core Curriculum

Block 1 - Biochemistry/Metabolism

- Amino acids and primary protein structure
- Protein secondary and tertiary structure
- Posttranslational modifications and allosteric changes
- Glycobiology
- Lipid structure and metabolism
- Thermodynamic principles of biochemical reactions

- Enzyme kinetics
- Enzyme mechanisms and regulation
- Amino acid/nitrogen metabolism
- Glycolysis, gluconeogenesis and citric acid cycle
- Glycogenesis, glycogenolysis and pentose phosphate pathway
- Electron transport/oxidative phosphorylation

Block 2 - Genetics/Molecular Biology

- DNA recombination
- Nucleic acids & DNA replication
- Prokaryotic transcription
- Prokaryotic translation
- Prokaryotic gene regulation
- Eukaryotic genome organization
- Eukaryotic DNA replication
- Eukaryotic transcription
- Eukaryotic translation
- Eukaryotic gene regulation I
- Eukaryotic gene regulation II
- Mendelian inheritance
- Genetic variation and polymorphisms

Block 3 - Biological Organization

- Integrated systems: From organelles to organs
- Membrane structure/function
- Cytoskeleton
- Secretion
- Endocytosis, lysosomal targeting, protein degradation
- Biochemistry of signal transduction
- Cell cycle
- Cell-cell junctions and polarity
- ECM and ECM-cell interactions
- Cell motility
- Apoptosis
- Discipline of pharmacology
- Pharmacokinetics

Advanced Courses and Journal Clubs

Department of Biochemistry and Molecular Genetics

BMG 731. Advanced Eukaryotic Molecular Genetics.

BMG 732. Mechanisms of Enzyme Catalysis.

BMG 733. Fermentation Technology.

BMG 734. Protein Structure.

BMG 735. Genomic Engineering Using Lambda Red

BMG 743. Advanced Metabolism.

BMG 747. Connective Tissue Biochemistry.

BMG 748. Membranes and Organelles.

BMG 751. Advanced Virology.

BMG 753. Protein Crystallography.

BMG 757. Physical Biochemistry.

BMG 758. Structure of Nucleic Acids.

BMG 759. Macromolecular Modeling.

BMG 760. Nuclear Magnetic Resonance.

BMG 761. Advanced Eukaryotic Molecular Biology.

BMG 762. Human Biochemistry and Genetics.

BMG 771. Dental Biochemistry.

BMG 775. Special Topics in Biochemistry.

BMG 776-780. Special Topics in Biochemistry.

BMG 781-785. Advanced Special Topics.

BMG 786. Journal Club in Free Radicals and Biology Oxidations.

BMG 787. Journal Club in Molecular Structure.

BMG 788. Journal Club in Fermentation.

BMG 789. Journal Club in Biological Crystallography.

BMG 790. Journal Club in Developmental Biology.

BMG 791. Journal Club in Gene Therapy.

BMG 792. Journal Club in Physical Biochemistry.

BMG 793. Journal Club in DNA Virology.

BMG 794. Journal Club in Molecular Neurobiology.

BMG 795. Journal Club in Molecular Biology.

BMG 796. Journal Club in Advanced Eukaryotic Molecular Biology.

Department of Cell Biology

CB 710. Extracellular Matrix and Cell Behavior.

CB 711. Cell Adhesion and Extracellular Matrix.

CB 712. Developmental Biology.

CB 713. Growth Factors Journal Club.

CB 715. Current Topics in Cell Biology.

CB 722. Vascular Biology.

CB 723. Membranes & Glycobiology.

CB 726. Genetics in Cell Biology.

CB 728. Cell Biology of Human Disease.

CB 729. Mechanisms of Signal Transduction.

CB 748. Special Problems in Cell Biology.

CB 756. Molecular Biology of Cell Adhesion.

Department of Microbiology

MIC 720. Advanced Topics in Microbiology I.

MIC 721. Advanced Topics in Microbiology II.

MIC 723. RNA Virus Journal Club.

MIC 737. Mucosal Immunology Journal Club.

MIC 753. Practical Application of Sequence Analysis Software.

MIC 772. Bacterial Pathogenesis Journal Review & Research Workshop.

MIC 780. Selected Readings in Molecular Cell Biology.

MIC 785. Biology of Parasitism Discussion Group.

MIC 786. Retrovirology Journal Club.

MIC 789. Journal Club in Biological Crystallography.

MIC 794. Structural Virology Journal Club.

MIC 796. Neuroimmunology Journal Club.

MIC 797. Cellular and Molecular Immunology Journal Club.

MIC. Pathogenesis of Gram-Positive Bacteria

Neuroscience (Ph.D.)

Degree Offered: Ph.D.

Director: Dr. Lori McMahon

Phone: (205) 934-3523

E-mail: mcmahon@uab.edu

Web site: <http://www.neuroscience.uab.edu>

Faculty

Franklin Amthor, Associate Professor (Neurobiology, Vision Sciences); Retinal Physiology, Neural Information Processing

G.M. Anantharamaiah, Professor (Biochemistry & Molecular Genetics, Medicine); Apolipoproteins, Amphipathic Helices and Atherosclerosis

Bakhrom Berdiev, Assistant Professor (Cell Biology); The CFTR Chloride Channel control of Epithelial Sodium Channel under physiological and pathological conditions

Mark Bevensee, Associate Professor (Neurobiology, Physiology & Biophysics); Cellular and Molecular Physiology of Acid-base Transporters and pH Regulation

J. Edwin Blalock, Professor (Cell Biology, Neurobiology, Physiology & Biophysics); Rational Drug and Vaccine Design/Neutrophilic Inflammation

Karl-Heinz Braunewell, (Nutrition Sciences); Molecular and Cellular Neurobiology, Function of neuronal calcium sensors in health and disease

Michael Brenner, Professor (Neurobiology); Molecular Studies of Astrocytes in Health and Disease

William Britt, Professor (Microbiology, Neurobiology); Human Herpesviruses, Molecular Virology and Pathogenesis

Claudio Busettini, Assistant Professor (Vision Sciences); Eye movements in a three-dimensional environment

Steven Carroll, Professor (Cell Biology, Neurobiology, Pathology); The Role of Neuregulin-1 in Peripheral Nervous System Neoplasia

Rita Cowell, Assistant Professor (Cell Biology, Neurobiology); Transcriptional regulation of early postnatal brain development: Insights into the pathology of Autism and Schizophrenia

Patrizia de Sarno, (Psychiatry)

Lynn E. Dobrunz, Associate Professor (Neurobiology, Physiology & Biophysics); Synaptic Transmission and Plasticity in Hippocampus

Candace L. Floyd, Assistant Professor (Neurobiology); Neuronal-Glial Interactions in Traumatic Brain and Spinal Cord Injury

Paul Gamlin, Professor and Chair (Neurobiology, Vision Sciences); Studies of the Neural Bases of Vision & Eye Movements

Timothy Gawne, Associate Professor (Neurobiology, Vision Sciences); Information Processing in the Central Nervous System

Alecia K. Gross, Assistant Professor (Vision Sciences); Rhodopsin trafficking in rod cells and rhodopsin-mediated retinal degenerations

John Hablitz, Professor (Neurobiology, Physiology & Biophysics); Cellular Mechanisms of Neurotransmission

Inga Kadisha, Instructor (Cell Biology)

Rajesh Kumar Kana, Assistant Professor (Neurobiology)

Bob Kesterson, Associate Professor (Genetics); Hypothalamic Control of Feeding Behavior

Helen Kim, Associate Professor (Biochemistry & Molecular Genetics, Neurobiology, Pharmacology & Toxicology); Proteomics of neuroprotective and chemopreventive actions of dietary phytochemicals

Peter King, Professor (Physiology & Biophysics); Mechanisms of Growth Factor mRNA Stabilization in Cancer

Kevin Kirk, Professor (Neurobiology, Physiology & Biophysics); The CFTR Chloride Channel

Bruce Korf, Professor and Chair (Genetics); Neurofibromatosis Type 1

Timothy Kraft, Associate Professor (Neurobiology, Vision Sciences); Physiology and Pathophysiology of Photoreceptors

Mathieu Lesort, Assistant Professor (Cell Biology, Pharmacology & Toxicology); Pathogenesis of Huntington's Disease: from models to therapeutic targets

Robin Lester, Associate Professor (Neurobiology, Physiology & Biophysics); Molecular & Cellular Mechanisms of Nicotine Addiction

Li Ling, Associate Professor (Cell Biology, Pharmacology & Toxicology); Connections Between Atherosclerosis, Diabetes, and Alzheimer's Disease

Xiaohua Li, Associate Professor (Cell Biology, Neurobiology, Pharmacology & Toxicology); Neurobiology of mood disorders

Yuqing Li, Associate Professor (Neurobiology); Pathophysiology and experimental therapeutics of dystonia and related movement disorders. Basal ganglia function and dysfunction. Molecular and cellular mechanism of learning and synaptic plasticity

Rui-Ming Liu, Associate Professor (Environmental Health Sciences); Glutathione, aging, age-related diseases, fibrosis, cancer

Michael Loop, Associate Professor (Neurobiology, Vision Sciences); Visual psychophysics, color vision/vertebrate

Farah D. Lubin, Assistant Professor

Guillermo Marques, Assistant Professor (Cell Biology, Genetics, Neurobiology); TGF- β Signaling in Nervous System Development and Function

Lori McMahon, Associate Professor (Neurobiology, Physiology & Biophysics); Synaptic plasticity and hippocampal dependent learning

Miguel Melendez-Ferro, Assistant Professor (Cell Biology)

Cynthia Owsley, Professor (Vision Sciences); Visual Psychophysics, Aging

Vladimir Parpura, Associate Professor (Neurobiology); The role of glial cells in physiology of nervous system

Emma Perez-Costas, Assistant Professor (Neurobiology)

Lucas Pozzo-Miller, Professor (Cell Biology, Neurobiology, Physiology & Biophysics); Neurotrophins, Ca²⁺ Signaling, Synapse Development and Plasticity, Mental Retardation, Rett Syndrome

Hongwei Qin, Assistant Professor (Cell Biology)

Chandar Raman, Associate Professor (Medicine, Microbiology); Lymphocyte activation, immune tolerance and autoimmunity tolerance and autoimmunity

Erik Roberson, Assistant Professor (Neurobiology); Neurobiology of Alzheimer's Disease and Frontotemporal Dementia

Kevin Roth, Professor and Chair (Cell Biology, Neurobiology, Pathology); Molecular Regulation of Neuronal Cell Death

John Shacka, Assistant Professor (Pathology); Regulation of Neuron Death by the Autophagy Lysosome Pathway

Sadeep Shrestha, Assistant Professor (Epidemiology); Infectious Disease Epidemiology, Genetic Epidemiology

Monsheel Sodhi, Assistant Professor (Neurobiology); Genetic and transcriptional variation in psychosis, depression and suicide

Harald Sontheimer, Professor (Cell Biology, Neurobiology, Physiology & Biophysics); The Role of Neuroglia in Brain Function and Disease

David G. Standaert, Endowed Professor (Cell Biology, Neurobiology); Translational Research in Neurodegenerative Diseases

David J. Sweatt, Professor (Genetics, Neurobiology, Physiology & Biophysics); Signal Transduction Mechanisms in Learning and Memory

Elizabeth Sztul, Professor (Cell Biology, Physiology & Biophysics); Membrane Traffic; Protein Degradation

Edward Taub, University Professor (Psychology); Medical Psychology, Biofeedback

Anne W. Theibert, Associate Professor (Cell Biology, Neurobiology, Physiology & Biophysics); Role of phosphoinositides in developmental neurobiology

Janusz Tucholski, Assistant Professor (Psychiatry); Cellular and molecular biology of neuroblastoma. Response of neuronal cells and neurons to stress

Thomas Van Groen, Associate Professor (Cell Biology)

Jacques Wadiche, Assistant Professor (Cell Biology, Neurobiology, Physiology & Biophysics); Synaptic transmission and glutamate transporters

Linda Wadiche, Assistant Professor (Neurobiology, Physiology & Biophysics) The function of adult generated neurons

Qin Wang, Associate Professor (Cell Biology, Neurobiology, Physiology & Biophysics); Regulation of GPCR cellular responses and in vivo functions

Ursula I. Wesselmann, Professor (Anesthesiology, Neurology, Psychology)

Andrew West, Assistant Professor (Neurobiology); Genetic and biochemical mechanisms in neurological disorders

Scott Wilson, Assistant Professor (Biochemistry & Molecular Genetics, Genetics, Neurobiology); Mouse Models of Neurodegeneration

Michael J. Wyss, Professor (Cell Biology, Medicine, Neurobiology); Neuroplasticity in aging and neuro cardiovascular control

Talene Yacoubian, Assistant Professor (Neurobiology); Role of 14-3-3 proteins in Parkinson's disease

Nabiha Yusuf, Instructor (Dermatology)

Jianhua Zhang, Assistant Professor (Cell Biology, Neurobiology, Pathology); cell and molecular mechanisms, and mouse models of autophagy in development, neurological and psychiatric diseases

Yuhua Zhang, Assistant Professor (Ophthalmology)

Theme Information

The UAB Neuroscience Graduate Program is a portal into the comprehensive neuroscience research opportunities at UAB. Students entering the Neuroscience Graduate Program will find a home and anchor for their entire graduate experience. Throughout a student's entire Ph.D. career, the faculty and staff of the Neuroscience Graduate Program provide continued support, encouragement, and guidelines for success.

The theme-based UAB Neuroscience Graduate Program seeks to equip and train students to become tomorrow's innovative neuroscientists by

- teaching basic neuroscience ideas that become stepping stones to more in-depth research
- providing unique professional and scientific avenues through which they can develop their presentation skills, learn critical thinking and how to design experiments
- offering students the opportunity to choose neuroscience research from a multitude of options available through labs all over campus, not limiting students to a department but, rather, a discipline

- providing opportunities for informal interaction with other students to discuss research, scientific writing, as well as a social network of peers to assist students in staying grounded

Students enter the neuroscience theme either through direct admit into the program or after their first year when moving into the permanent lab of a neuroscience mentor. Neuroscience theme students follow the neuroscience curriculum and do not join a departmental graduate program nor follow a departmental graduate program curriculum. The student becomes affiliated with the department in which the mentor holds his/her primary appointment for the purpose of the awarding of the degree.

Some of the affiliated departments:

- Neurobiology
- Cell Biology
- Neurology
- Psychiatry
- Pediatrics
- Pathology
- Physiology & Biophysics
- Vision Sciences

ADMISSION TO THE PROGRAM

Admission to our program is highly competitive. We generally admit only 6-7 students each year. Students admitted to our students meet and usually exceed general requirements of:

- 3.0 or above undergraduate GPA
- GRE scores of 550 or better on each section for a minimum composite score of 1100
- Strong background in biology, chemistry and/or mathematics
- TOEFL (for international students) of greater than 500 on paper-based test and greater than 173 on computer-based test

Required Application Materials

Domestic students: (No application fee)

- Application and personal statement
- Official transcripts from all undergraduate institutions attended
- Official GRE scores (Institutional code 1856)
- 3 letters of recommendation

International students: (\$60 application fee)

- Application and personal statement
- Official transcripts from all undergraduate institutions attended
- Official GRE scores (Institutional code 1856)
- Official TOEFL scores
- 3 letters of recommendation

All students accepted into the program receive

- *free tuition>*
- *free health insurance>*
- *\$25,000/year stipend. >*

CURRICULUM

All first year students follow the same curriculum, designed to provide them with the foundations they will need as they move into permanent labs and begin their own research projects. Students begin their year attending the Intro to Neurobiology course at the Dauphin Island Sea Lab on Dauphin Island, Alabama, on the Gulf of Mexico. While there, the student is exposed to a variety of learning opportunities, including lectures, hands-on experiments, and going out into the Gulf to "fish" for marine life. Students live at Dauphin Island, dorm style, for 2 1/2 weeks in late summer, working hard with UAB faculty and teaching assistants and playing hard during their downtime. This course provides a very unique opportunity for neuroscience students.

General Requirements for Ph.D.

- Students are required to successfully complete 2 electives prior to their last semester.
- Registration for the Student Summer Seminar Series (NEUR 782) is required for each student each summer semester. Participation includes attendance, completion of an evaluation form for each speaker, and the presentation of a 20 minute PowerPoint talk and 10 minute Q-A session. Students will present once each summer. First year students are excluded from presenting.
- Students must register for and attend a seminar series of their choosing (with advice from their mentor) each semester until graduation.
- A biostatistics course is required. At this time, a particular stats course is not recommended. Work with your mentor on choosing the stats course that works best for you.
- All students must successfully complete an ethics course. This is taken during the summer semester of the student's first year (PHY 792 with Dr. Dale Benos).
- Students must register for a journal club of their choosing (with advice from their mentor) each semester until graduation.
- Two first-authored papers accepted to an appropriate journal are required unless the student's committee recommends/approves differently.
- Students must be registered for a minimum of 12 hours during the Fall semester, 12 hours during the Spring semester, and 11 hours during the Summer semester each year.
- 18 credit hours of dissertation research are required before graduation. This means you must have a minimum of two semesters between the semester of your Qualifying Exam and your final defense semester.
- You must be registered for at least 3 credit hours during the semester in which you plan to graduate.

Admission Requirements

GENERAL ADMISSION PREFERENCES FOR OUR PROGRAM:

- oe 3.0 or above undergraduate GPA
- oe GRE scores of 550 or better on each section for a minimum composite score of 1100
- oe Strong background in biology, chemistry and/or mathematics
- oe TOEFL (for international students) of greater than 500 on paper-based test and greater than 173 on computer-based test

REQUIRED APPLICATION MATERIALS: Domestic students: (No application fee)

- Application and personal statement
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- Official GRE scores (Institutional code 1856)
- 3 letters of recommendation

International students: (\$60 application fee)

- Application and personal statement
- Official transcripts from all undergraduate institutions attended
- Official GRE scores (Institutional code 1856)
- Official TOEFL scores
- 3 letters of recommendation

All students accepted into the program receive

- free tuition
- free health insurance
- \$25,000/year stipend.

Only online applications will be accepted.**Curriculum**

All first year students follow the same curriculum, designed to provide them with the foundations they will need as they move into permanent labs and begin their own research projects. Students begin their year attending the Intro to Neurobiology course at the Dauphin Island Sea Lab on Dauphin Island, Alabama, on the Gulf of Mexico. While there, the student is exposed to a variety of learning opportunities, including lectures, hands-on experiments, and going out into the Gulf to "fish" for marine life. Students live at Dauphin Island, dorm style, for 2 1/2 weeks in late summer, working hard with UAB faculty and teaching assistants and playing hard during their downtime. This course provides a very unique opportunity for neuroscience students.

General Requirements for Ph.D.

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minute PowerPoint talk and 10 minute Q-A session. Students will present once each summer. First year students are excluded from presenting.

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- You must be registered for at least 3 credit hours during the semester in which you plan to graduate.

Additional Information

Deadline for Entry Term(s):	Consult Program Director for information
Deadline for All Application Materials to be in the Graduate School Office:	Domestic preferred deadline: April 30 International Applications: Jan 15
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:

Lori McMahon, Ph.D.

Associate Professor and Program Director
of Physiology and Neurobiology
UAB Department of Physiology and Biophysics
MCLM 960 / 1918 University Boulevard
Birmingham, AL 35294-0005
Tel: 205.934.3523
Email: mcmahon@uab.edu

Patricia Matthews

Program Manager

UAB Neuroscience Graduate Program

SHEL 120C / 1825 University Boulevard

Birmingham, AL 35294-2182

Tel: 205.934.7034

Fax: 205.996.6749

Email: pm1@uab.edu**Pathobiology and Molecular Medicine (Ph.D.)**

Degree Offered:

Ph.D.

Dr. Ralph Sanderson
sanderson@uab.edu
(205) 996-6226

Directors:

Dr. Kevin Kirk
kirk@uab.edu
(205) 934-3122

Web site:

<http://www.uab.edu/pbmm>**Faculty****Anupam Agarwal**, Professor (Medicine); Regulation of heme oxygenase gene expression in kidney and vascular injury**Peter G. Anderson**, Professor (Pathology and Genomics & Pathobiology); Cardiovascular pathology; education**Shannon M. Bailey**, Associate Professor and Program Director, Molecular Mechanisms of Chronic Alcohol and Obesity Induced Liver Diseases; Mitochondrial Dysfunction in Disease; Molecular Bioenergetics; Functional Proteomics; Free Radical Biology**Daniel Balkovetz**, Associate Professor (Medicine), Epithelial Cell Biology; Epithelial Cell Cycle Regulation; Regulation of paracellular transport across epithelial cell tight junctions**Scott Ballinger**, Associate Professor (Pathology); Cardiovascular disease mediated by free radicals, mitochondrial damage, and dysfunction**Marcas Bamman**, Professor (Physiology & Biophysics)**Zsuzsanna Bebok**, Assistant Professor, Membrane protein biogenesis in epithelial cells (CFTR as model). Unfolded protein response.**Susan Bellis**, Associate Professor (Physiology & Biophysics)**Bakhrom Berdiev**, Assistant Professor (Cell Biology); The CFTR Chloride Channel control of Epithelial Sodium Channel under physiological and pathological conditions

Mark Bevensee, Associate Professor (Neurobiology, Physiology & Biophysics); Cellular and Molecular Physiology of Acid-base Transporters and pH Regulation

J. Edwin Blalock, Professor (Cell Biology, Neurobiology, Physiology & Biophysics); Rational Drug and Vaccine Design/Neutrophilic Inflammation

S. Louis Bridges, Jr., Professor; Genetics of rheumatoid arthritis

Donald J. Buchsbaum, Professor (Radiation Oncology)

Daniel Bullard, Associate Professor (Comparative Medicine); Adhesion Molecules in Inflammatory Disease

Steven Carroll, Professor (Neuropathology)

John Chatham, Associate Professor (Cell Biology, Medicine, Physiology & Biophysics); Cardiomyocyte function and metabolism in diabetes and ischemic heart disease

Irshad Chaudry, Professor (Microbiology, Pathology, Physiology & Biophysics); Cardiovascular/Immunological Alterations Following Trauma-Sepsis

Yabing Chen, Assistant Professor (Pathology); Oxidative stress-induced molecular signals in cardiovascular disease and bone disease.

James F. Collawn, Professor (Cell Biology); Molecular Mechanisms of Protein Trafficking

Yingzi Cong, Assistant Professor (Medicine); Mucosal immunology

Rita Cowell, Assistant Professor (Cell Biology, Neurobiology); Transcriptional regulation of early postnatal brain development: Insights into the pathology of Autism and Schizophrenia

Randy Cron, Associate Professor (Medicine); Immunotherapy

Randall S. Davis, Associate Professor (Biochemistry & Molecular Genetics, Medicine, Microbiology); Fc receptors, lymphocyte development

Lawrence DeLucas, Professor (Biochemistry & Molecular Genetics, Physiology & Biophysics); Protein Crystallography/Protein Crystal Growth

Peter Detloff, Associate Professor (Biochemistry & Molecular Genetics, Neurobiology); Mouse Models of Human Genetic Disorders

Patricia DeVilliers, Assistant Professor (Pathology); Novel Target for Head and Neck Cancer: The Sonic Hedgehog Pathway

Dale A. Dickinson, Assistant Professor (Environmental Health Sciences); Molecular Mechanisms of the Adaptive Response to Environmental Toxicants and Pollutants; Mechanism of Action of Naturally Occurring Compounds; Functional Genomics and Proteomics of Naturally Occurring Compounds; Induction of Glutathione; Free Radical Biology

Qiang Ding, Assistant Professor (Medicine); Signaling proteins and molecular mechanisms regulating cell migration and myofibroblast differentiation, and their roles in the development of pulmonary fibrosis

Joanne T. Douglas, Assistant Professor (Pathology); Gene therapy; adenoviral vectors; conditionally replicating adenoviruses

Jeffrey C. Edberg, Associate Professor; Fc receptors, rheumatoid arthritis

Charles O. Elson, III, Professor; Mucosal immunology

Isam-Eldin Eltoum, Professor (Pathology);

Maaike Everts, Assistant Professor (Pathology); Gene therapy and nanotechnology for imaging and therapy of cancer

Charles N. Falany, Professor (Pharmacology and Toxicology); Protein Chemistry and Molecular Biology of Drug Metabolizing Enzymes and Molecular Biology of Bile Acid-Conjugating Enzymes

Xu Feng, Associate Professor; Bone Metabolism in RANKL/RANK signaling in osteoclast differentiation and function

Jose R. Fernandez, Associate Professor (Nutrition Sciences); Gene Mapping, Genetic Admixture, Racial Differences, Obesity, Diabetes

Candace Floyd, Assistant Professor (Neurobiology); Neuronal-Glial Interactions in Traumatic Brain and Spinal Cord Injury

Stuart J. Frank, Professor (Medicine); Growth Hormone Receptor Structure-Function, Growth Hormone Signaling

Andra Frost, Associate Professor (Pathology); Effects of the microenvironment on breast carcinogenesis

Catherine Fuller, Associate Professor (Physiology & Biophysics); ENaC/ASIC Ion Channels

Shawn F. Galin, Associate Professor (Medicine)

Paul Gamlin, Professor and Chair (Neurobiology, Vision Sciences); Studies of the Neural Bases of Vision & Eye Movements

W. Timothy Garvey, Professor (Nutrition Sciences); Molecular, Metabolic, and Genetic basis of type 2 diabetes mellitus, insulin resistance, and obesity.

James F. George, Associate Professor; Transplantation

Paul Goepfert, Associate Professor; Immune responses to HIV

Lisa Guay-Woodford, Professor (Medicine); Characterizing molecular determinants involved PKD pathogenesis

John Hablitz, Professor (Neurobiology, Physiology & Biophysics); Cellular Mechanisms of Neurotransmission

James Hagood, Professor (Pediatrics); Role of Fibroblasts in Tissue Remodeling

Robert W. Hardy, Associate Professor (Pathology); Insulin resistance; cancer cell proliferation

Laurie Harrington, Assistant Professor (Cell Biology); Protective and Pathogenic CD4 T Cell Responses

Hui-Chen Hsu, Associate Professor; Autoimmunity

Karen Iles, Associate Professor (Anesthesiology)

Nirag Jhala, Professor (Pathology); Cytopathology and gastrointestinal tract pathology

Inga Kadisha, Instructor (Cell Biology)

Santosh Katiyar, Associate Professor (Dermatology); Prevention of skin cancer by dietary antioxidants

Helen Kim, Associate Professor (Biochemistry & Molecular Genetics, Neurobiology, Pharmacology & Toxicology); Proteomics of neuroprotective and chemopreventive actions of dietary phytochemicals

Robert Kimberly, Professor (Medicine); Autoimmunity, Molecular Mechanisms and Genetic Risk

Peter King, Professor (Physiology & Biophysics); Mechanisms of Growth Factor mRNA Stabilization in Cancer

Kevin Kirk, Professor (Neurobiology, Physiology & Biophysics); The CFTR Chloride Channel

David D. Ku, Professor (Pharmacology and Toxicology, Cardiovascular Disease); Cardiovascular and Coronary Pharmacology; Role of Thrombin, Endothelium, and Platelets in Coronary Vasospasm and Ischemic Heart Disease

Jack Lancaster, Professor (Anesthesiology, Physiology & Biophysics); The Biophysics and Biochemistry of Nitric Oxide

Aimee Landar, Assistant Professor (Pathology); Cellular effects of post-translational modification of protein thiols by reactive species in cancer and cardiovascular disease

Ling Li, Professor (Medicine)

Xiaohua Li, Associate Professor (Cell Biology, Neurobiology, Pharmacology & Toxicology); Neurobiology of mood disorders

Yuqing Li, Associate Professor (Neurobiology); Pathophysiology and experimental therapeutics of dystonia and related movement disorders. Basal ganglia function and dysfunction. Molecular and cellular mechanism of learning and synaptic plasticity

Nita A. Limdi, Assistant Professor (Neurology)

Fang-Tsyr (Fannie) Lin, Assistant Professor (Cell Biology); Regulation of Cell Growth by G Protein-Coupled Receptor Signaling

Weei-Chin Lin, Associate Professor (Cell Biology); Cell Cycle Control and DNA Damage Response

Rui-Ming Liu, Associate Professor (Environmental Health Sciences); Glutathione, aging, age-related diseases, fibrosis, cancer

Robin Lorenz, Professor (Pathology); Immune mediators of gastrointestinal disease

Clint Lothrop, Professor (Biochemistry & Molecular Genetics)

Upender Manne, Associate Professor (Anatomic Pathology)

Roslyn Mannon, Professor (Medicine); Translational Approaches to the Pathogenesis and Treatment of Chronic Graft Injury

Jay M. McDonald, Professor (Pathology); Cell signaling in bone disease, AIDS and cancer

Carmel McNicholas-Bevensee, Instructor (Physiology and Biophysics); Structure-Function and Regulation of Ion Channels of the Renal and Cardiovascular System

Joseph L. Messina, Professor (Pathology); Insulin and growth hormone action and resistance in trauma and infections

John D. Mountz, Professor; T cells in autoimmunity

Joanne E. Murphy-Ullrich, Professor (Pathology); Regulation of cell death and motility by cell adhesion signaling and role of growth factor control in diabetic and fibrotic diseases

Moon H. Nahm, Professor (Pathology); Immune response to pneumococcal polysaccharide antigens

Robert Novak, Professor (Medicine, Microbiology)

Suzanne Oparil, Professor (Medicine, Physiology & Biophysics); Molecular and Cellular Mechanisms of Cardiovascular Disease

Boris Pasche, Professor and Director (Cell Biology, Medicine)

Rakesh Patel, Associate Professor (Pathology); Inflammation; free radicals; atherosclerosis; sepsis; nitric oxide; hemoglobin; antioxidants; endothelial cell biology

Ji-Bin Peng, Assistant Professor (Medicine, Physiology & Biophysics); Calcium transport proteins and their roles in health and disease

Dennis J. Pillion, Professor (Pharmacology and Toxicology); Endocrine Pharmacology; Administration of Insulin in Eye Drops and Nose Drops; Diagnosis and Treatment of Diabetes Mellitus

Selvarangan Ponnazhagan, Professor (Pathology); Adeno-associated virus gene therapy

Edward Postlethwait, Professor and Chair (Environmental Health Sciences); Environmental Induction of pulmonary epithelial injury

Meredith A. Preuss, Assistant Professor (Medicine)

Hongwei Qin, Assistant Professor (Cell Biology)

Raghavan Raju, Associate Professor; Acute inflammation

Michael Reddy, Professor (Periodontology)

Erik Roberson, Assistant Professor (Neurobiology); Neurobiology of Alzheimer's Disease and Frontotemporal Dementia

Kevin Roth, Professor and Chair (Cell Biology, Neurobiology, Pathology); Molecular Regulation of Neuronal Cell Death

Paul Sanders, Professor (Medicine, Physiology & Biophysics); Mechanisms of Disease Progression in the Kidney

Ralph D. Sanderson, Professor (Pathology); Tumor microenvironment, cancer progression and metastasis, heparanase, heparan sulfate proteoglycans

James A. Schafer, Professor Emeritus (Physiology and Biophysics); Regulation of Epithelial Transport Processes

Lisa Marshall Schwiebert, Associate Professor (Physiology & Biophysics); Inflammatory Responses

Rosa Serra, Associate Professor (Cell Biology); Mechanism of TGF- β Action in Developmental and Disease Processes

John Shacka, Assistant Professor (Pathology); Regulation of Neuron Death by the Autophagy Lysosome Pathway

George M. Shaw, Professor (Medicine, Microbiology); Evolution, Persistence and Pathogenesis of HIV-1; HIV/AIDS Vaccine Development

Peter R. Smith, Associate Professor (Physiology and Biophysics); The Role of the Membrane Cytoskeleton in Regulating the Cell Surface Expression of Epithelial Transport Proteins

Monsheel Sodhi, Assistant Professor (Neurobiology); Genetic and transcriptional variation in psychosis, depression and suicide

Yuhua Song, Assistant Professor (Biochemistry & Molecular Genetics); Genetic Multiscale Modeling in Biology and Biomechanics

Harald Sontheimer, Professor (Cell Biology, Neurobiology, Physiology & Biophysics); The Role of Neuroglia in Brain Function and Disease

Eric Sorscher, Professor (Genetics, Medicine, Physiology & Biophysics); Cystic Fibrosis and Molecular Genetics; Patient Oriented Research

David G. Standaert, Endowed Professor (Cell Biology, Neurobiology); Translational Research in Neurodegenerative Diseases

Theresa Strong, Associate Professor (Biochemistry & Molecular Genetics, Genetics, Medicine); Identification of Tumor Antigens and Development of Cancer Vaccines

David J. Sweatt, Professor (Genetics, Neurobiology, Physiology & Biophysics); Signal Transduction Mechanisms in Learning and Memory

Laura Timares, Assistant Professor (Dermatology); Engineering Dendritic Cells for Immunotherapy

Thomas Van Groen, Associate Professor (Cell Biology)

Mei Wan, Assistant Professor (Pathology), TGF-beta signaling in pancreatic cancer development and in bone diseases

Jianbo Wang, Assistant Professor (Cell Biology); Novel signaling pathway termed planar cell polarity (PCP) pathway and how this pathway regulates morphogenesis in mammals.

Qin Wang, Associate Professor (Cell Biology, Neurobiology, Physiology & Biophysics); Regulation of GPCR cellular responses and in vivo functions

Douglas A. Weigent, Professor (Physiology and Biophysics); Immunoendocrinology

Roger C. White, Associate Professor (Medicine, Physiology & Biophysics); Oxidant Stress and Endothelial Dysfunction

Hui Wu, Assistant Professor (Microbiology); Bacteria- host interaction

Talene Yacoubian, Assistant Professor (Neurobiology); Role of 14-3-3 proteins in Parkinson's disease

Yang Yang, Assistant Professor (Pathology); Targeting heparan sulfate for myeloma therapy

Bradley K. Yoder, Professor (Cell Biology); Polycystic Kidney Disease

Nabiha Yusuf, Instructor (Dermatology)

Allan J. Zajac, Associate Professor; Immunovirology

Majd Zayzafoon, Assistant Professor (Pathology); The Role of Calcium Signaling in the Genetic and Epigenetic Pathogenesis of Disease

Jianhua Zhang, Assistant Professor (Cell Biology, Neurobiology, Pathology); cell and molecular mechanisms, and mouse models of autophagy in development, neurological and psychiatric diseases

Yuhua Zhang, Assistant Professor (Ophthalmology)

Theme Information

The Pathobiology & Molecular Medicine (PBMM) Graduate Program at UAB is the successor of the popular and highly successful Integrative Biomedical Sciences Graduate Program established in 1999. PBMM represents an expansion of the Integrative Biomedical Sciences Program and is designed to give students the very best multidisciplinary training within the emerging and exciting field of molecular medicine. The main objective of the program is to expose students to a diverse faculty with research interests that range from molecules - to whole organisms - to disease processes - to new therapies. Our premise is that students, when trained in basic principles of molecular and cellular biology, in addition to organ-based physiology, pharmacology and pathology, will be prepared to study biological processes at any level of organization. The important biomedical issues of today are sufficiently complex that the successful investigator must be able to tackle these issues using integrated, multi-faceted approaches.

The advantage of joining PBMM is that students have full access to all faculty within the GBS, including those not within PBMM. This gives students the broadest opportunity possible to move their studies in the direction that they find most interesting. In addition, PBMM is composed of over 125 active research faculty that are utilizing state-of-the-art resources and ideas to drive the field of molecular medicine forward. Within PBMM, you will have the opportunity to immerse yourself at the leading edge of biomedicine and share in the excitement first-hand by working alongside research pioneers.

During your first year, you will complete a series of rigorous courses that includes training in biochemistry, molecular biology, genetics, cellular physiology and pathobiology. You will also have the opportunity to take courses within designated "Focus Areas." These Focus Areas are organized around specific research strengths represented by faculty within the PBMM and address important issues in diseases such as diabetes, heart disease and cancer among others. In addition, you will have full access to courses offered by other programs within the GBS where strengths exist in multiple fields including immunology, neuroscience, structural biology and others. There will also be ample time allotted for you to attend research seminars, learn to make scientific presentations and to perform 3-4 laboratory rotations. These rotations are designed to give the student a practical introduction to bench research and to help the student choose a faculty mentor. After the first year there will be additional coursework directed in your area of interest, but the main focus will be on intensive research training within the laboratory. Here, guided by your mentor and graduate advisory committee, you will develop critical technical and analytical skills that will form the basis of your dissertation research.

Graduates of the PBMM training program will be fully prepared to address the most complex and challenging issues in disease biology and therapy and be well positioned to pursue work in academic, industrial or government research or related positions. Training for the PhD degree is generally completed within four to six years, depending on the student's background and training goals.

Admission Requirements

UNDERGRADUATE EDUCATION

A **baccalaureate degree in the natural or physical sciences** is required. Undergraduate level courses in organic and analytical chemistry, cell biology, biochemistry and genetics are strongly encouraged. Undergraduate mathematics through calculus and physics are also recommended.

GRADES & SCORES

The Graduate School recommends that entering students have a minimum grade point average (**GPA**) of 3.0 on a 4.0 scale and a minimum combined verbal/quantitative score on the Graduate Record Exam (**GRE**) of 1100.

International students must submit scores from the Test of English as a Foreign Language (**TOEFL**) earned within the last two years. Applicants with scores of 600 (paper-based) or 250 (computer-based) or higher will be considered.

RESEARCH

Most students admitted to the program have undergraduate or postgraduate **research experience**.

APPLICATION REVIEW

Applications are reviewed by the GBS Admissions Committee, representing all GBS thematic programs. **Acceptance** will be based on a combination of factors including:

- Undergraduate performance (both the curriculum and grade point average)
- Letters of recommendation
- GRE scores
- A personal statement of research and career interests
- Previous research experience
- Personal interview, at program expense (international applicants may be interviewed by phone or video conference)

Admission to our Programs is very competitive and the number of positions is limited; thus not every qualified applicant can be offered a position.

Academic Program

Year 1

Courses

Integrated, science-based teaching is the foundation of every PBMM course. You will learn from a team of faculty that will contribute their expertise in the basic biology and physiology of each topic coupled with an emphasis on understanding relevant diseases, clinical correlates, and therapeutic approaches. The lectures also emphasize the scientific techniques and experimental approaches that are essential to the concepts being discussed. In addition, many instructors assign journal readings and independent

projects, which may include Web-based searches or literature reviews, to actively engage you in the learning process.

- First year students in all Graduate Biomedical Sciences Themes take a common 10-week core curriculum emphasizing the fundamentals of biochemistry, genetics, and cell biology. This coursework will include an overview of the principles of biochemistry, metabolism, molecular biology, genetics and biological organization. This will be followed by an integrated course in experimental medicine that focuses on mechanisms that drive specific diseases and exposes students to approaches being taken by UAB scientists who are addressing disease-based problems. Additional coursework in the first year will include integrative physiology, pathophysiology, endocrinology, immunology, pharmacology and molecular medicine.

- Journal Club

You will present relevant published research papers to help hone your presentation skills and to teach you to think like a scientist.

- Seminar Series

Faculty from participating departments, other UAB faculty, and faculty from other institutions discuss their latest research.

- Lab Rotations (3 rotations of 10 weeks each)

Based on your specific interests, you will choose from a wide range of research laboratories available to you. This "hands on" research experience will provide you with the background to decide on a laboratory and mentor to guide you through your dissertation research.

Second year and beyond - Qualifying examination, courses, journal clubs, research, completion of degree.

Qualifying examination. Students must pass a Qualifying Examination that assesses their general knowledge, ability to read the literature, and ability to formulate and defend testable hypotheses. The examination involves a written proposal and oral defense of the proposal.

Journal Clubs. From the second year until completion of the program, students participate in a Journal Club related to their specific area of interest. The purpose of the journal club is to enhance the ability to critically read the literature and to stay abreast of current findings in the field.

Pathobiology and Molecular Medicine courses. Advanced courses in areas relevant to the student's area of interest are required and may be completed anytime from the second year on. Students are encouraged to take these courses as early as possible in order to achieve the most benefit in their training.

Dissertation research. After completion of the Qualifying Examination, and no later than the third year, the student forms a dissertation committee comprised of five faculty members (including the mentor) whose expertise will be beneficial in helping direct the research and course of study.

Awarding of the PhD degree. The PhD is awarded upon completion of the academic requirements and defense of the dissertation. The dissertation consists of a written document that is expected to include published papers or manuscripts in preparation, along with a scholarly introduction and discussion of the work that has been completed. A successful private defense of the dissertation in front of the dissertation committee is then followed by a seminar presentation and public defense of the dissertation as the final step in completion of the PhD degree.

Student Support

All students accepted into PBMM receive a **competitive annual stipend** and **fully paid tuition and fees**. Single coverage **health insurance is also provided** at no cost to the student through VIVA Health UAB.

The annual stipend for the 2009-2010 academic year is \$25,000. The total annual award value, including stipend, tuition, fees and health insurance is \$35,700. Stipends are reviewed and updated regularly.

First-year students are funded through the PBMM Graduate Program by Graduate School Fellowships and occasionally by other national and University fellowships. In subsequent years, students are supported through their advisor's research grants, institutional funds or training grants. In addition, highly qualified students are encouraged to apply for individual fellowship awards, with the guidance of their advisors. See [**Fellowships and Awards**](#) for additional fellowship information and resources.

Additional Information

Deadline for Entry Term(s):	Consult Program Director for information
Deadline for All Application Materials to be in the Graduate School Office:	Domestic Applications: April 1 International Applications: Jan 31
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:

Ralph Sanderson, Ph.D.

Theme Director

Tel: 205.996.6226 (office)

Email: sanderson@uab.edu

Kevin Kirk, Ph.D.

Theme Co-Director

Email: klkirk@uab.edu

Randy L. Seay, M.A., M.P.H.

Theme Manager

Tel: 205.934.7810 (office)

Fax: 205.996.6749

Email: rseay@uab.edu

*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

Business

Accounting (M.Ac.)

Degree Offered: M.Ac.
Director: Dr. Steve Grice
Phone: (205) 934-8871
E-mail: sgrice@uab.edu
Web site: www.uab.edu/business

Faculty

Nell Adkins, Associate Professor (Accounting and Finance); Corporate Taxes and Financial Accounting

Dawn Drnevich, Assistant Professor (Accounting and Finance)

Thomas P. Edmonds, Professor (Accounting and Finance); Financial and Managerial Accounting

John S. Grice, Professor (Accounting and Finance); Financial Accounting and Auditing

Frank M. Messina, Professor (Accounting and Finance); Corporate Taxes

Ollie S. Powers, Associate Professor (Accounting and Finance); Financial Accounting

Jenice Prather-Kinsey, Professor and Chair (Accounting and Finance); Managerial Accounting and International Accounting

Tommie W. Singleton, Associate Professor (Accounting and Finance); Forensic Accounting, Information Technology Auditing, and Information Systems

Bor-Yi Tsay, Professor (Accounting and Finance); Accounting Systems and Managerial Accounting

Richard A. Turpen, Associate Professor (Accounting and Finance); Financial Accounting and Auditing

James L. Worrell, Assistant Professor (Accounting and Finance); Internal Auditing and Information Systems

Stephen Yoder, Assistant Professor (Marketing, Industrial Distribution and Economics); Corporate Governance and Legal Studies

Mission and Objective

The mission statement of the Department of Accounting and Finance is as follows: "The Department of Accounting and Finance is committed to providing a high-quality, practice-oriented educational experience to a largely urban population. The Department will offer, through its accounting programs, an educational foundation that will prepare students for professional careers in business and accounting or enable them to pursue graduate studies. The Department will contribute to the understanding and application of accounting and business knowledge through the scholarship activities of the faculty. The Department will maintain a continuing relationship with the professional community while supporting the internal activities of the University."

The objective of the Master of Accounting Program is to further develop in students the skills required for success in the accounting profession. Offered primarily in an evening format, it is designed for those individuals with a knowledge base in accounting and business who desire to broaden their communication, interpersonal, technological, and applied research skills. The Master of Accounting Program is accredited by the AACSB International-The Association to Advance Collegiate Schools of Business (AACSB International, www.aacsb.edu).

Admission Requirements

Requirements for admission to the program include the following:

1. A bachelor's degree in accounting from an institution accredited by AACSB International 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 undergraduate accounting degrees 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 maintain at least a B average in the foundation courses numbered 300 and above. To determine the foundation courses that must be completed, potential applicants should contact the MAc Program Director at sgrice@uab.edu.
2. A satisfactory score on the Graduate Management Admission Test (GMAT) administered by the Graduate Management Admission Council (GMAC, www.mba.com) within the five-year period immediately preceding the desired term of enrollment. **The GMAT is waived for UAB accounting graduates and other students who take their foundation accounting courses at the undergraduate level at UAB.**
3. Satisfactory academic performance as measured by the undergraduate grade point average.

[Note: UAB undergraduates planning to pursue the M.Ac. degree should take AC 430 and AC 423 as their two accounting electives. 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.]

The following additional admission requirements may apply to international applicants:

A satisfactory score on 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.

A "catalog match" transcript evaluation report prepared by Educational Credential Evaluators, Inc. (ECE, www.ece.org).

Admission to the program is competitive. The number of qualified applicants admitted may be limited as deemed appropriate by the Master of Accounting Program Committee.

Program Description—Master of Accounting

The Master of Accounting Program consists of 30 semester hours of graduate credit—21 hours of required courses and 9 hours of electives:

Required courses (7):

LS 557 Business Law for Accountants

AC 514 Governmental and Not-for-Profit Accounting

AC 580 Advanced Financial Accounting

AC 600 Current Issues in Financial Accounting

AC 606 Advanced Auditing and Attestation

AC 620 Tax Entities

AC 672 Advanced Information Technology Auditing

Elective courses* (3):

*MAc students must choose 3 electives from the following: LS 571, AC 513, AC 523, AC 564, AC 572, AC 573, AC 574, AC 590, AC 612, AC 617 or any nonfoundation MBA course numbered 600 or above approved by the M.Ac. Program Director. Students may not take any of the MBA foundation courses including MBA 609, 610, 620, 632, 633, 640, 650, or 660 for elective credit without prior approval by the M.Ac. Program Director.

Program Description—Master of Accounting with an Internal Auditing Concentration

Students who have not previously taken an internal auditing course at the undergraduate level can pursue a Master of Accounting degree with an Internal Auditing Concentration by pursuing the following program of study. The Master of Accounting Program with an Internal Auditing concentration consists of 30 semester hours of graduate credit—24 hours of required courses and 6 hours of approved electives:

Required courses for Internal Auditing Concentration (8):

LS 557 Business Law for Accountants

AC 513 Internal Auditing

AC 514 Governmental and Not-for-Profit Accounting

AC 580 Advanced Financial Accounting

AC 600 Current Issues in Financial Accounting

AC 606 Advanced Auditing and Attestation

AC 620 Tax Entities

AC 672 Advanced Information Technology Auditing

Elective courses for internal auditing concentration (2):

AC 564 Accounting Internship (must be in internal auditing)

AC 612 Corporate Governance

AC 572 Forensic Accounting and Information Technology Auditing

AC 573 Fraud Examination

Other internal audit related courses approved by the M.Ac. Program Committee.

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 3.5 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 sgrice@uab.edu.

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.state.al.us), requires that applicants for the Uniform CPA Examination hold a baccalaureate degree from an accredited institution and possess a total of 150 semester hours of postsecondary education, including at least 33 semester hours of accounting in specified areas at the upper-division or graduate level. 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 should contact Wendy England, the undergraduate accounting advisor in the School of Business for specific

guidance. Those interested in this option who already hold degrees from other institutions should also contact Wendy England at wendyengland@uab.edu.

(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 Christy Manning, the Admissions Counselor in the Graduate School of Management, at cmanning@uab.edu.

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.

Additional Information

Deadline for Entry Term(s):	The program admits every semester
Deadline for All Application Materials to be in the Graduate School Office:	Two months before term begins
Number of Evaluation Forms Required:	None, unless required by Program Committee
Entrance Tests	GMAT for applicants who did not take their undergraduate accounting classes at UAB (TOEFL and TWE for international applicants whose native language is not English.)
Comments	An ECE "catalog match" is normally required of applicants whose degrees are from foreign institutions. Inquiries regarding financial assistance should be directed to the University's Office of Financial Aid.

Contact Information

For detailed information contact the Graduate School of Management:
School of Business, BEC 210
1150 Tenth Avenue South
Birmingham, AL 35294-4460

Telephone 205-934-8815
FAX 205-975-5933
E-mail, M.Ac. sgrice@uab.edu
E-mail, M.B.A. cmanning@uab.edu
Web www.uab.edu/business

Course Descriptions

Unless otherwise noted, all courses are for three semester hours of credit. For M.B.A. and other courses offered through the Graduate School of Management, see the M.B.A. information. Unless otherwise noted, the general enrollment requirement for Master of Accounting courses is graduate standing and an undergraduate accounting major or its equivalent or permission of the MAc Program Director. Graduate accounting courses are not open to nondegree students.

Accounting (AC)

513. Internal Auditing. Theory and practice of internal auditing and application of internal auditing principles and techniques to selected audit problems.

514. Governmental and Not-for-Profit Accounting. Special features of budgetary and fund accounting as applied to municipalities, other government units, and to other non-profit entities.

523. External Auditing. Study of the external audit function and the essential standards that govern audit practice.

564. Accounting Internship. Work experience enabling students to better integrate academic knowledge with practical applications by exposure to accounting practice and the business environment.

Prerequisites: Permission of instructor and 3.0 grade point average in all AC courses (undergraduate and graduate).

572. Forensic Accounting and IT Auditing. Introduction to the practice of forensic accounting and its relationship to auditing in settings characterized by extensive reliance on information technology. An emphasis on audit methodology as applied to accounting information systems.

573. Fraud Examination. Advanced forensic accounting concepts with a primary focus on occupational fraud and abuse-its origins, perpetration, prevention, and detection.

574. Forensic Accounting Practicum. Work experience requiring the application of forensic accounting concepts and methods. One to three hours. Prerequisites: AC 473/573 and LS 471/571, or permission of the instructor.

580. Advanced Financial Accounting. Business combinations, consolidated financial statements, multinational accounting, and partnerships. *Prerequisite:* AC 430/530

590. Advanced Topics in Accounting. Contemporary professional accounting issues. *Prerequisite:* Permission of Instructor.

600. Current Issues in Financial Accounting. Consideration of recent pronouncements of various authoritative bodies such as the FASB and SEC through research projects and case discussions.

606. Advanced Auditing and Attestation. Study of professional standards and their application to external audits and other service engagements, with an emphasis on practical research and analysis.

612. Corporate Governance. Examination of the governance by boards of directors, shareholders, management and others of publicly-owned corporations, larger privately-held corporations and other complex organizations.

617. IT enabled Business Process Management. Concepts and applications of business process management in conjunction with project management and systems development techniques and tools. Emphasis is placed on the Association of Business Process Management Professionals' body of knowledge; best practices that support the inclusion of adequate management, accounting, and financial controls; and initiating the preparation of students for the Association of Business Process Management Professionals (ABPMP) CBPP certification exam.

620. **Tax Entities.** Basic research tools in taxation; selected parts of Internal Revenue Code and Regulations; tax planning techniques.

672. **Advanced Information Technology Auditing.** 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.

Legal Studies (LS)

557. **Business Law for Accountants.** The mechanics and application of the Uniform Commercial Code with emphasis on sales, commercial paper, and secured transactions; legal principles regarding trusts and estates, insurance, and business organization; and expanded treatment of the law of contracts.

571. **Legal Elements of Fraud Investigation.** Key legal principles and courtroom procedures relevant to forensic accounting, and survey of related topics-criminology theories, evidence management, and litigation services.

Business Administration (M.B.A.)

Degree Offered: M.B.A.
Director: Douglas Ayers
Phone: (205) 934-8856
E-mail: dayers@uab.edu
Web site: www.uab.edu/mba

Faculty

Nell Adkins, Associate Professor (Accounting and Finance); Corporate Taxes

Douglas Ayers, Director, MBA Programs, Associate Professor (Marketing, Economics, and Industrial Distribution); Business to Business Marketing, Product Management, Industrial Distribution

Theodore Bos, Professor (Accounting and Finance); Quantitative Analysis

Richard M. Burns, Associate Professor (Accounting and Finance); Financial Management, Financial Institutions

Lary B. Cowart, Assistant Professor (Accounting and Finance); Real Estate valuation and Investment Analysis, Financial Management

Paul Crigler, Instructor (Management, Information Systems, and Quantitative Methods); Management Information Systems

Manabendra Dasgupta, Associate Professor (Accounting and Finance); Economic Theory

Thomas E. DeCarlo, Professor and Ben S. Weil Endowed Chair of Industrial Distribution Marketing, Economics, and Industrial Distribution; Marketing and Sales Management

James B. Dilworth, Professor Emeritus (Management, Information Systems and Quantitative Methods); Production and Operations Management

W. Jack Duncan, University Scholar and Professor Emeritus (Management, Information Systems and Quantitative Methods); Strategic Management

Thomas Edmonds, Professor (Accounting and Finance); Financial and Managerial Accounting

Peter M. Ginter, Professor (Management, Information Systems and Quantitative Methods); Policy and Strategic Management

Stephen J. Grice, Associate Professor (Accounting and Finance); Financial Accounting and Auditing

Robert Holmes, Professor Emeritus, Dean (Management, Information Systems and Quantitative Methods); Strategic Management

Morris M. Gee, Instructor and Internship Director (Management, Economics and Industrial Distribution); Marketing, Retail and Entrepreneurship

Mark N. Hadley M.D. FACS, Charles A. and Patsy W. Collat Professor of Neurological Surgery (School of Medicine) and Professor (Marketing, Economics, and Industrial Distribution); Medical Supplies and Supplies Distribution

Eric P. Jack, Associate Dean, Interim Chair, Associate Professor (Management, Information Systems and Quantitative Methods); Operations Management

Allen C. Johnston, Assistant Professor (Management, Information Systems and Quantitative Methods); Information Assurance, Forensic Investigations, Telecommunicaitons Management, Object-oriented Development

Karen Kennedy, Associate Dean, Associate Professor (Marketing, Economics, and Industrial Distribution); Personal Selling and Marketing Strategy

Susan Key, Associate Professor and Executive Director, Management (Management, Information Systems and Quantitative Methods); Social, Legal, and Ethical Environment of Business

Brian K. Lee, Instructor (Marketing, Economics, and Industrial Distribution); Corporate Finance, Investments, and Risk Management

Seung-Dong Lee, Professor (Marketing, Economics and Quantitative Methods); International Economics, Applied Economic Theory

Gail W. McGee, Professor Emeritus (Management, Information Systems and Quantitative Methods); Organizational Behavior

Nir Menachemi, Associate Professor of Healthcare Organization and Policy (Public Health) and Associate Professor of Marketing and Industrial Distribution (Marketing, Economics, and Industrial Distribution); Healthcare Policy and Healthcare Organization

Frank M. Messina, Professor and Chairman (Accounting and Finance); Systems, Taxation, Fraud Prevention

Kenneth R. Miller, Instructor (Marketing, Economics and Industrial Distribution); Business Strategy, Marketing Strategy, Sales Management, Professional Selling

George M. Munchus, III, Professor (Management, Information Systems and Quantitative Methods); Human Resource Management, Labor Relations

Philip Musa, Associate Professor (Management, Information Systems and Quantitative Methods); Project Management, Operations Management, Supply Chain Management, and Information Systems

Thomas L. Powers, Professor (Marketing, Economics and Industrial Distribution); International Marketing, Strategic Marketing

Andreas Rauterkus, Assistant Professor (Accounting and Finance); Fixed Income, Markets and Institutions, Securities Analysis, International Finance

Stephanie Rauterkus, Assistant Professor (Accounting and Finance); Investments, Derivative Securities, Trading, Real Estate

Julio C. Rivera, Associate Professor (Management, Information Systems and Quantitative Methods); Management Information Systems

Robert A. Robicheaux, Professor, Marshall Scholar and Executive Director (Marketing, Economics and Industrial Distribution); Marketing and Retail

Allen L. Ryan, Instructor (Accounting and Finance); Corporate Finance and International Finance

Robert A. Scott, Associate Professor Emeritus (Management, Information Systems and Quantitative Methods); Administrative Theory and Practice, Organizational Design and Development

Sanjay K. Singh, Associate Professor (Management, Information Systems and Quantitative Methods); Management Information Systems

Tommie Singleton, Associate Professor (Management, Information Systems, and Quantitative Methods); Accounting and Information Systems

Lauren R. Skinner, Assistant Professor (Marketing, Economics and Industrial Distribution); Marketing, Supply Chain Management, and Retail Strategy

Bryce Sutton, Assistant Professor (Marketing, Economics and Industrial Distribution); Health Economics and Industrial Organization

John E. Swan, Professor Emeritus (Marketing, Economics and Industrial Distribution); Marketing

Bor-Yi Tsay, Professor (Accounting and Finance); Managerial Accounting and Accounting Systems

Richard Turpen, Associate Professor (Accounting and Finance); Financial Accounting and Auditing

Joseph G. Van Matre, Professor (Management, Economics and Quantitative Methods); Multivariate Analysis, Total Quality Management

Joe Walker, Associate Professor (Management, Economics and Quantitative Methods); Financial Management

Barbara Wech, Assistant Professor (Management, Information Systems and Quantitative Methods); Organizational Behavior

James L. Worrell, Assistant Professor (Management, Information Systems and Quantitative Methods); Information Systems

Stephen A. Yoder, Assistant Professor (Marketing, Economics and Industrial Distribution); Legal Environment of Business, Business Ethics, Business Leadership, Corporate Governance

Program Objectives

The objectives of the program are to provide professional, graduate-level education and to maintain a continuing relationship with the business community through service activities. In order to deal effectively with increasingly complex problems of organizations, managers require training in sophisticated analytical techniques, appreciation for the behavioral facets of management, and an ability to anticipate and adapt to changes in the organizational environment. The M.B.A. program is designed to provide competency in management and to acquaint the student with all aspects of business activity. The program is decision oriented, focusing on key aspects of modern administration, and seeks to prepare graduates for leadership roles in business, industry, government, or social service.

Admission Requirements

Requests for application forms and information concerning admission procedures should be directed to the UAB Graduate School of Management. Applicants must be holders of baccalaureate degrees from regionally accredited institutions and must present evidence including, but not limited to, admission test scores (see below) and undergraduate records indicating high promise of success in business study at the graduate level. Applicants must have completed satisfactorily an undergraduate calculus course within the previous five years of application or must pass a proficiency exam or complete the Graduate School of Management Calculus Review. In addition, foreign student applications must have a minimum score of 550 on the TOEFL paper-based test or a minimum of 20 in each section and a minimum of 80 composite score on the computer-based test.

Admission to the M.B.A. program is competitive. In order to be considered, applicants must submit transcripts from baccalaureate work and GMAT scores. We will accept candidates with terminal degrees who have not taken the GMAT. In addition, applicants with a minimum two years full-time professional work experience are preferred. The number of qualified applicants admitted may have to be limited when resource constraints and optimum enrollment considerations so dictate.

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. We will require a resume, copies of transcripts, and GMAT scores along with the application. 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.

Program Requirements

The M.B.A. program is suitable not only for students with baccalaureate degrees in business but also for those who have degrees in engineering, science, or liberal arts.

A maximum of 51 semester hours of credit is required for completion of the M.B.A. program; however, students with applicable undergraduate courses in business may have certain core courses (MBA 609, 620, 632, 633, 640, 650, 660) waived. The minimum degree requirement is 36 semester hours.

After the student is admitted to the program, the M.B.A. graduate advisor is available to meet with the student, if needed, to help outline a plan of study. Each candidate for the M.B.A. must file formal application for the degree in the Graduate School of Management Office one term prior to the expected term of graduation.

Program Information

The M.B.A. program is taught in an evening format and is designed for students who work during the day. Most students can complete degree requirements within 2-2½ years. Concentrations are available in finance, information technology management, and health care management. Each concentration consists of nine semester hours. The M.B.A. program is accredited by AACSB—The Association to Advance Collegiate Schools of Business.

Additional Information

Admission Terms Available	Fall, Spring and Summer
Deadline for All Application Materials to be in the Graduate School Office:	Fall admission - July 1 st Spring admission - Nov. 1 st Summer admission - April 1 st
Number of Evaluation Forms Required:	Two letters of reference or recommendation forms
Entrance Tests	GMAT (TOEFL and TWE also required for international applicants whose native language is not English.)

Contact Information

For detailed information contact Christy Manning: School of Business, Room 203, 1150 South 10th Avenue, Birmingham, Alabama 35294-4460.

Telephone 205-934-8815

E-mail cmanning@uab.edu

Web www.uab.edu/mba

Course Descriptions

Unless otherwise noted, all courses are for 3 semester hours of credit. Courses numbers preceded with an asterisk indicate courses that can be repeated for credit, with stated stipulations.

Master of Business Administration (MBA)

609. **Financial Accounting for Managers.** Accounting fundamentals—an introduction to accounting and its role in the U.S. economy, emphasizing management's use of financial statements. 3 hours.

610. **Financial Reporting and Analysis for Management.** Determination and use of cost data for decision making, control and evaluation of performance, and formulation of goals and budgets. 3 hours. Prerequisites: MBA 609

611. **Management Information Systems.** Applications of information and management sciences to design and use of decision-oriented systems. 3 hours.

620. **Corporate Finance.** Introduction to financial management of nonfinancial corporations. Topics include time value of money, bond and stock valuation, cost of capital, capital budgeting, capital structure and dividend policy. Cases may be used. Prerequisites: MBA 609, and 660. 3 hours.

621. **Advanced Topics in Corporate Finance.** An advanced course in finance with emphasis on special topics such as financial planning, working capital management, leasing hybrid financing, international capital budgeting, etc. Case studies are used. Prerequisite: MBA 620. 3 hours.

630. **Social, Ethical, and Legal Environment.** Social, ethical, and legal environment in which business enterprise operates domestically and internationally. 3 hours.

632. **Managerial Processes & Behavior.** A study of classical and modern theories of organization, management and leadership with emphasis on applications to modern organizations. 3 hours.

633. Operations Management. Introduction to management planning and control techniques applicable to operations portion of various enterprises. Prerequisites: MBA 660 or 661. 3 hours.

634. Business Strategy. Integration of management, finance, accounting, marketing, economics, production, and decision-making concepts. Prerequisite: Last term in MBA program. 3 hours.

635. International Business Policy. Problems and strategic considerations of firms engaged in international business. Prerequisites: MBA 632 or equivalent. 3 hours.

640. Applied Microeconomic Analysis. Application of economic theory and methodology to decision making: theoretical and empirical analysis of demand, production, costs, and pricing behavior. Prerequisite: MBA 660. 3 hours.

650. Modern Marketing Concepts. Analytical approach to business systems directing flow of goods and services from product conception and production to consumption from a marketing manager's point of view. 3 hours.

651. Seminar in Marketing Policy. Problems of marketing managers; planning, implementing, evaluating, and controlling marketing activities. Prerequisite: MBA 650. 3 hours.

660. Business Statistics. Selected statistical techniques, including statistical inference, regression, and decision theory. Application to business problems. 3 hours.

661. Decision Science. Introduction to topics in operations research. Prerequisite: MBA 660. 3 hours.

Electives

612. Corporate Governance. Federal and other laws applicable to the governance, accounting, and finance activities of publicly-owned corporations, larger privately-owned corporations and other complex business organizations. (also listed as AC 612)

615. Technology Based Entrepreneurship. Technology Based Entre- and Intra-preneurship. MBA 611 as the prerequisite. 3 hours.

616. Information Systems Planning and Decision Making. Provides the foundation for the strategic planning of information systems and solving problems faced by decision makers. MBA 611 as the prerequisite. 3 hours.

617. Enterprise Application Implementation. Provides the managerial foundation for developing and implementing large-scale enterprise applications. MBA 611 as the prerequisite. 3 hours.

618. Technology Based Project Management. Provides the foundation for the management and successful execution of IT based projects. MBA 611 as the prerequisite. 3 hours.

622. Portfolio Theory and Construction. Theoretical and practical aspects of investments and portfolio management. Prerequisites: MBA 620. 3 hours.

623. Mergers and Acquisitions. Introduces the student to the basic terminology, theories, and empirical evidence regarding the immediate and long-term wealth effects of corporate control events such as mergers, acquisitions and divestitures. Prerequisites: MBA 620. 3 hours.

624. Global Financial Management. Financial analysis and decision making in international context. Prerequisite: MBA 620. 3 hours.

626. Credit Markets and Instruments. Detailed coverage of the credit markets (Money and Bond markets) of the U.S. and an introduction to the international aspects of those instruments. Prerequisite: MBA 620. 3 hours.

627. Financial Risk Analysis and Management. Unifying approach to the valuation and use of derivatives in domestic and international financial risk management; exploration of issues in the measurement, analysis, and management of financial risk including interest rate, exchange rate, and commodity price risks. Prerequisite: MBA 620. 3 hours.

628. Valuation Seminar. A blend of theory and practice to gain knowledge and skills in the valuation of businesses and interests therein. Prerequisite: MBA 620. 3 hours.

629. Treasury Management. Multi-disciplinary approach to analysis of financial statements and working capital management. Financial planning, corporate liquidity, and short-term financial policy issues. Prerequisite: MBA 620. 3 hours.

636. Human Resource Management. 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. Prerequisite: MBA 632 or equivalent. 3 hours.

639. Seminar in Management. Current issues and problems in selected areas of management. Prerequisite: MBA 632, or permission of instructor. 3 hours.

641. Macroeconomic Analysis and Decision Making. Macroeconomic analysis; modern theory of aggregate demand and supply; forecasting and link between business firm and microenvironment. Prerequisites: 660. 3 hours.

645. Game Theory in Industrial Organization. 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. Prerequisite: MBA 640. 3 hours.

654. International Marketing. Examination of international marketing activities, including environmental issues, marketing strategy, and tactical considerations in entering foreign markets. Prerequisite: MBA 650. 3 hours.

667. Quantitative Methods for Finance. Involves quantitative reasoning and management science methodology, but focuses specifically in finance issues, not business processes in general. Prerequisite: 660. 3 hours.

669. Foundations of Total Quality Management. Reviews essential elements of TQM and emphasizes their interrelatedness. What thought processes of management must be changed, why, and how is discussed with application to manufacturing and service sectors. Prerequisites: MBA 660, which may be taken concurrently, or permission of instructor. 3 hours.

671. Health Care Marketing. 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. 3 hours.

673. Product Innovation Management. Introduction of the process of new product development, managing existing products and product deletion decisions. Prerequisite: MBA 620, 650 or HA 671. 3 hours.

674. Services Marketing. An examination of the generic differences between goods and services, with appropriate marketing strategies for services developed. Prerequisite: MBA 650. 3 hours.

675. Seminar in E-Commerce. Introduction to E-Commerce business-to-consumer and business-to-business activities. Prerequisite: MBA 650. 3 hours.

676. Management Internship. Provides students the opportunity to gain first-hand experience in local businesses for one term while receiving academic credit. Prerequisites: MBA 632, 650 or equivalent and permission of the instructor. 3 hours.

681. From Idea to IPO. 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.

682. The Art of the Deal: Negotiating Technology Agreements. This course takes an in-depth look at various negotiating strategies and addresses issues such as when to sell or when to license.

698. Directed Study (Nonthesis). Prerequisite: Approval of Graduate School of Management. 3 hours.

Graduate students may choose only two courses (6 hours) from the following list of 500-level electives or, if an undergraduate accounting major, from the list of 500-level accounting electives.

AC 612. Corporate Governance.. Federal and other laws applicable to the governance, accounting, and finance activities of publicly-owned corporations, larger privately-owned corporations and other complex business organizations. (also listed as MBA 612)

AC 572. Forensic Accounting and Information Technology Auditing. This course is an introduction to the practice of forensic accounting and its relationship to auditing in settings characterized by extensive reliance on information technology. The course emphasizes audit methodology as applied to accounting information systems. Prerequisite: AC 304, Accounting Information Systems. Requires approval from Dr. Rick Turpen.

AC 573. Fraud Examination. This course is an advanced fraud auditing course with a primary focus on occupational fraud and abuse—its origins, perpetration, prevention, and detection. It is the second course in the series of fraud audits and basic forensic accounting. Prerequisite: AC 472/572 or IS 472. Requires approval from Dr. Rick Turpen.

AC 574. Forensic Accounting Practicum. Students who wish to complete the forensic series are required to obtain actual work experience that applies forensic accounting concepts and methods. Prerequisite: AC 473/573; permission of the instructor; and for AC 474, senior standing, or for AC 574, graduate standing.

EC 520. Applied Forecasting. Practical use of various forecasting techniques on business and economic data. Topics include dynamic regression models, exponential smoothing, moving averages, seasonality, univariate Box Jenkins ARIMA modeling. Prerequisite: MBA 660. 3 hours.

LS 571. Legal Elements of Fraud Investigation. This course surveys key legal principles and courtroom procedures relevant to forensic accounting, and a survey of related topics—criminology theories, evidence management, and litigation services. Prerequisite: LS 246, Legal Environment of Business. Requires approval from Dr. Rick Turpen.

MG 518. **Quality Control.** Concepts, techniques, and organizational requirements to ensure that quality is provided to consumer. Topics include breadth of quality efforts, statistical quality control methods, quality circle principles, and quality assurance activities in various enterprises. Prerequisite: MBA 633. 3 hours.

MG 521. **Entrepreneurship.** Analytical and critical examination of functions and environments where new organizational development takes place. Role of entrepreneurship in creation and development of new economic entities. Prerequisite: MBA 632. 3 hours.

MK 520. **Sales Management.** Management of personal selling function. Nature of selling task; recruiting, selecting, training, compensating, and evaluating sales personnel. Prerequisite: MBA 650. 3 hours.

MK 540. **Small Business Consulting and Research.** Applied field work integrating all of the functional business fields. Prerequisites: MBA 632, MBA 650, and permission of instructor. 3 hours.

Dentistry

Dentistry (M.S.)

Degree Offered: M.S.

Director, Dentistry: Dr. Amjad Javed

Phone: (205) 996-5124

E-mail: javeda@uab.edu

Web site: www.dental.uab.edu

Faculty

Muna Anabtawi, Instructor (General Dental Sciences); Dental materials, Clinical research, Non-carious cervical lesions, Biocompatibility

Ruth Aponte-Wesson, Assistant Professor (Prosthodontics); Biomechanical and Clinical Behavior of Dental Implants

Andrei Barasch, Associate Professor (General Dental Sciences); Oral Health and Function in Medically Complex Patients, Oral Cancer Treatment, Oral Oncology

Anton Borovjagin, Instructor (Periodontics); Adenoviral vectors for gene therapy applications. Transductional re-targeting of adenoviral vectors to cancer cells.

James Broome, Professor (Prosthodontics); Polymers, Adhesives, Physical and Mechanical Testing, Clinical Research

John O. Burgess, Professor (Prosthodontics); Clinical Trials, Caries Models, Dental Materials

Deniz Cakir, Instructor (Prosthodontics); Mechanical and physical properties of dental materials, Dental material behavior in simulated oral environment, dental composites, dental polymers

Mary Lynne Capilouto, Professor Emeritus (General Dental Sciences); Dental Epidemiology, Advanced General Dentistry

Rama Kiran Chavali, Assistant Professor (Prosthodontics); Clinical research in endosseous dental implants

Haiyan Chen, Instructor (Oral Maxillofacial Surgery); Transcriptional control of bone differentiation and repair.

Noel K. Childers, Professor (Pediatric Dentistry); Streptococcus mutants, Dental Caries, Oral Immunization, Liposomes

John M. Coke, Professor (General Dental Sciences): Oral Medicine, Clinical Pharmacology, Hospital Dentistry

Juan Dong, Instructor (Orthodontics); Dental and craniofacial genetic disorders.

Paul Eleazer, Professor (Endodontics): Microbiology of Waterlines, Microbiology of Endontic Anaerobic Pathogens

Heidi Erlandsen, Instructor (Periodontics): Protein crystallography, molecular mechanisms of cell signaling, metabolic disease.

Andre Ferreira, Assistant Professor (Orthodontics); Temporary anchorage, self ligation

Steven J. Filler, Professor (General Dental Sciences); Medically Compromised Patients, Oral Microbiology

Kohtaro Fujihashi, Professor (Pediatric Dentistry); Mucosal Immunity, Molecular Pathogenesis, Periodontal Disease, Alpha and Beta T Cells and Epithelial Cells

Maria Geisinger, Assistant Professor (Periodontics); Regenerative techniques/materials, Periodontal-systemic interrelationships, optimizing periodontal esthetics

Niclaas Geurs, Associate Professor (Periodontics); Translational clinical periodontal research: Pharmacotherapeutics, Periodontal regeneration, Diagnostic systems, Periodontal disease and systemic effects Implant research, Implant healing, Early loading of implants, Site preparation, Bone grafting procedures

Gregg H. Gilbert, Professor (General Dental Sciences); Oral Epidemiology, Dental Health Services

Daniel Givan, Associate Professor (Prosthodontics and Biomaterials); Composite, Resin, Wear, Fatigue

Timothy Heaven, Associate Professor (General Dental Sciences); Dental Digital Imaging, Use of Computer in Digital Imaging Analysis

Yung-Tsung Hsu, Associate Professor (General Dental Sciences); Dental Implants, Complete Denture, Overdenture, Dental Attachment

Janice Jackson, Associate Professor (Pediatric Dentistry): Clinical pediatric dentistry, pulp therapy, childhood caries, childhood obesity

Alexander Jacobson, Professor Emeritus (Orthodontics); Cephalometric Evaluation of Orthognathic Surgery and Skeletal Open Bite Cases

Amjad Javed, Associate Professor (Oral and Maxillofacial Surgery); Bone, cartilage development and remodeling, Adipogenesis, Gene knock-out models, Transcriptional regulation of skeletal cell differentiation.

Donald T. Karaki, Assistant professor (General Dental Sciences); Oral Medicine, Oral Radiology, Implants, Diabetes, Head and Neck Oncology

Jannet Katz, Professor (Pediatric Dentistry); Periodontal Disease, Porphyromonas gingivalis, Hag B, T-Helper Cells, Immune Response, Cytokines

Chung H. Kau, Professor (Orthodontics); Three Dimensional Facial Imaging and Modeling

Keith Kinderknecht, Professor (Prosthodontics); Axiography, mandibular movement, temporomandibular disorders

Jack E. Lemons, Professor (Prosthodontics); Biocompatibility of Synthetic Materials, Alloys and Casting Technology, Biomechanics

Mark Litaker, Associate Professor (General Dental Sciences); Dental Epidemiology, Research Methods, Biostatistics

Perng-Ru Liu, Professor (Prosthodontics); Dental CAD-CAM, Esthetic, and Dental Implant Restorations

Patrick J. Louis, Professor (Oral and Maxillofacial Surgery); Maxillofacial Reconstruction, Dental Implantology, Dentoalveolar Surgery, Temporomandibular Joint Therapy

Mary McDougall, Professor (Oral and Maxillofacial Surgery); Genetic dental diseases, tooth development, mineralized matrix, gene regulation

Sonia K. Makhija, Assistant Professor (General Dental Sciences); Early Occlusal Caries, Geriatric Dentistry, Preventive Dentistry, Evidence-Based Dentistry

Raquel Mazer-Gurmendi, Associate Professor (General Dental Sciences); Dental Materials, Composite Resins, Adhesives, Clinical Investigation, Physical and Mechanical Testing

Michael McCracken, Associate Professor (General Dental Sciences); Dental Implants, Biomimetic Materials, Growth Factors

Lillian Mitchell, Assistant Professor (General Dental Sciences); Dental implants and implant prostheses, Cad-Cam all ceramic restorations

Steven C. Mitchell, Assistant Professor (Pediatric Dentistry); Early Childhood Caries, Technology, Education

Leonard A. Mueninghoff, Professor (Prosthodontics); Implants, Biomaterials, Microléakage, Adhesives, Veneering, Composites

Kent G. Palcanis, Professor Emeritus (Periodontology); Clinical Periodontology, Control of Periodontal Disease

Firoz Rahemtulla, Professor Emeritus (Prosthodontics); Connective Tissue Biochemistry, Oxidants and Antioxidant Enzymes, Salivary Proteins, Peroxidases

Lance Ramp, Assistant Professor (General Dental Sciences); Wear and Degradation of Dental Materials

Merrie H. Ramp, Associate Professor (General Dental Sciences); Dental materials Testing

Michael Reddy, Professor (Periodontics); Periodontal Disease Progression, Implants, Periodontal Therapeutics

John Ruby, Associate Professor (Pediatric Dentistry); Pulpotomy, Pulpectomy, Innate Immunology, Genotyping, *Treponema denticola*

P. Lionel Sadowsky, Professor Emeritus (Orthodontics); Temporomandibular Joint Dysfunction, Growth and Treatment, Surgical Orthodontics, Bonding

Somasak Sittitavornwong, Assistant Professor (Oral Maxillofacial Surgery): Obstructive sleep apnea, airway, fluid dynamics

David K Stillwell, Associate Professor (General Dental Sciences): Dental anomalies, Sports dentistry, Dental management of eating disorder syndromes, Implant placement and restoration

Ken Tilashalski, Associate Professor (General Dental Sciences): Smokeless tobacco, Smoking cessation, Mucocutaneous diseases, Endodontic treatment outcomes

Huw Thomas, Professor (Pediatric Dentistry): Mineralization, Oral Health, Tooth formation

Joe P. Thomas, Adjunct Professor (Endodontics); Clinical Caries Investigation, Sickle Cell Anemia

John B. Thornton, Jr., Professor (Pediatric Dentistry); Incidence of Periodontal Disease in the Mentally Retarded, Dental Health of Aging and Elderly Persons with Mental Retardation

Christos C. Vlachos, Clinical Assistant Professor (Orthodontics); Occlusion, Temporomandibular Dysfunction, Orthodontics

Peter D. Waite, Professor (Oral and Maxillofacial Surgery); Orthognathic Deformities, Cosmetic Facial Surgery, Facial Reconstruction, Cleft Lip and Craniofacial Disorders, Obstructive Sleep Apnea

Thomas W. Weatherford, III, Professor (Periodontology); Chemotherapy of Plaque, Clinical Trials in Periodontal Diseases

Richard Weems, Associate Professor (General Dental Sciences); Dental Radiology, Digital Radiographic Imaging, Diagnostic Decision Support Software

Hui Wu, Associate Professor (Pediatric Dentistry); Biofilm, adhesin, glycosylation, secretion, bacterial pathogenesis

Ping Zhang, Assistant Professor (Pediatric Dentistry); Immunology, inflammation, periodontitis

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 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 dental radiology. 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 the minor area, for appointment to the graduate study committee. The student should discuss with this 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 of one foreign language, competence in biostatistics, experience with computer techniques, or other tools of research 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 three 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, 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 School of Dentistry 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 include the "Dean's Seminar Series" and the Institute of Oral Health Research seminars. 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. 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 applicant; transcripts and all related material should be received no later than **December 1** to enroll in the summer semester of the following year.

For US applicants; transcripts and all related material should be received no later than **April 15** to enroll in the summer 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
1530 3rd Avenue South
Birmingham, AL 35294-2170
Telephone: (205) 934-2878
FAX: (205) 934-1426
e-mail: meow@uab.edu

Course Descriptions

Clinical Dentistry (CD)

Course credits in semester hours are to be arranged by consultation with the chair of the department involved. In general, courses in clinical dentistry may be expected to carry 3-6 hours of credit per semester. Course numbers marked with an asterisk indicate courses that may be repeated for credit.

*601. **Advanced Topics in Endodontics Seminar I.** Correlation of basic science and endodontics by literature review, lectures, seminars, demonstrations, presentations, and patient clinical treatments. Prerequisite: Permission of instructor. 3-6 hours.

*602. **Special Topics in General Dentistry.** 3-6 hours.

*603. **Special Topics in Oral and Maxillofacial Surgery.** Unique areas of surgical treatment in oral and maxillofacial surgery; orthognathic, TMJ, and facial reconstruction. 1-12 hours.

*604. **Special Topics in Orthodontics.** Diagnosis and treatment of orthodontic malocclusion in children, adolescents, and adults. 3-6 hours.

*605. **Special Topics in Pediatric Dentistry.** Areas affecting practice of pediatric dentistry, such as developing malocclusions, and their early diagnosis and management. 1-6 hours.

*606. **Special Topics in Periodontics.** Review of basic sciences and periodontics by special readings, lectures, seminars, and clinical instruction. Patient evaluation, treatment, planning, and therapeutic skills. 3-6 hours.

*607. **Removable Prosthodontics Seminar.** Current treatment modalities.

*608. **Special Topics in Radiology.** Lectures, seminars, and clinical instruction regarding intraoral and extraoral radiographic examinations. Technical and interpretation facets. 1-6 hours.

*609. **Special Topics in Fixed Prosthodontics.** Gnathological concepts and implantology.

610. **Introduction to Medical Genetics.** 3-6 hours.

*611. **Special Topics in Maxillofacial Prosthetics.** Application of biologic knowledge to planning treatment for restoration and reconstruction of special maxillofacial prosthetic patient. 1-3 hours.

*612. **Advanced Prosthodontics.** First-year clinic. Laboratory and clinical diagnosis, treatment planning, and care delivery, including implantology.

*613. **Special Topics in Hospital Dentistry.** Hospital protocol and procedures, medical emergencies in dental office, infection control, treating the medically compromised patient. 1-6 hours.

*614. **Periodontal Case Conferences.** 1-3 hours.

*615. **Periodontal Literature Review Seminar.** 1-3 hours.

*616. **Periodontal Board Topics.** 1-3 hours.

*620. **Clinical Pediatric Dentistry I.** 3-6 hours.

625. **Design and Analysis in Clinical Dental Research.** Basic statistical concepts, including terminology and appropriateness of study design and statistical tests. 1-4 hours.

626. **Surgical Implants in Dentistry.** Materials used for dental implants, design, fabrication, and tissue response to implants. 3-6 hours.

*627. **Biocompatibility Testing and Biodegradation Phenomena.** Degradation of materials in body, effect of ion release to tissues, tests for biocompatibility.

*628. **Enamel Properties, Acid Etching, and Adhesion.** Properties of enamel and dentin, acid-etching techniques, principles of adhesion, dentin bonding agents. 4 hours.

*629. **Ceramic Materials in Dentistry.** Basic science of ceramic materials, porcelain, cements, gypsum, investments, and ceramic implant materials.

*630. **Clinical Biomaterials Research Methods.** Design of studies for clinical evaluation of biomaterials, clinical test methods, and correlation of laboratory results.

*631. **Polymeric Biomaterials.** Basic science of polymers, acrylics, waxes, composite resins, impression materials, and polymeric implant materials.

*632. **Seminar in Biomaterials.** Review of biomaterials literature. 1 hour.

*633. **Alloy Systems in Dentistry.** Basic science of metals, mobile and base metals and alloys, amalgam, metallic implants.

*634. **Craniofacial Genetics.** Craniofacial findings in children with genetic disorders; dental features and other physical abnormalities associated with such disorders.

*635. **Pediatric Dentistry Journal Club.** 2 hours.

*636. **Hospital Dentistry.** Aspects of general anesthesia for pediatric and handicapped patients, including laboratory tests, indications for general anesthesia, etc. 2 hours.

*637. **Growth and Development-Genetics.** Mechanisms and control of craniofacial growth, both normal and aberrant; background in genetics.

638. **Current Topics In Dentistry.** Fixed and removable prosthetics, restorative techniques, endodontics, periodontics, practice management. 1 hour.

639. **Dental Management of the Medically Compromised Patient.** Treatment modifications for the medically compromised patient; heart disease, diabetes, renal disease, organ transplantation, antibiotic protocols. Summer.

*640. **Physical Diagnosis.** Basic principles of physical examination.

*650. **Advanced Topics in Hospital Dentistry.** Dealing with medically complex patient; anesthesia and sedation techniques; dental care of hospitalized patient. 1-6 hours.

651. **Advanced Topics in Endodontics Seminar II.** Readings, lectures, seminars, and clinical instruction in surgical therapies, trauma, and resorption of roots; fundamental research techniques. Prerequisite: CD 601. 3-6 hours.

*652. **Advanced Topics in General Dentistry.** 3-6 hours.

*653. **Advanced Topics in Oral and Maxillofacial Surgery.** 3-6 hours.

*654. **Advanced Topics in Orthodontics.** Diagnosis and treatment planning of complex orthodontic malocclusions including orthognathic surgical problems, craniofacial malformations, and temporomandibular joint dysfunction. This includes didactic and clinical programs. 3-6 hours.

*655. **Advanced Topics in Pediatric Dentistry.** Individually selected topics researched and presented in manuscript form at end of semester. 1-6 hours.

*656. **Advanced Topics in Periodontics.** Special readings, seminars, lectures, and clinical instruction in advanced clinical procedures and clinical research techniques. Prerequisite: CD 606. 3-6 hours.

*657. **Advanced Clinical Prosthodontics.** (Continuation of CD 612). Emphasis on full-mouth rehabilitation and implantology. Prerequisite: CD 612.

*658. **Advanced Topics in Radiology.** Advanced imaging systems; radiographic procedures. 1-12 hours.

*659. **Advanced Topics in Fixed Prosthodontics.** Total patient care; emphasis on implantology and rehabilitation. Prerequisite: CD 609.

*660. **Advanced Topics in Maxillofacial Prosthetics.** Principles of maxillofacial prosthetics; technical procedures and material; mechanical testing and laboratory evaluation of materials.

*661. **Physical Properties of Biomaterials.** Physical and chemical properties of metallic, ceramic, and polymeric materials; mechanical testing and laboratory evaluation of materials.

*662. **Laboratory Methods for Biomaterials Research.** Dental casting methods, metallography, hardness and mechanical properties testing, corrosion and surface testing, design of laboratory and clinical experiments, photography, use of light and scanning electron microscopes.

*663. **Diagnosis and Screening Procedures in Dentistry.**

*664. **Grand Rounds in Pediatric Dentistry.** 2-3 hours.

665. **Maxillofacial Seminar.**

*666. **Clinical Maxillofacial Prosthetics.** Prosthetic rehabilitation of patients with deficient maxillofacial system. 1-3 hours.

667. **Selected Topics in Anatomy of Head and Neck.**

*668. **Advanced Oral Histopathology.**

***669. Clinical Pediatric Dentistry II.**

***670. Microcomputer Applications in Dental Research, Public Health Dentistry, and Clinical Dentistry.** Use of microcomputers, different types of software; application to specific research, clinical, public health, and practice management procedures.

***671. Special Topics in Microcomputer.**

***672. Advanced Topics in OMS.** 5 hours.

***673. Special Topics in OMS Trauma.** 4 hours.

***674. Advanced Topics in OMS-Orthognathic.** 4 hours.

***675. Special Topics in OMS Patient Care.** 4 hours.

***676. Advanced Topics in OMS Oral Pathology.** 4 hours.

***679. Fundamentals of Pediatric Dentistry.** Topics include operative dentistry, physical therapy, preventive orthodontics. 1-6 hours.

***680. Dental Clinical Pathology.**

***681. Clinical Pediatric Dentistry III.**

***682. Special Topics in Endodontics.**

***685. Advanced Endodontics.** First-Year Clinic.

***686. Advanced Endodontics.** Second-Year Clinic.

***688. Special Pathology.**

***689. Conscious Sedation.**

***690. Physiology and Concepts of Occlusion.**

***691. Special Topics in Biomaterials Science.** 1-6 hours.

***692. Advanced Prostodontic Seminar.** Correct and historical prostodontic literature.

***693. Special Topics in OMS.** 5 hours.

***694. Advanced General Dentistry Seminars (I-IV).** Diagnosis, treatment planning and case management; patient and practice management; quality assurance; instruction and advanced clinical procedures; comprehensive case presentations. 1 hour.

***695. Literature Review in Pediatric Dentistry.**

***698. Nonthesis Research.** 1-6 hours.

***699. Thesis Research.** Prerequisite: Admission to candidacy. 1-6 hours.

Oral Biology (OB)

Unless otherwise noted, all courses are for 3 semester hours of credit.

600. Graduate Cariology. Comprehensive survey of the state of the science in the management, etiology and prevention of dental caries from an infectious disease perspective. Modern methods in molecular epidemiology and molecular biology are integral to the course. Winter.

602. Pharmacology and Therapeutics for Dentistry. Current knowledge in pharmacological issues related to dentistry. Spring.

603. Oral Inflammation and Periodontal Disease. Understanding the immunological aspects of periodontal disease. Winter

607. Prenatal craniofacial growth and Development

608. Special Topics in Oral Biology

611. Saliva: Composition and Function. Physiology, biochemistry, and function of saliva in relation to oral health and as a diagnostic fluid. Spring.

616. Postgraduate Oral Histology.

620. Oral Microbiology and Immunology. Microbiological and molecular aspects of infectious diseases that impact the oral cavity including dental caries, periodontal disease, hepatitis, AIDS and various oral infections. Winter.

622. Biochemistry of Connective Tissue and Bone. Biology, chemistry and function of connective tissue elements. Methods and approaches to research. Fall.

625. Current Issues in Nutrition and Oral Health.

627. Surgical Implants in Dentistry. Basic aspects of dental implant-based treatment modalities. Spring.

630. Introduction to Clinical Trials/Epidemiology.

631. Ethics in Biological Research.

632. Special Topics on Mucosal Immunology.

633. Research Design Methodology.

657. Prenatal Craniofacial Growth and Development.

663. Saliva as a Diagnostic Fluid. Comprehensive knowledge about planning, performing, and interpreting results of saliva analyses. Fall

687. Oral Immunobiology and Vaccine Development. Comprehensive knowledge of immune responses and "state of the art" mucosal vaccine development and their protection of oral/mucosal infectious diseases.

721. Oral & Skeletal Biology Journal Club. Genetic, developmental and molecular aspects of the oral cavity and bone. 2-credit hours.

698. Non-Thesis Research.

699. Thesis Research. Prerequisite: Admission to candidacy

DMD/PhD Program

Degree Offered:	DMD/PhD
Director:	Dr. Mary MacDougall
Phone:	(205) 996-5122
E-mail:	admissions@cs1.dental.uab.edu
Web site:	http://www.dental.uab.edu/research/training-programs/dmdphd-program1.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. 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.

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. Students need to directly contact Dr. Steve Filler, Director of Admissions, UAB-School of Dentistry at 205.934.3387 or by email at admissions@cs1.dental.uab.edu. Separate applications are submitted to the UAB School of Dentistry and the UAB Graduate School (1530 3rd Avenue South, HUC 511, Birmingham, AL 35294-1150). UAB School of Dentistry participates in the American Association of Dental Schools Application Service (AADSAS). Students should initiate AADSAS applications as early as possible. Applications received by AADSAS after November 1 can cause a delay in the admission process.

All Alabama applicants and those out-of-state residents, whose AADSAS applications indicate they can be given serious consideration, will be requested to file a supplemental DMD/PhD application. This form requests additional information that is not part of the AADSAS material and includes a photograph, a one page assay on the interest of the candidate in a dental academic research career, a pre-dental advisory committee evaluation if available, and three letters of recommendation from professors related to the applicant's interest in research or major field of study. A non-refundable \$75 fee is required to file this supplemental application. This supplemental application, along with all transcripts, letters of recommendation and other specified documents, should be received by the School of Dentistry Admissions Office no later than December 1 for the upcoming year for which admission is sought.

Applicants whose credentials indicate they may qualify 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, commitment to a research career, character, and personality traits indicating potential for success in a DMD/PhD program. An acceptable interview makes the student eligible for participation in the program and for admission to the School of Dentistry DMD/PhD program.

To be accepted into 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.
- 3) Submit a formal application to the UAB Graduate School through the integrated program General Biomedical Sciences or an individual participating department e.g., Microbiology, Pathology, etc.)
- 4) Have successfully taken the Dental Aptitude Test (DAT).
- 5) Have completed all the recommended courses for both dental and graduate school admissions.

Sequence of the DMD/PhD Program:

- 1) Completion of at least two years of graduate school coursework and requirements including graduate school qualification examinations and dissertation proposal defense maintaining a cumulative GPA of at least a **3.0**
- 2) Receive a positive recommendation for transition into the dental school's curriculum by the DMD/PhD Advisory Committee

Important Points:

- 1) Generally it is anticipated that the 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 expected to be 7.0 years; however students with strong prior research experience have completed the program in 6 years.
- 3) If a student is accepted into the DMD/PhD program and chooses not to complete the PhD training program, they will be required to re-apply to the School of Dentistry for admission as a traditional DMD candidate.

Financial Support Opportunities:

Students enrolled in the DMD/PhD training program are eligible for funding through an individual NIDCR supported F-30 Training Award. Detailed information about the F-30 grant application is available at <http://grants.nih.gov/grants/guide/pa-files/PAR-08-119.html>. The F30 grant program provides an annual student stipend of \$25,000 per year (as of July 2010), a percentage of total tuition costs (60% of the allowable costs), health and dental insurance, and scientific meeting travel funds (\$800).

DMD/PhD Career Opportunities:

Upon completion of the DMD/PhD program students may be qualified for additional post-doctoral training related to their research interests as well as a dental specialty program. Successful completion of the DMD/PhD program and post-graduate training could make the student a viable candidate for a faculty position in academic dentistry. The National Institute of Craniofacial and Dental Research (NIDCR) sponsors a number of institutional or individual grant award programs to provide funding for these types of additional training. Information about these programs can be found on the NIDCR webpage at <http://www.nidcr.nih.gov/Funding/FundingMechanisms/default.htm>

Education: General Information

UAB's programs in education are fully approved by the Interstate Agreement on Qualifications of Educational Personnel, the National Association of State Directors of Teacher Education, and the National Council for Accreditation of Teacher Education. There are 13 graduate majors in the area of education; these are described in sections arranged alphabetically following this general information section.

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 (SDE). 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 SDE certification. There is a rough correspondence between degree level and certification class, as follows:

<i>Degree Level</i>	<i>Certification Class</i>
Bachelor's	B

Master's	A
Specialist (post-master's)	AA
Doctoral	No Equivalent

In spite of this correspondence, 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 SDE certification. Students seeking certification should verify requirements with an advisor or program director.

Students who wish to add to an existing certificate through a SDE evaluation letter must be eligible for admission to the Graduate School. In addition, a copy of the SDE letter must be filed with the appropriate department chairperson and with Academic Advising Services, Room 100, School of Education Building, before coursework is begun. In some instances, prerequisites will have to be met in order to enroll in the desired courses.

Education: Curriculum and Instruction

Chair:	Dr. Lynn Kirkland
Phone:	(205) 934-8358
E-mail:	lkirk@uab.edu
Web site:	http://www.ed.uab.edu/

Degrees offered:

Education, Early Childhood (Ph.D., Ed.S., M.A.Ed.)
 Education, Elementary (Ed.S., M.A.Ed.)
 Education, High School (Ed.S., M.A.Ed.)
 Art Education (M.A.Ed.)
 Music Education (M.A.Ed.)
 English as a Second Language (M.A.Ed.)
 Reading (M.A.Ed.)

Faculty

Carol Allison, Instructor (Special Education); Visual Impairments

Joseph C. Burns, Associate Professor (Elementary and High School Education); Biology, Science Education

Charles Calhoun, Associate Professor (Elementary Education); Elementary Math Education, Curriculum and Instruction

Lois M. Christensen, Professor (Elementary Education); Elementary Social Studies, Qualitative Research Methodology, Elementary Preservice Teacher Education, Ethnographic Processes, Study of Diversity, Women, and International Topics

Karen Dahle, Associate Professor (Special Education); Special Education Administration and Supervision, School Psychology, Autism, Counseling

Ann Dominick, Assistant Professor (Early Childhood Education)

Kay Emfinger, Associate Professor (Early Childhood Education); Early Childhood Development, Curriculum Development, Curriculum Theory

James Ernest, Associate Professor (Early Childhood Education)

Richard M. Gargiulo, Professor (Special Education); Conceptual Development of Mild Disabilities, Teacher Education

Renitta Goldman, Professor (Special Education); Learning and Behavioral Handicaps; Assessment; Physical, Emotional and Sexual Abuse; Suicide Among Minrotiy Populations

Grace Jepkemboi-Kibirgen, Assistant Professor (Early Childhood Education) Early Childhood Development, Early Childhood Curriculum

Constance Kamii, Professor (Early Childhood Education); Early Childhood Education and Theory of Jean Piaget

Jennifer Kilgo, Professor (Special Education); Early Childhood

Lynn Kirkland, Professor (Early Childhood Education); Early Childhood Development, Early Childhood Curriculum

Tondra Loder-Jackson, Assistant Professor (Foundations); Urban Educaiton, Confluence of Generation, Race & Gender; African American Education pre- & post-Brown, Life History & Life Course of Educators

Maryann M. Manning, Professor Emerita (Elementary Education); Reading and Language Arts, Individualization of Instruction, Creative Teaching

Kathleen Martin, Associate Professor (Early Childhood Education); Reading, Child Development, Reading Recovery

Andrew McKnight, Assistant Professor (Foundations); Philosophy of Education, Social Justice in Education, Emotional Contexts in Education, Qualitative Interpretive Inquiry

Lee Meadows, Associate Professor (High School Education); Science Education, Multicultural Issues, K-14 Science

Netty Nelson, Associate Professor (Special Education); Low-Incidence and High-Incidence Disabilities, Assistive Technology, Collaboration in Schools

Susan Olmstead-Wang, Assistant Professor (English as a Second Language); Teaching Adult Language Learners, Instruction and Assessment, Practicum

Tonya Perry, Assistant Professor (Secondary Education); Language Arts Education

Diane Pevsner, Assistant Professor (Collaborative Teacher)

David Radford, Associate Professor (Science Education); Assessment, Professional Development

Mary Jean Sanspree, Research Professor (Special Education); Visual Impairments, Alabama Deaf-Blind Project

Linda Searby, Assistant Professor (Leadership); Mentoring

Michele Sims, Associate Professor (High School Education); Reading, Middle School Education

Tommy G. Smith, Associate Professor (High School Education); Mathematics Education

Susan Spezzini, Assistant Professor (English Language Learner Education); Phonology for ESL Teachers, Grammar for ESL Teachers, Second Language Acquisition

Deborah Strevy, Assistant Professor (Early Childhood Education); Language Arts, Early Childhood Education

Debora Voltz, Associate Professor (Special Education); Learning Disabilities, Urban Education

Yu-Mei Wang, Associate Professor (Technology); Technology Across Curriculum, E-teaching, Instructional Design

Lou Anne Worthington, Associate Professor (Special Education); Emotional and Behavioral Disorders, Collaborative TEaching, Special Education Law

Veronique Zimmerman-Brown, Instructor

Program Contact Information:

Program	Coordinator	Room	Phone Number
<u>Secondary Education</u>	<u>Dr. Tommy Smith</u>	122 A	(205) 934-8089
<u>English as a Second Language</u>	<u>Dr. Susan Spezzini</u>	120	(205) 934-8357
<u>Special Education</u>	<u>Dr. Diane Pevsner</u>	232 I	(205) 975-5351
<u>All other programs</u>	<u>Dr. Lynn Kirkland</u>	115	(205) 934-8358

Graduate Programs

The M.A.Ed., Ed.S., and Class AA 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 33 semester hours of study, and the Ed.S. and AA programs require at least an additional 32 semester hours. All programs require a written final examination and a minimum GPA of 3.00. An outline of the specific course requirements can be obtained from the office of the graduate program director or the Academic Advising Office in the School of Education. The M.A.Ed. programs satisfy the academic requirements for the State Department of Education Class A Professional Certificate. The Ed.S. programs satisfy academic requirements for the State Department of Education Class AA Professional Certificate and an Ed.S. degree. The AA programs satisfy AA certification requirements, but do not lead to a 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 only once annually, with the program of study beginning in June (summer term). Application packets must be complete in the Graduate School office, at the latest, by six weeks before the program begins.

Contact Information

For detailed information, contact Dr. Joe Burns (Early Childhood and Elementary), Dr. Tommy Smith (Secondary), Dr. Susan Spezzini (English as a Second Language), or Dr. Richard Gargiulo (Special Education) UAB Department of Curriculum and Instruction, EB 119, 1530 3rd Avenue South, Birmingham, Alabama 35294-1250.

Telephone 205-934-5371

Web www.ed.uab.edu

Course Descriptions

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.

Early Childhood Education (ECE)

545. Curriculum for Young Children. 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. Prerequisite: Admission to ECE 5th-Year Program. 6 hours.

546. Communication Arts and Reading for the Young Child. Nature of reading and language arts experiences for children, infant through grade three. Media, materials, experiences, programs, and strategies to facilitate development of communicative abilities with emphasis on preserving and maintaining creative expression in different cultural settings. Integration of learning in areas of listening, speaking, reading, composition, literature, handwriting, spelling, and other communicative arts. Laboratory experiences required. Prerequisite: Admission to ECE 5th-Year Program. 6 hours.

548. Infant/Toddler Development. 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.

549. Educational Environment: Infants/Parents (Toddlers/Parents). 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. 3 or 6 hours.

620. Introduction to Curriculum and Teaching. Basic knowledge of early childhood curriculum for programs, infant through third grade, in a variety of settings. Relationship of child growth and development in planning and implementation of all areas of curriculum. Prerequisite: Admission to ECE 5th-Year Program.

630. Cognitive Curriculum in Early Childhood Education. Mathematics and science for children four to eight years of age based on constructivism. Children's thinking, particularly in physical-knowledge activities, group games, and situations in daily living.

631. Program for Young Children. Early childhood education programs and theoretical perspectives. Existing curricula such as Piaget, behavior modification, Montessori, open classroom, foreign-based programs. Required for students without undergraduate majors in ECE.

632. Young Children and Their Literature. Literature for children in nursery school, kindergarten, primary grades; selection, use, and integration of literature in total curriculum.

633. Social Development of the Young Atypical Child. Theoretical issues and political, sociological relationship of the atypical child. Nature, assessment, and intervention of emotional disorder. Program planning, teaching, and interdisciplinary considerations.

690. Practicum in Early Childhood Education. Required of all M.A.Ed. students. Prerequisite: Permission of instructor. 3 or 6 hours.

692. Practicum in Primary Education. Prerequisite: Permission of advisor and department. 6 or 9 hours.

693. Internship in Early Childhood Education. Full-time internship for 10 weeks (300 clock hours). 3 or 9 hours.

694. Practicum in Early Childhood Education for the Young Atypical Child.

730. Doctoral Seminar I: Issues in Developmental Theory. Historical, sociological, and psychological influences on theories of development. Prerequisites: Graduate course in development or educational psychology and admission to doctoral program.

731. Doctoral Seminar II: Children and Society. Societal influences on child development. Role of family and various agencies in different cultures. Prerequisite: Admission to doctoral program.

732. Doctoral Seminar III: Special Topics in Early Childhood and Development Studies. Specific topic announced in class schedule. Prerequisites: ECE 730 and 731. 1-3 hours.

733. Doctoral Seminar IV. Advanced Research in Early Childhood Education. Evaluation and planning of research in preparation for dissertation. Prerequisite: At least one course in research, measurement, or statistics. 3-9 hours.

734. Logic and Scientific Inquiry. Scientific investigation as applied in education. Conceptual issues in research process. Methods of analysis and presentation. Prerequisite: Master's degree.

735. Meaning and Development of Play. Nature of play, its importance and how it is nurtured. Prerequisite: Master's degree.

736. Personality Development of the Young Child. Theoretical perspectives; review of research, including cross-cultural studies. Prerequisite: Admission to doctoral program.

737. Parent, Child, School Interface. Historical development of parent involvement. Theoretical bases of family-school interactions. Prerequisite: Admission to doctoral program.

738. The Consultation Process and the Young Child. Problem areas affecting young children; skills for working with families and community agencies. Prerequisites: ECE 730 and 731.

739. Developing Interpersonal Competence for Leaders. Relationships with coworkers and subordinates. Various approaches to interpersonal relationships. Prerequisites: Admission to doctoral program.

740. Research Apprenticeship. Planning, implementation, analysis, and presentation of research. Prerequisites: ECE 730 and 731. 3 or 6 hours.

741. Research Study: Design and Implementation. 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, 608, 609, and ECE 740.

742-745. Piaget: Theory and Research. 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.

746. Contemporary Issues in American Science Education. Crisis atmosphere surrounding science education in American classroom. Prerequisites: ECE 730, 731 and 732.

747. Social Development of Young Children. Factors influencing socialization of young children. Prerequisites: ECE 730 and 732.

748. Research in Infancy. Theoretical and empirical evidence relating to psychomotor domain. Prerequisite: Admission to doctoral program in early childhood education.

749. Advanced Early Childhood Curriculum. Historical, philosophical, psychological, and social thought influencing curriculum in early childhood education. Prerequisites: ECE 730, 731, and 732.

750. Literacy Before School. Written language development of preschool children. Prerequisites: Master's degree and two courses in language development.

751. Schooling and Literacy Instruction. Primary-level literacy instruction and children's literacy development. Prerequisites: Admission to doctoral program in early childhood education and two courses in language development.

752. Theory and Research on Literacy Development and Instruction. Philosophical and psychological beliefs regarding literacy development. Prerequisite: Admission to doctoral program in early childhood education.

753. John Dewey and the Early Childhood Curriculum. Dewey's philosophy, epistemology; relationship to early childhood education and development.

760. Current Issues in Education. 1-3 hours.

774. Advanced Seminar in Language Development. Relationship of thinking and knowing to language development; strategies for analysis; strengths and weaknesses of techniques of examining language development. Prerequisites: Master's degree and one course in language development or equivalent.

790. Internship in Early Childhood Education and Development. 6 or 9 hours.

791. Field Studies in Early Childhood Education. Prerequisite: Permission of instructor. 1-6 hours.

792. Directed Readings in Research. Review of research in early childhood education to gain understanding of conceptual and methodological basis.

793. Individual Research in Early Childhood Education. Recent research in early childhood education; systematic solutions to problems in education.

794. Current Research Topics in Early Childhood Education. 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.

798. Nondissertation Research. 3-12 hours.

799. Dissertation Research. Prerequisite: Admission to candidacy. 3-12 hours.

Arts Education (EDA)

583. Methods of Teaching Art. Learning experiences necessary for development of essential teaching competencies. Prerequisite: Admission to 5th-Year Program. 3 or 6 hours.

584. Methods of Teaching Art Laboratory. Required. 1 or 2 hours.

591. Art Education Final Exhibition. M.A. students plan and mount exhibition of work during final year. Graphic design students may prepare public portfolio presentation instead of exhibition. Art History students prepare a thesis research paper. Should be taken with the student's thesis advisor. Prerequisite: Permission of advisor.

651. Innovative Practices in Teaching Art in the Schools. Innovative practices in planning, instructing, and evaluating in art education. Specialized study of contemporary needs in art and art education.

680. Art Experiences in the Teaching of Art N-12. Concepts, methods, and skills for teaching art.

690. Internship in Art Education N-12. For 5th-Year Program students. Observation and student teaching in elementary and secondary schools (10 weeks or 300 clock hours). Prerequisites: Unconditional acceptance into the 5th-Year Program, completion of 9 hours in professional studies, EDA 680, and completion of 9 hours in academic courses. 9 hours.

Curriculum (EDC)

651. Innovative Practices in Curriculum. Current issues and special topics in curriculum; topics vary. May be repeated with different subject areas.

655. Curriculum Principles and Practices. Current curriculum practices; concepts and principles underlying their development.

656. Developmental Problems and Issues in Curriculum Construction. Includes field study of curriculum in teachers' own schools.

694. Curriculum Seminar: Special Problems in Curriculum Development. Prerequisite: EDC 655 or permission of instructor. 1-3 hours.

706. The Dynamics of Educational Change. Defining roles as change agents; understanding school as unit undergoing change; guiding perspectives in making changes. Prerequisite: Admission to graduate school.

707. Introduction to Teacher Leadership. Prerequisites: Master's degree and EDC 655.

711. Analysis and Evaluation of Teaching. Strategies and models for analysis of teaching. Use of data in evaluating teacher effectiveness. Prerequisite: Master's degree.

712. Seminar in Curriculum and Instruction. Critical issues and research. Development and discussion of individual research. Prerequisite: Master's degree.

713. Educational Issues and Human Diversity. Social, economic, and cultural forces contributing to deprivation; implications for teachers, administrators, and educational staff. Prerequisite: Master's degree.

720. Problems and Issues in Education. Exploration of problems and issues associated with education. Emphasis on needs of teachers and implications of the current problems and issues. Prerequisite: Master's degree.

725. Advanced Study in Social Studies Curriculum. 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.

728. Ed.S. Research Project I. Development of research proposal. Proposal must be accepted and approved by appointed faculty committee. Prerequisites: EPR 692 or equivalent, EPR 596 or EPR 608, and 12 hours in Ed.S. program.

729. Ed.S. Research Project II. Prerequisites: EPR 692, EDC 728, EPR 596 or EPR 608, and 12 hours in Ed.S. program.

Reading (EDR)

540. Developmental Reading I. Materials and methods. Emphasis on planning balanced program and understanding reading process. Includes field experiences. Prerequisite: Admission to 5th-Year Program.

541. Literature for Adolescents. Literary works written for or about adolescents.

543. Developmental Reading II: Focus on Content Areas. Reading process as it relates to content area materials. Includes field experience. Prerequisite: Admission to 5th-Year Program.

551. Reading in Content Areas. Reading process; evaluation of content area materials; analysis of different content area textbooks; meeting individual differences.

640. Reading Improvement Workshop. For inservice teachers of reading. Specific content varies according to needs of teachers. 3 or 6 hours.

650. Teaching Reading. Understanding of reading process. Nature of reading programs; readiness motivation, methods, skills, assessment, evaluation, materials, and resources.

652. Pre- and Early-Reading Instruction. Theoretical bases, procedures, techniques, and materials for prereading and reading instruction. Prerequisite: Developmental reading course.

653. Literature for Elementary and Middle Schools. Emphasis on needs of children, selection of books, societal issues in children's literature.

654. Assessment, Evaluation, and Correction of Reading Difficulties. Observation, standardized oral and written reading tests, and informal reading inventories. Selecting learning activities based on diagnostic data. Prerequisite: Special Education majors only.

655. Reading Assessment and Evaluation. Examines evaluation techniques, such as observations, and standardized oral and silent reading tests, and informal reading inventories, such as miscue analysis.

656. Reading Strategies for Students with Reading Difficulties. Development and application strategies for remediating reading problems based on assessment data. Prerequisite: Diagnostic reading course.

657. Supervision of Reading. Supervisor's role in improving reading instruction; methods of supervision and evaluation. Prerequisite: Permission of instructor.

659. Research and Problems in Reading. For teachers in elementary and early childhood education.

690. Internship in Remedial Reading. Supervised experience with children with reading difficulties. Prerequisites: Admission to reading certification program, permission of instructor and department, and EDR 654.

691. Practicum in Reading. Prerequisite: Permission of instructor.

692. Internship in Supervision of Reading. Prerequisites: Admission to Reading Supervisor Program, EDR 654 and 657, and permission of instructor. 6 hours.

698. Independent Nonthesis Research in Reading. Prerequisite: Permission of instructor.

701. Advanced Diagnosis and Remediation of Reading Problems. 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.

702. Reading: Theoretical Foundations. 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.

703. Advanced Research in Reading. Prerequisites: EDR 650 and master's degree.

704. Field Experiences in Reading. 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. 3 or 6 hours.

705. Seminar in Reading Instruction. 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.

706. Research. Prerequisites: Master's degree and permission of instructor. 1-3 hours.

Elementary and Early Childhood Education (EEC)

500. Pedagogy One. 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. 9 hours.

501. Pedagogy Two. 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 experiences required. 9 hours.

505. Children's Literature in Elementary & Early Childhood Education. Materials and methods. Needs of children, selection of books, societal issues in children's literature, and role of media in children's literature. Field experience required. Prerequisites: Admission to 5th-Year Program, EEC 600, EEC 610, EEC 660.

506. Language Arts in Elementary & Early Childhood Education. Materials and methods. Communication-based approach in developing effective language arts program. All aspects of language arts program addressed. Field experiences required. Prerequisites: Admission to 5th-Year Program, EEC 600, EEC 610, EEC 660.

512. Mathematics in Elementary & Early Childhood Education. 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. Prerequisite: Admission to 5th-Year Program, EEC 505, EEC 506, EEC 515.

513. Science in Elementary & Early Childhood Education. Scope, sequence, materials, and methods. Emphasis on teaching and the development of content and process skills. Field experiences completed in conjunction with practicum. Prerequisite: Admission to 5th-Year Program.

514. Social Studies in Elementary & Early Childhood Education. Scope, sequence, and content of elementary school social studies curriculum. Teaching strategies, program articulation, and instructional planning. Field experiences completed in conjunction with practicum. Prerequisite: Admission to 5th-Year Program.

515. Learning Environments. Theoretical approaches that focus on child-centered curriculum, classroom management, discipline strategies, and cultural, linguistic, and developmentally appropriate instruction. Prerequisites: Admission to 5th-Year Program, EEC 600, EEC 610, EEC 660.

540. Advanced Workshop in Education. May be repeated for total of 9 hours with various topics. 1-3 hours.

560. Current Issues in Education. Topics announced in class schedule. May be repeated for maximum of 6 hours with different topics. 1-3 hours.

565. Teaching Globe and Map Skills. 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.

573. Teaching in a Multicultural Society. Implications of cultural pluralism for teaching, student learning, curriculum planning, and instructional techniques.

592. Individual Curriculum Projects: (Area Specified). Field projects in curriculum modification and improvement of classroom practice. Prerequisite: Permission of instructor. 3 or 6 hours.

593. Individual Readings. Individualized readings on special topics. Prerequisite: Permission of instructor. 1-3 hours.

594. Field Work in Elementary and Early Childhood Education. Observation and participation experiences with children. Prerequisite: Permission of instructor. 1, 2, 3, or 6 hours.

600. Transition into P-6 Teaching. Introduction to the teaching profession (Alternative Fifth-Year Program, Elementary/Early Childhood Education). 3 hours

610. Curriculum Development in Elementary and Early Childhood Education. Curriculum decisions, planning and implementation.

611. Teacher Roles in Elementary and Early Childhood Education. Models of instructional roles such as facilitator, program planner, curriculum designer; models of social roles. Includes practicum experiences.

612. Models of Teaching. Selecting and applying specific teaching strategies. Includes practicum experiences.

620. Teaching Mathematics N-6. Issues and approaches in early childhood and elementary mathematics; research and implementation for instruction.

621. Teaching Language Arts N-6. Issues and approaches in teaching early childhood and elementary school language arts. Implications of research for instruction.

622. Teaching Social Studies N-6. Function and organization of social studies programs in early childhood and elementary schools. Selection and adaptation of content, resources, teaching materials, and teaching strategies and methods with emphasis on current trends.

623. Teaching Science N-6. Issues and approaches in early childhood and elementary science. Implications of research for instruction.

625. Critical Theory in P-6 Education. Course encompasses current issues in education from critical, postmodern, and feminist perspectives. Issues of equity, social justice, racism, sexism, and the marginalization of minorities in education will be explored. Prerequisites: Admission to Graduate School and EEC 660, Readings in Teaching and Learning. 3 hours.

628. Master's Project. Course is 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. 1 hour.

632. Advanced Children's Literature. Course is designed to explore literature for preschool, kindergarten, and primary- and intermediate-level children. Selection, use, and integration of literature throughout the total curriculum is stressed. Prerequisites: Admission to Graduate School or permission of the instructor. 3 hours.

650. Systematic Reflections About Teaching. Theory and practice of reflective inquiry in the elementary classroom which includes observations, data collection, analysis, and narrative reporting. Prerequisite: Admission into Graduate School. 3 hours.

660. Reading in Teaching and Learning. This introductory course is designed to assist the student in locating, analyzing, and synthesizing current research in early childhood and elementary education. 3 hours.

670. Studying the Child in School. Analysis of child study in school; values and limitations of assessment.

671. Creative and Affective Experiences. Nature and nurture of creativity through creative learning experiences. Maintaining and preserving creative expression throughout curriculum.

672. Piaget and Perspectives in Learning. Piaget's theory of intellectual or cognitive development; applications to elementary and early childhood education. Prerequisite: Course in human growth and development.

674. Language Development. Developmental processes involved in language, relationship to education programs.

675. Teaching in the Urban School. Methods and materials; evaluation of school and school-related programs for equalizing educational opportunity.

676. Discipline and Social Education. Child growth and development as the basis for sound discipline in elementary school.

677. Readiness for Learning. Preschool and primary level language development and literacy development; assessment techniques.

678. Primary Math: A Constructivist Approach. New ways of teaching primary math based on Piaget's theory about how children acquire logico-mathematical knowledge.

680. National Board Portfolio. Course involves 18 Saturday seminars during the school year to prepare teachers for National Board Candidacy and to support candidates as they go Y^a \ through the certification process. Students enrolled in this course may be either precandidates or candidates for National Board Certification. Prerequisites: Admission to Graduate School and permission of candidate's advisor and course instructor. 6 hours.

690. Internship in P-3/3-6. Supervised teaching in an early childhood (P-3) and an elementary (3-6) program. The student gradually assumes responsibility for planning and teaching for the entire class (minimum of 12 weeks). The internship experience includes supervision in working with professional resource professionals and parents. Prerequisites: Approval of application for Internship in P-3/3-6. 9 hours.

691. Practicum in ECE/ELE. Prerequisite: Permission of instructor. 3 hours.

692. Individual Curriculum Projects: (Area Specified). Field projects in curriculum modifications and improvement of classroom practice. Prerequisite: Permission of instructor. 3 or 6 hours.

693. Independent Study. Prerequisite: Permission of instructor. 1-3 hours.

694. Field Study. Prerequisite: Permission of instructor. 1, 2, 3, or 6 hours.

695. Practicum Supervision in ECE/ELE. Prerequisite: Permission of instructor or advisor. 2 hours.

696. Internship Seminar. Prerequisite: Concurrent enrollment in EEC 690. 2 hours.

698. Independent Nonthesis Research. Prerequisite: Permission of instructor.

699. Thesis Research. Prerequisites: Admission to candidacy and permission of instructor. 6 or 9 hours.

701. Advanced Seminar in Language Development. Relationship of thinking and knowing to language development; strategies for analysis. Prerequisites: EEC 674 or equivalent and master's degree.

702. Administration and Supervision of Programs for Young Children. Evaluation, decision making, supportive services, staff development, community interaction strategies. Prerequisite: Master's degree.

710. Research. Prerequisite: Permission of instructor. 1-3 hours.

English as a Second Language (EESL)

610. Second Language Acquisition. 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. 3 hours.

613. Teaching ESL in a Multicultural Society. The course is designed to introduce students to the goals, principles, and practices of multicultural education and to sensitize students to cultural pluralism in the United States. 3 hours.

615. Grammar for ESL Teachers. This course is a critical study of aspects of Modern English grammar 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. 3 hours.

617. Teaching English in a Global Context. 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. 3 hours.

620. Special Topics in ESL. Overview of institutional structures that support new language learners, curriculum and teaching accommodations supported by second language acquisition theory, support networks, and legal issues. (Recent topics: K-12 Equal Access) Prerequisite: EESL 610. 3 hours.

625. Phonology for ESL teachers. This learner-centered course is an introduction to phonology and its application to the teaching of English as 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 English language learners (ELLs) from different first languages, and identify instructional strategies for assisting ELLs to perceive and produce challenging English sounds. 3 hours.

627. Teaching Adult Language Learners. This course 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. 3 hours.

630. Methods and Materials of Teaching ESL. This course examines traditional and current approaches to teaching English to speakers of other languages and curriculum materials, texts, and other resources. Prerequisite: EESL 610. 3 hours.

637. Methods for Teaching English as an International Language. This course 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. 3 hours.

640. Teaching ESL through Reading and Writing. 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. Prerequisite: EESL 610. 3 hours.

647. Instruction and Assessment: Reading and Writing. This course 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. Prerequisite: EESL 610. 3 hours.

650. Strategies for Teaching Math and Science to ELLs. This course 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. 3 hours.

657. Instruction and Assessment: Listening and Speaking. This course 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. Prerequisite: EESL 610. 3 hours.

687. Practicum Seminar in Adult English Language Teaching. This inquiry-focused course guides emerging teachers in experiencing the differentiated facets of working in adult ESL and EFL environments. Students explore issues related to 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.
Prerequisite: EESL 610. 3 hours.

689. Internship Seminar in ESL. This course provides an opportunity to explore in-depth effective ways to deliver instruction during the internship experience. It must be taken concurrently with EESL 690 (9). Approval of internship application. 1 hour.

690. Internship in ESL, N-12. This course 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. Prerequisite: Approval of internship application. 3, 6, or 9 hours

697. ESL Practicum: Adult ELLs. This standards-based course offers practical application of the knowledge and skills learned in other courses for teaching ESL to adult language learners. After doing structured observations of professional ESL educators and participating in the corresponding debriefings, novice teachers engage in the full scope of ESL teaching activities. They plan and deliver lessons, evaluate learners and their language development, and conduct managerial tasks and other appropriate duties. Prerequisite: Approval of practicum application. 3 hours.

Foreign Language (EFL)

585. Teaching Strategies for Foreign Language, N-12. Approaches and methods of teaching and testing foreign language. Selection and use of audiovisual equipment and materials. Includes structured school observations. 6 hours.

598. Student Teaching in Foreign Languages, N-12. Supervised teaching in foreign languages (N-12). Prerequisite: Approval of application for student teaching. 9 hours.

691. N-12 Foreign Language Internship. Supervised foreign language teaching in elementary and secondary schools. Prerequisite: Approval of application for internship. 9 hours.

High School (EHS)

556. Classroom Management in the Secondary Schools. 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.

558. Science, Technology, and Society: A Primer for Education Majors. (Also EHS 458). 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.

565. Secondary School Curriculum: Mathematics. Preparation to teach secondary school mathematics: making informed decisions about curricula, learners, and methodology in mathematics. Acquainting students with current state and national reforms in mathematics education. Problem solving, computers and calculators, and manipulatives in teaching mathematics. Developmental levels and individual differences of learners. Includes field experiences. Prerequisite: Admission to 5th-Year Program.

566. Secondary School Curriculum: Language Arts/English. A study of and practicum in the teaching of Language Arts and English in the secondary school; includes field experiences. Prerequisite: Admission to 5th-Year Program.

567. **Secondary School Curriculum: Science.** Teaching methods and curricula in secondary science programs. Includes field experiences. Prerequisite: Admission to 5th-Year Program.

568. **Secondary School Curriculum: Social Studies.** Understanding curriculum design and implementation as it relates to Social Studies in grades 7-12. Required demonstration of abilities to make informed decisions concerning what strategies to use with what students and how best to evaluate the students' progress in achieving the defined goals of a lesson. Includes field experiences. Prerequisite: Admission to 5th-Year Program.

569. **Secondary School Curriculum: Foreign Language.** Approaches and methods of teaching and evaluating foreign language at all levels. Includes field experiences. Prerequisite: Admission to 5th-Year Program.

570. **Practicum in Secondary Education.** Prerequisite: Concurrent enrollment in EHS 565, 566, 567, or 568. 1 hour.

571. **Special Education, Accommodation and Modification Lab.** Problems and issues in special education and the regular classroom. Concurrent enrollment in EHS 565, 566, 567, or 568. 1 hour.

597. **Special Problems in Education.** Seminar for seniors and graduate students; individualized readings and research projects based on student's special interests. May be repeated for total of 6 hours. 1-3 hours.

599. **Field Studies in Selected Educational Settings.** 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. 1-3 hours.

600. **Secondary Education Curriculum and Methods I.** Introductory course in 5th-Year (nontraditional) Alternative Masters Program for high school education. Developing basic teaching skills and understanding of interdependence among all levels within school and community. Course requires 35 hours of field experiences beyond class meetings. 3 hours

611. **Advanced Special Methods for Teaching Foreign Languages.** Instructional objectives, classroom learning activities, utilization of differential pedagogical activities, improved use of source materials, and material sources.

612. **Teaching English, Grades 7-14.** Curriculum and instruction in English programs. Issues, materials, and methods. Field experiences required. Prerequisite: Undergraduate Language Arts methods.

614. **Teaching Social and Behavioral Sciences, Grades 7-14.** Advanced course in methods and materials of teaching social and behavioral sciences in high school. General philosophy and purpose of social science disciplines. Field experiences required. Prerequisite: Undergraduate Social Science methods.

615. **Methods of Teaching Science, Grades 7-14.** Science teaching methods, classroom interaction, current research, process skills, science/society issues, and cognitive development of students. Field experiences required. Prerequisite: Undergraduate Science methods.

616. **Teaching Mathematics in Secondary School.** Philosophical and psychological principles applied to teaching math. Field experiences required. Prerequisite: Undergraduate Mathematics methods.

644. **Workshop in Teaching (Selected Topics).** Prerequisite: Permission of instructor.

645. Inquiry in the Social Studies. Inquiry and discovery techniques through use of simulation, games, role playing, and other group activities. Social studies projects, programs, and materials.

647. Secondary School Programs. Innovations, programs, and classroom practices; forces leading to recent trends.

650. Teaching the Emerging Adolescent. Curriculum, materials, and methods of instruction reflecting needs and characteristics of age group.

***651. Innovative Practices in Teaching in Secondary School (Area Studies).** Innovative practices in planning, instructing, and evaluating high school area studies. May be repeated if taken in different areas of study.

653. Current Issues in Secondary Education. Critical problems affecting teacher and curriculum in grades 6-14.

681. Special Topics in Education. Prerequisite: Permission of instructor. 1-6 hours.

690. Internship Seminar in Secondary Education. Prerequisite: Current enrollment in EHS 691. 1 hour.

691. Secondary School Internship. 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. 9 hours.

692. Field Studies in (Selected Educational Settings). 1-3 hours.

693. Advanced Field Experience.

695. Secondary School Internship for Speech Communication/Theater. 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. 6 hours.

697. Individual Readings in Education. May be repeated for total of 6 hours. Prerequisite: Permission of advisor and instructor. 1-3 hours.

698. Individual Research in Education. Prerequisite: Permission of instructor. 1-6 hours.

699. Thesis Research. Prerequisites: Admission to candidacy and permission of instructor. 6 or 9 hours.

710. Creative Teaching in Middle School. Advanced methods and materials for teaching grades 6-9.

720. Individual Research in Education. Prerequisites: Master's degree and permission of instructor.

Elementary (ELE)

620. Teaching Mathematics in the Elementary School. Issues and approaches in elementary mathematics; research and implementation for instruction.

621. Teaching Language Arts in the Elementary School. Issues and approaches in teaching elementary school language arts. Implications of research for instruction.

622. Teaching Social Studies in the Elementary School. 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.

623. Teaching Science in the Elementary School. Issues and approaches in elementary science. Implications of research for instruction.

624. The Elementary School. Organizational patterns in American elementary schools.

690. Practicum in Elementary Education. Prerequisite: Permission of instructor. 3 or 6 hours.

691. Internship in Elementary Education. 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.

721. Developing Effective Instruction in the Elementary School. Leadership role of senior teachers; analysis and enhancement of instructional programs; development of teaching staff. Prerequisite: Master's degree.

Middle School (EMS)

590. Middle School Internship. 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.

648. The Middle School. Curriculum and principles in middle school education. Development of middle school from early junior high school movement. Examination of middle school programs and activities.

649. Studies in Middle School Education I, II, III. Advanced workshops in various phases of middle school program. Phase I foundations (history, growth and development, philosophy); Phase II, curriculum; and Phase III, instruction. 1-3 hours.

698. Individual Research in Education. Prerequisite: Permission of instructor. 1-6 hours.

699. Thesis Research. Prerequisites: Admission to candidacy and permission of instructor. 6 or 9 hours.

710. Creative Teaching in Middle School. Advanced methods and materials for teaching grades 6-9.

720. Individual Research in Education. Prerequisites: Master's degree and permission of instructor.

Music Education (EMU)

502. Methods of Teaching Music N-6. Teaching music in the elementary school environment. Investigation of critical elements in the teaching and learning process as related to music in grades N-6. Prerequisites: Permission of instructor. 3 hours.

503. Methods of Teaching Music N-6 Laboratory. This lab will provide public school observation experiences for music education students enrolled in EMU 502. Prerequisites: Permission of instructor. 1 hour.

Educational Collaborative Teacher (ECT)

601. Special Education Portfolio Process (1 credit hour). This course is designed to provide 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.

650. Master's Seminar in Collaborative Teaching. This is 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.

651. Assessment Foundations in Special Education. This course is 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.

652. Characteristics of Children and Youths with High-Incidence Disabilities. This course 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.

653. Characteristics of Children and Youth with Low-Incidence Disabilities. This course 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.

654. Instructional and Assistive Technology. The emphasis of this course is on identifying, designing, and implementing instructional and assistive technology devices and services. Topics covered include technologies for students with high- and low-incidence disabilities, general assistive technology adaptations, augmentative and alternative communication technologies, IEPs that incorporate assistive technology services and devices, and interagency collaboration.

655. Elementary Methods for Students with High-Incidence Disabilities. This course provides students with knowledge and skill in instructional elementary content and methods. Issues related to designing, implementing, and evaluating instruction are presented. Additionally, the course provides critical information regarding the informal assessment of the teaching and learning processes. Specific methods for teaching reading, writing, mathematics, and study skills are covered.

656. Secondary Methods for Students with High-Incidence Disabilities. This course provides students with knowledge and skill in secondary content and methods, including transition from school to adulthood. Issues related to designing, implementing, and evaluating instruction are presented. Additionally, this course provides critical information regarding the informal assessment of the teaching and learning processes. Specific methods for teaching reading, writing, mathematics, and study skills are covered.

657. Methods for K-12 Students with Low-Incidence Disabilities. This course is designed to provide 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.

658. Advanced IEP Program Development. This course is designed to prepare 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.

659. Classroom Management. This course is designed to prepare 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.

660. Positive Behavior Supports. This course is designed to prepare 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.

661. Collaborative Partnerships. This course is intended to provide 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.

670. Practicum in Collaborative Teaching: Grades K-6. 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.

671. Practicum in Collaborative Teaching: Grades 6-12. 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.

672. Internship in Collaborative Teaching: Grades K-6. 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.

673. Internship in Collaborative Teaching: Grades 6-12. 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.

674. Advanced Readings and Research in Special Education. This course allows the student to pursue an in-depth investigation of current and timely issues in the field of special education. The instructor and student design an individual program of study during the course, based upon student needs and interests.

675. Survey of Attention Deficit Hyperactivity Disorder. This course is designed to provide teachers with the knowledge and skills necessary to implement an optimal teaching-learning environment for students with attention deficit hyperactivity disorder who represent diverse backgrounds in grades K-12.

676. Survey of Pervasive Developmental Disorders. This course presents 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.

677. Combating Child Abuse and Neglect. What constitutes child abuse? Perspectives will be offered from those affected by the tragedy of abuse, including victims, perpetrators, and the community at large:

the family, educational, medical, political and legal systems. Intervention and prevention strategies will be stressed.

679. Advanced Topics in Special Education Law. The purpose of this course is to provide 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.

Exceptional Children and Youth (ECY)

600. Introduction to Exceptional Learners. This course provides 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.

607. Counseling Parents of Exceptional Children. Dynamics of family life and parental and sibling reactions to handicapped individuals are addressed in this course. Prerequisite: ECY 600.

635. Early Development and Intervention in ECSE. An introductory course designed to provide an overview of the field of early intervention/early childhood special education (EI/ECSE) including the areas of historical and philosophical foundations of EI/ECSE, 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. Prerequisite: ECY 600. 3 hours.

636. Instructional Methods for Infants and Preschoolers with Disabilities. This course covers topics central to an adequate understanding of the conceptual and theoretical foundations underlying current educational curricula and methods for young children with disabilities and their families. Emphasis is on developmentally and individually appropriate practices that facilitate inclusive environments, as well as instructional strategies and technologies applied to instructional programs for young children with disabilities. Prerequisites: ECY 600 and 635. 3 hours.

637. Assessment of Young Children with Disabilities. This course addresses screening, assessment, program planning, and progress monitoring of young children with known or suspected disabilities. Both child-level and family-level assessment procedures are emphasized. Prerequisites: ECY 600 and 635. 3 hours.

638. Motor and Health Care Needs of Young Children with Disabilities. This course focuses on effective intervention/education for young children with physical and health impairments. Included in the course are conceptual and theoretical foundations underlying typical and atypical motor development and neurodevelopment. Students become proficient in motor skill facilitation, positioning, handling, feeding and health care management. Prerequisite: ECY 600. 3 hours.

661. Nature and Needs of the Visually Impaired. Historical perspectives; definition and characteristics of persons who are blind, visually impaired or deafblind; and educational considerations. Prerequisite: ECY 600.

662. Methods and Materials for Teaching the Visually Impaired. Principles and procedures for developing and implementing curricula for persons who are blind, visually impaired or deaf-blind. Prerequisites: ECY 600 and 661.

663. Orientation and Mobility. Principles and fundamentals in teaching spatial orientation; guided practicum of demonstration, adaptations necessary for persons who are blind, visually impaired or deaf-blind. Prerequisites: ECY 600, 661, and 662.

664. Braille. Principles of teaching reading, transcribing and writing Braille; tests, curricula and technology for Braille literacy. Prerequisites: ECY 600, 661, 663.

665. Anatomy of the Eye and Educational Implications of Visual Impairments. 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, 661, 663, and 664.

686. Practicum Visual Impairments. 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, 661, 662, 663, 664, and 665.

670. Practicum in ECSE. This course is designed to provide 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. Prerequisites: ECY 600, 635, 636, 637, 638, and Permission of Instructor. 3 hours.

672. Internship in ECSE. This course is designed to provide individualized field-based experiences that will meet the unique needs of ECSE candidates in the 5th year, nontraditional program. Students complete a 12-week 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. Prerequisites: ECY 600, 635, 636, 637, 638, and permission of instructor. 3 hours.

689. Advanced Topics in Special Education. This course is 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. Prerequisites: Permission of instructor, ECY 600. 1-6 hours.

Educational Foundations (EDF)

362. Foundations of Education I: Social, Historical, and Philosophical. An examination of the historical, social, philosophical, and comparative foundations of contemporary American education.

600. Urban Education. An examination of the historical, social, political, and economic factors that shape urban education in America.

601. The History of American Curricular Thought. An examination of American educational history using primary source documents to provide insight into the evolution of curriculum, policy, and educational practice.

602. Critical Social Issues in American Education. 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.

603. Philosophy and Education. An examination of various philosophical schools of thought, their application to the field of education, and their relevance to teaching, learning, and life.

604. Social Philosophies and Education. 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.

606. Social Movements in Education. An examination of how the Progressive education 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.

608. Theories of Knowledge. An examination of the various philosophical and cultural conceptions of knowledge, and how these inform and impact research, educational practice, and lived experience.

616. Comparative Education. An examination of the cultural forces influencing the structure and function of education in selected countries.

620. Culture and American Education: Race, Class, and Gender. An examination of the interlocking influences and socially constructed meanings and understanding of culture, race, ethnicity, class, and gender in American education.

624. Ethics and Education. 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 looks at the present moral context of schools and the problems and potentials of morally directed education.

697. Individual Readings in Foundations of Education. Prerequisite: Permission of instructor. 1-3 hours.

698. Individual Nonthesis Research in Foundations of Education. Prerequisite: Permission of instructor. 1-3 hours.

703. Selected Topics in Educational Philosophy. A topical advanced seminar in the philosophy of education.

706. Social Movements in Education. An examination of how the Progressive education 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.

708. Ethic Dilemmas in Educational Administration. Relationships among disciplines; application of concepts in individual disciplines to interdisciplinary problems. Prerequisite: Ed.S. or doctoral status.

710. Special Problems in the Foundations of Education. Individual readings. Prerequisites: Master's degree and permission of advisor and educational foundations faculty member.

711. Theories of Knowledge. An examination of the various philosophical and cultural conceptions of knowledge, and how these inform and impact research, educational practice, and lived experience.

713. History of Educational Philosophy. A historical sequenced survey of educational philosophy from the ancient Greeks, 18th century enlightenment thought, American pragmatism, and existentialism to postmodernism.

716. Comparative Education. Prerequisite: Ed.S. or doctoral status.

720. Culture and American Education: Race, Class, and Gender. An examination of the interlocking influences and socially constructed meanings and understanding of culture, race, ethnicity, class, and gender in American education.

724. Ethics and Education. 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 looks at the present moral context of schools and the problems and potentials of morally directed education.

797. Independent Study. Independent readings under the direction and supervision of EDF faculty. Doctoral status and the permission of the instructor are required.

Educational Technology (EDT)

610. Computer-Based Instructional Technologies. The first course in a series of three to familiarize classroom teachers with computer-based instruction technologies as they are applied to educational settings. Students are introduced to the historical and social context within which computer technologies are developed, as well as to the knowledge of computer hardware and software. Students will learn basic skills of microcomputer operation and applications.

620. Current and Emerging Instructional Technologies. The second course in a three-course series designed to provide inservice teachers with knowledge and skills in the use of computing and other new technologies. Prerequisite: EDT 610.

630. Curriculum Integration of Technology. This is the third course in a three-course series designed to provide inservice teachers with knowledge and skills in the use of computing and other new technologies. Prerequisites: EDT 610 and 620.

640. Instructional Design and Technology. This course introduces students to the principles of instructional design. Students will be familiarized with the process of instructional design and various design models. The role of technology in instructional design will also be covered.

641. Instructional Multimedia Authoring. This course teaches students skills for advanced multimedia development. The topics include digital audio and digital video production, CD and DVD creation, multimedia authoring tools, and streaming technologies.

650. Learning, Cognition, and Technology. This course examines the relationship between learning theories and technology. Students will explore the role of technology in supporting various aspects of the learning process and the use of learning theories as a guide to implement technology in educational contexts.

660. E-Learning. This course focuses on e-learning environments. Students will develop the knowledge and skill to design effective e-learning environments and explore conceptual frameworks, various e-learning tools, and strategies.

Education: Human Studies

- Counselor Education (Ed.S., M.A.Ed.)
- Educational Leadership (Ed.D., Ed.S., M.A.Ed.)
- Health Education (Ed.S., M.A.Ed.)
- Health Education/Health Promotion (Ph.D.)
- Physical Education (Ed.S., M.A.Ed.)

Faculty

Gypsy Abbott, Professor; Educational Psychology, Psychological Testing, Evaluation

Wajih Ahmad, Assistant Professor; Health Education - Epidemiology

Michael Brooks, Associate Professor, Counselor Education. Counseling Theories, Social and Cultural Diversity, Career Counseling, Counseling Theories, Internship.

Loucrecia Collins, Associate Professor (Leadership); Curriculum, Conflict Resolution, Urban Education, Diversity

Retta Evans, Associate Professor; Health Education - Youth Physical Activity and Nutrition, Body Image and Eating Disorders, Distance Education

Brian F. Geiger, Professor; Health Promotion Models, Comprehensive School Health, Technology, Community Education

Donna J. Hester, Associate Professor; Motor Development, Physical Education Pedagogy,

Gary R. Hunter, Professor; Exercise Physiology, Sport Conditioning, Body Composition and Energy Metabolism

Glenda Isenhour, Assistant Professor: Clinical Coordinator; Group Counseling, Introduction to Community Counseling, Professional Orientation, Assessment.

Maxie P. Kohler, Associate Professor; Personality Theory, Human Development, Educational Psychology, Psychological Testing, Literacy

David M. Macrina, Professor; Health Promotion, Community Health, Planning and Administration

Gary B. Peters, Associate Professor (Leadership); Organizational Theory

Cynthia J. Petri, Associate Professor; Health Behavior, HIV Education and Prevention, Technology, Theory

Jane Roy, Associate Professor, Exercise Physiology

Kristi Sayers Menear, Associate Professor, Physical Education Pedagogy, Adapted Physical Education

Solange Ribeiro, Assistant Professor, Director of Counselor Education Community Clinic

Patricia M. Sheets, Sign Language, Supervision, College Teaching

Melanie Shores, Assistant Professor; Measurement, Math Education, Education of Girls

Sandra K. Sims, Assistant Professor; Physical Education Pedagogy, Athletic Coaching

Scott W. Snyder, Associate Professor; Child Development, Measurement, Early Childhood Special Education, Program Evaluation

Jacqueline Swank, Assistant Professor, Counselor Education Clinical Coordinator, Play Therapy, Assessment

Laura Talbott, Assistant Professor; Health Education - Alcohol and Other Drugs, College Health

Lawrence Tyson, Associate Professor; School counseling, Group Counseling, Adventure-based Counseling.

Program Contact Information:

Program	Coordinator	Room	Phone Number
Counselor Education	<u>Dr. Larry Tyson</u>	152	(205) 975-2491
Educational Leadership	<u>Dr. Linda Searby</u>	213	(205) 934-4892
Health Education	<u>Dr. Retta Evans</u>	259	(205) 996-2701
Physical Education	<u>Dr. Donna Hester</u>	224	(205) 934-8336
Research	<u>Dr. Maxie Kohler</u>	204	(205) 934-3701

Counselor Education

Overview:

The program in Counselor Education at the University of Alabama at Birmingham prepares community, school, and rehabilitation counselors at the Master's and Educational Specialist levels. At the master's level, students acquire core knowledge and clinical skills which enable them to enter the profession of counseling. Graduates in the Educational Specialist program develop advanced skills in clinical work, and supervision. We strive to create a rigorous scholarly and supportive atmosphere for students to develop intellectually with a sense of social consciousness and self-awareness.

All counseling concentrations (community/agency and school) are designed to meet the course-work and field experiences requirements for professional licensure in the State of Alabama. The School and Community/Agency Concentrations are accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP). The school counseling concentration meets the course work and field experiences required by the Alabama State Department of Education for certification.

Admission Process

Consideration for admission to graduate study in counseling will occur each term. The completed application packet must be received by the Counselor Education Program from the Graduate School by the dates shown:

Term	Deadline
Fall	July 1
Spring	October 1
Summer	April 1

Admission to graduate study in counseling is initiated through the Graduate School and all required materials are to be submitted per specified instructions delineated by the Graduate School.

Each applicant seeking admission to a counseling program concentration must include with the other required materials, a typewritten statement of professional purpose that reflects the applicant's background, development, pertinent work-related experience, professional career objectives and specified ways that completion of this program will contribute to his/her goal for becoming a professional counselor.

Standardized Test Scores and GPA Requirements

GPA 2.75 or better

GRE 850 (combined score of verbal and quantitative) or,

MAT 35

Applicants who do not meet these standards may be considered for admission if the faculty determines the candidate brings something unique to the learning community. If your Graduate Record Exam or Millers Analogy Test scores do not meet our minimum requirement and/or your undergraduate grade point average does not meet our minimum requirement, you will need to submit a "Statement of Purpose" which explains and identifies exceptional qualities you posses which would allow you to be successful in this program. This new "Statement of Purpose" will be used to determine if an individual will be granted an interview as part of the application process.

The application packet is reviewed by the Counseling faculty. Applicants deemed to have acceptable scores, strong references, appropriate statement of purposes, and grades will be contacted for a personal interview with the Admissions Committee. Applicants should not infer they have been admitted into the program if granted an admissions interview. Selection will be made by the counseling faculty after reviewing the applicant's credentials in their entirety, and some candidates meeting minimum requirements may not be admitted. Candidates participating in the interview may be given one of three decisions: a) admit, b) admit with contingencies, or c) denied. Students are notified of their admission status following the interview.

Non-Degree Seeking Students

Potential students may take classes prior to admission to the Counselor Education Program as "non-degree seeking" students. However, non-degree seeking students are limited to 12 hours of coursework. 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 faculty member prior to enrolling in elective courses as choices made could impact on future clinical placements. Non-degree seeking students are not permitted to take "core" counseling courses prior to admission. 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.

Program Outcomes

Students in the program are required to meet specific outcomes for the program. These outcomes involve knowledge, skills, and abilities. Outcomes are met when students pass critical "high stakes" assessments in the program. Failure to achieve the required outcomes will result in termination from the program.

Evaluation of Candidates

There are 7 Checkpoints in the assessment system for counseling candidates: Admissions, Course-based Assessments, Comprehensive Exams, Practicum, Internship, and Eligibility for

Graduation/Certification. 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

Counselor Education 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.

Clinical Experience: Master's Level

Prerequisites for the clinical experience include successful completion of required coursework, meeting the required outcomes and competencies in Areas I and II, and successful completion of comprehensive exams. In addition, all students will be required to undergo a **background check** and present a "cleared" status prior to enrolling in the clinical phase of the program. 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. 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. If a student fails to pass any part of the clinical experience, he or she will not be allowed to continue in the program. Taking the clinical experience over will not be an option.

Concentrations: Master's Level

Community Agency Counseling

The Master of Arts in Counseling with a concentration in Community Agency 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 2 years to complete. For most students, it takes approximately 2.5 years or 6 terms to complete the program.

COURSE OF STUDY

(49 Semester Hours)

Area I: Pre-Candidacy Requirements

(28 semester hours)

EPR 590	Research and Program Evaluation in Counseling
EPR 614	Human Growth and Development
ECG 612	Professional Orientation
ECG 621	Theories of Individual Counseling
ECG 624	Assessment: Individual and Group (<u>Prerequisites:</u> EPR 590)

ECG 626	Group Counseling: Process & Procedures (Prerequisites: ECG 621 & ECG 638)
ECG 628	Social and Cultural Diversity
ECG 630	Career Development: Vocational and Life Planning
ECG 638	Practicum I: Clinical Skills and Techniques (Prerequisite: ECG 621)

Comprehensive Exam

The Counselor Preparation Comprehensive Exam will be given upon 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 will be dismissed from the program.

AREA II: Pre-Candidacy Requirements

(12 semester hours)

ECG 600	Introduction to Community Counseling
ECG 650	Diagnosis and Treatment of Mental Disorders
ECG	Approved Elective
ECG	Approved Elective

Admission to Candidacy—Completion of Areas I and II; passing the comprehensive examination, completion of eight counseling sessions, recommendation of faculty and a cleared background check.

AREA III: Clinical Requirements

(9 semester hours)

ECG 695	Practicum II: Supervised Field Experience (3 semester hours) (Prerequisites: Areas I & II, Comprehensive Exams, and recommendation of the faculty) Practicum is 100 hours minimum with 40 hours of direct client contact
ECG 697	Counseling Internship (6 hours-2 semesters) (Prerequisite: ECG695) Internship is 600 hours with 240 hours of direct client contact

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 49 semester hours of prescribed coursework to meet the academic and field experience requirements for the SDE Class A Professional Certificate in school counseling.

Admissions: In addition to the admissions requirements for the Counselor Education Program, candidates seeking admission to the school counseling concentration. The individual must possess a minimum of a 2.5 undergraduate grade point average. Before the school counseling student can receive certification, the school counseling student must satisfactorily obtain a passing score on the following assessments: Alabama Test of Basic Skills, the Praxis II Test in School Counseling, the National Counselor Exam.

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.

COURSE OF STUDY

(49 Semester hours)

Area I: Pre-Candidacy Requirements

(28 semester hours)

EPR 590	Research and Program Evaluation in Counseling
EPR 614	Human Growth and Development
ECG 612	Professional Orientation
ECG 621	Theories of Individual Counseling
ECG 624	Assessment: Individual and Group (<u>Prerequisites:</u> EPR 590)
ECG 626	Group Counseling: Process & Procedures (<u>Prerequisites:</u> ECG 621 & ECG 638)
ECG 628	Social and Cultural Diversity
ECG 630	Career Development: Vocational and Life Planning
ECG 638	Practicum I: Clinical Skills and Techniques (Prerequisite: ECG 621)

Comprehensive Exam

A National Comprehensive Examination will be given upon 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 will be dismissed from the program.

AREA II: Pre-Candidacy Requirements

(12 semester hours)

ECG 620	Foundations of School Counseling
ECG 623	Comprehensive Counseling and Guidance: Middle & High School
ECG 627	Comprehensive Counseling and Guidance: Elementary School
ECG	Approved Elective

Admission to Candidacy—Completion of Areas I and II; passing the comprehensive exam and recommendation of faculty, and a cleared background check.

AREA III: Clinical Requirements

(9 semester hours)

ECG 695	Practicum II: Supervised Field Experience (3 semester hours) (Prerequisites: Areas I & II, Comprehensive Exams, and recommendation of the faculty) Practicum 100 hours; 40 direct hours.
ECG 697	Counseling Internship (6 hours-2semester hours) (Prerequisite: ECG695) Internship 600 hours; 240 direct hours

Educational Specialist

Note: The Educational Specialist Degree in both Community/Agency and School Counseling is being revised. At the time of this submission, final changes have not yet been made. Those interested in this degree are urged to contact Dr. Lawrence Tyson, Program Coordinator of the Counselor Education Program for information before applying to this degree program.

The Educational Specialist (Ed.S.) degree is designed to assist counselors who wish to continue their professional development in working toward licensure, training for supervision, obtain AA certification, or who plan to enter doctoral programs in counselor education. There are two Ed.S. tracks in the counseling program: Community Agency and School.

Prerequisites:

Prerequisites for admission to the program include: a) a Master's degree in counseling, including courses in the 8 CACREP areas; a 100 hour practicum; a 600 hour internship, and b) evidence of either previous or current employment as a professional counselor.

Persons wishing to apply to the Ed.S. School Counseling Track must possess an "A" certificate and have a Master's degree in Counseling which meets the State Department of Education's criteria.

Admissions: Persons seeking admission to the Ed.S program in counseling must apply to the Graduate School and follow the protocol for admission application. When all of the required documents are in the application file, the file will be sent to the program faculty for review. A Graduate GPA level of 3.0 and a 50 on the MAT or 1000 (combined score, verbal and quantitative) on the GRE are required. If the standardized test score is less than 5 years old, the applicant may petition the department chair for a waiver. Upon receiving the request, the Chair will review the transcripts and old test scores and a decision will be rendered as to whether the test scores will be waived or not. If the test scores are over 10 years old, the GRE or Mat will not be waived unless the applicant has a terminal degree.

The completed application must be received in the Counseling Program by the dates indicated below:

Term	Deadline
Fall	July 1

Spring November 1

Summer April 1

Once the materials are reviewed by the Admissions Committee, a decision will be made to invite the applicant in for an admissions interview or not. An admission decision will be made following the interview.

[Ed.S Program Outcomes:](#)

There are 3 Outcome areas: Supervision, College Teaching in Counselor Education, and Research. "High Stakes" assessments are utilized to determine if outcomes have been achieved.

[Ed.S. Comprehensive Examination](#)

Upon completion of the requisite course work, students are required to pass a written and oral comprehensive examination, conducted by Counselor Education Faculty, to complete the Ed.S. degree.

[Ed.S. Community/Agency Track](#)

(33 Semester Hours)

Note: The Educational Specialist Degree in both Community/Agency and School Counseling is being revised. At the time of this submission, final changes have not yet been made. Those interested in this degree are urged to contact Dr. Lawrence Tyson, Program Coordinator of the Counselor Education Program for information before applying to this degree program.

Prerequisites:

Prerequisites for admission to the program include: a) a **Master's degree in counseling**, including courses in a) the 8 CACREP areas, a 100 hour practicum, and a 600 hour internship and, b) evidence of either previous or current employment as a professional counselor.

Students admitted to the Ed.S program are appointed an advisor upon admission to the program. Students shall receive a letter from The **Graduate School** detailing this information once they have been admitted into the program. Students are required to meet with their advisor and discuss their professional plans before declaring a track of study and before practicum and internship. All students will complete Area I, Core Area of Study. In Area II, students and their advisor will design a plan of study based on the professional needs of the student.

[Program Outline](#)

AREA I	Counseling Core Area of Study (21 Semester Hours)
EPR 609 EPR 596	Statistical Methods and Research in Education: or Introduction to Qualitative Methods
EPR 692	Introduction to Educational Research Design
ECG 700	College Teaching in Counselor Education
ECG 704	Seminar on Current Issues in Counseling Supervision
ECG 795	Ed.S. Practicum in Supervision
ECG 797	Ed.S. Internship in Supervision

AREA II Clinical/Research Emphasis (12 Semester Hours)

Clinical Focus: This focus of study is designed to enhance one's clinical practice or research interest. Students may select 12 hours from counseling coursework from the list of course offerings which meet their unique needs and/or interests. There may be options of courses outside the Counselor Education Program such as Gerontology, Health Education Promotion, and Sociology.

Research Focus:

Students interested in research and/or interested in pursuing a doctorate should consider taking these research courses as part of their 12 hours.

EPR 696 Qualitative Research: Inquiry and Analysis

EPR 710 Computer Applications and Advanced Statistical Methods

[Ed.S. School Counseling Track](#)[**\(33 Semester Hours\)**](#)

The Educational Specialist (Ed.S.) degree in this field requires a minimum of **33** semester hours of prescribed coursework beyond the Master of Arts in Education degree and successful completion of the comprehensive exam, which includes a presentation of a research proposal. In addition, all Ed. S. Program Outcomes must be met.

[**Program Outline**](#)

Note: The Educational Specialist Degree in both Community/Agency and School Counseling is being revised. At the time of this submission, final changes have not yet been made. Those interested in this degree are urged to contact Dr. Lawrence Tyson, Program Coordinator of the Counselor Education Program for information before applying to this degree program.

[**Course Descriptions**](#)

Unless otherwise noted, all courses are for 3 semester hours of credit. Counseling and Guidance (ECG)

522. Strategies for Attitude Development. Dynamics of both negative and positive attitude presented., including. methods for improving communications, developing empathy. Techniques for determining personal strengths, setting goals, managing time, developing strong positive attitudes and self-images are highlighted.

523. Strategies for Effective Interviewing. This course introduces students to microskills needed to develop effective communication in a variety of settings.

524. Conflict Management. This course examines the scope of conflict management in the inner self, the family, school/workplace and the community.

570, 670. Crisis Intervention Techniques. Overview of crisis counseling. Theory and practical application of crisis intervention. This course examines traumatic stress and how it affects the individual. Coping interventions; stress management, post-traumatic stress syndrome; violence in the workplace, disaster response; critical incidence stress management; and debriefing techniques are examined.

574, 674. Seminar on Death, Dying, and Bereavement. Provides general knowledge of death, dying, and bereavement issues faced in today's society.

578. Counseling the African American Client. Dynamics of working with African American clients in counseling settings.

600. Introduction to Community Counseling. Individuals entering the counseling profession to work with community agencies and organizations are facing a paradigm shift in the way many traditional counselors think and act. This course addresses the specific needs of students preparing for contemporary counseling careers in community/agency 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 community counseling.

612. Professional Orientation. Emphasis on understanding of professional roles and responsibilities; ethical and legal issues; historical perspectives; preparation standards; credentialing; trends and issues in the counseling profession. Prerequisite: Admission to the Counselor Education Program.

613. Foundations of Substance Abuse. Surveys the field of substance use, abuse, and dependency, providing an overview of macro and micro issues and using various models of addictions. Topics examined include: historic and current theories of addiction and treatment, the substances of addiction, their effects, their signs and symptoms, addiction and special populations, direct practice with individuals, families, groups, community level intervention and public policy issues, and outcome research. Participants will be exposed to community based support groups and treatment professionals.

619. Special Issues for School Counselors. Exposure to a variety of critical incidents that cover a variety of experiences 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.

620. Foundations of School Counseling. Social, psychological, economic, and philosophic trends leading to development of guidance programs in American schools are explored. Organization and administration of guidance services are emphasized.

621. Theories of Individual of Counseling. Students will be provided an introduction to counseling theories. Students will explore beliefs about different approaches and methods of counseling. Prerequisite: Admission to the Counselor Education Program.

622. Group/Classroom Guidance in Schools

The process and practice of group and classroom guidance with children k-12 will be explored.

623. Comprehensive Counseling and Guidance in Middle and High School. The purpose of this course will be to develop an understanding of the nature of middle/high school children as related to their guidance and counseling needs. The student will be able to understand the role and function of the middle/high school counselor and understand the essential features of a comprehensive, developmental, guidance program at the middle/high school level. Additionally, the student will be able to understand the elements of a pre-college counseling and guidance program and understand the ethical and legal issues that directly relate to middle/high school counseling and guidance programs.

624. Assessment. Overview of instrument review and selection, measurement methods, administration and interpretation. Emphasis on common assessment instruments used in schools and public agencies. The use of assessment data in program outcome evaluation will also be explored. Prerequisites: Admission to the Counselor Education Program; ECG 607/608; ECG 624.

626. Group Counseling: Process/Procedures. 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.

627. Comprehensive Counseling and Guidance: Elementary School. Guidance services and activities appropriate for preschool and elementary grades; facilitating intellectual, psychological, and social development during early school years.

628. Social and Cultural Diversity. Survey of issues and principles for relating professionally to individuals from diverse backgrounds and lifestyles. Includes sensitivity to differences in values, beliefs, attitudes, and culture. Prerequisite: Admission to the Counselor Education Program.

629. Counseling Families in a Multicultural Society. The intent of this course is to facilitate an understanding of family dynamics and cultural sensitivity. This course provides opportunities for students to explore, understand, and appreciate families from culturally diverse backgrounds. Contents include family and multicultural theories/concepts related to structure, dynamics, growth and development, assessment, counseling interventions, and research.

630. Career Development: Vocational and Life Planning. This course will introduce students to the concepts of career development. Counselors-in-training will learn career theories and how to apply career theory to practice. Instruction will include career assessment, life planning principles, sources of career information, labor market information, job search strategies, and examination of workplace issues. Additionally the on-line version of this course will include computer applications associated with career development.

637. Adlerian Family Counseling. Helping parents understand children. Parent-child relationship promoting responsibility, self-reliance, cooperation, mutual respect, and self-esteem.

638. Practicum I: Clinical Skills and TechniquesSkills and techniques for establishing effective interpersonal relationships. Prerequisite: ECG 621.

648. Principles, Practices, and Innovations in Rehabilitation Counseling. This course extensively covers a wide variety of best practices in the rehabilitation case management arena. Of special emphasis is the Code of Ethics for rehabilitation service providers in the public and private sector based on knowledge of both the CRC and the NBCC Code of Ethics. Also covered are discussions of various laws and regulations including ADA, case law, Workers Comp law, the Rehabilitation Act and its amendments. Also covered are private insurance, HMO, Medicare, Medicaid and Social Security issues as pertaining to both medical services and assistive technology.

649: Assessment, Case Management, & Job Development in Rehabilitation Counseling. A review and analysis of current rehabilitation assessment instruments and procedures. Exposure to case management philosophies and procedures common in public and private rehabilitation practice. Hands-on experience with computerized case management software. Strategies associated with career development, job readiness, and job development with persons with disability. In depth view and exposure to rehabilitation technology and engineering. Discussion of job placement strategies and work disincentives.

650. Diagnosis of Psychological Disorders. This course is designed to give the students an overview and general understanding of the etiology, assessment, diagnosis, and treatment of the various mental disorders. Specifically, the course will familiarize students with the different psychological disorders in the DSM-IV and the psychological and psychopharmacological treatment of these disorders. Prerequisites: Admission to the Counselor Education Program.

660. Dynamics of Child Sexual Abuse. Critical concerns and issues, effective techniques and practices for dealing with survivors of child sexual abuse.

661. Play Therapy I. Designed to provide students with instruction in the history and theories of play therapy and experiential knowledge in applying play therapy strategies with children. Meets the Association for Play therapy requirements for instruction in history and theories of play therapy and provides 67.5 Continuing Education hours for the Association (Prerequisite: ECG 621 & 638).

662. Play Therapy II. A course designed to provide students with instruction in play therapy with special populations and specialized therapeutic methods including sandplay/sandtray, group play therapy, play therapy in home and school, family play therapy and filial family therapy. Provides 67.5 CEU hours for the Registered Play Therapist credential (ECG 661).

663. Challenge Course Fundamentals I. Improvement of self-concept and social 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, and conflict resolution and physical fitness.

664. Challenge Course Fundamentals II. This course continues introducing to the background, philosophy, ethical issues, risk management required for 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 course 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.

665. Adventure Processing and Facilitation. This course provides the skills necessary for facilitating a variety of groups-educational, recreational, corporate-indoor experience programs. The curriculum includes the Experiential Learning Cycle, stages of group development, leading group discussion, active listening, frontloading, debriefing, 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 programs to various groups. How to facilitate and lead group discussions with diverse groups will be emphasized.

666. Organization and Administration of Adventure Education. Students will synthesize their experience in adventure leadership, instruction and programming to explore the details of managing an adventure program. Topics include risk 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.

691. Seminar: Special Topics in the Helping Professions. Emerging trends, techniques, and issues. Topics vary from semester-to-semester. Examples of topics include Spirituality in Counseling, Clinical Documentation, Marriage and Family, Sexual Addiction, Personality Types, Pharmacology in Counseling, Gender Issues, etc.

692. Independent Readings in Counselor Education.. A prospectus of the proposed reading must be submitted in advance for faculty approval before for the course. Prerequisite: Permission of advisor and instructor.

695. Practicum II: Supervised Field Experience. 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 coursework 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, agency, or rehabilitation setting for a **minimum of 100** clock hours, **40** of the hours must be in **direct service** with clients. Prerequisite: Completion of Areas I and II, and comprehensive exams; permission of clinical coordinator.

697. Counseling Internship. 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. 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, agency, or rehabilitation setting for a **total** of **600** clock hours, **240** of the hours must be in **direct service** with clients. Prerequisite: ECG 695.

698. Individual Non-thesis Research in Counseling and Guidance. A research proposal is presented and defended according to formal research guidelines on a topic of interest to the student and in the area of expertise of the cooperating faculty member.

700. College Teaching. This experiential course will prepare advanced students with the knowledge and skills needed to teach a course in counseling at a college level. Students will co-teach a class with a mentoring faculty member. Prerequisite: Admission to the Ed.S. program

704. Seminar on Current Issues in Counseling Supervision. This course is intended to provide supervisors-in-training with an overview of supervision theories, models, interventions, and issues relative to counseling supervision and the supervision process.

726. Ed.S. Group Supervision. This course provides an opportunity for the development of an advanced level of understanding of group dynamics and an opportunity to enhance group leadership skills. Prerequisite: Admission to the Ed.S. program.

795. Ed.S. Practicum. Experiential course in which Ed.S. students are assigned to assist in supervision of master's level practicum groups in the Counseling Education program. Applied knowledge of counseling supervision theories. Prerequisite: ECG 704.

797. Ed.S Internship. This is an experiential course in which Ed.S. students are assigned to provide supervision under faculty direction to a section of the master's level internship group. Applied knowledge of supervision theories and practices are highlighted. Prerequisites: ECG 704 and 795.

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.

The programs leading to the Doctor of Education (Ed.D.) degree in educational leadership is offered at UAB by the joint faculties of UAB and the University of Alabama (Tuscaloosa). Admission is highly selective and is open only once annually; application packets must be complete in the Graduate School office by **April 15** for the program of study beginning the following Fall Term.

Additional Information

For detailed information, contact Dr. Linda Searby, Program Director, Department of Leadership, UAB School of Education, EB 213, 1530 3rd Avenue South, Birmingham, AL 35294-1250.

Telephone 205-934-4892

E-mail lsearby@uab.edu

Web www.uab.edu/education/

Course Descriptions

Unless otherwise noted, all courses are for 3 semester hours of credit. Course numbers preceded by an asterisk indicate courses that can be repeated for credit, with stated stipulations.

Educational Leadership (EDL)

EDL 601 Foundations of Instructional Leadership – 3 credit hours

The purpose of this course is to provide a strong foundation in strengthening knowledge and skills in instructional leadership. As a foundation course, Through a combination of course assignments and accompanying field based experiences involving observing, participating and leading in a school setting, the student will be prepared to become an instructional leader who engages the school community in developing and maintaining a shared vision; plans effectively; uses critical thinking and problem-solving techniques; collects, analyzes, and interprets data; allocates resources; and evaluates results for the purpose of continuous school improvement.

EDL 602 Field Experiences in Foundations of Instructional Leadership – 1 credit hour

This course provides the student with practical, authentic leadership experiences related to EDL 601 Foundations of Instructional Leadership. These field experiences are conducted under the guidance of a trained mentor and UAB clinical field supervisor.

EDL 603 Data Driven Decision Making for Instructional Leadership

This course prepares the future school leader to effectively use and interpret data in all forms to effectively lead and monitor continuous school improvement, especially student achievement. The future leader will become conversant with technologies that enhance classroom instruction as well as assist in the management of the school. The future school administrator will have opportunities to lead in a school by conducting an action research project which addresses a student achievement issue and conducting a Needs Assessment for Technology Planning.

EDL 604 Field Experiences in Data Driven Decision Making for Instructional Leadership – 1 credit hour

This course provides the student with practical, authentic leadership experiences related to EDL 603 Data Driven Decision Making for Instructional Leadership. These field experiences are conducted under the guidance of a trained mentor and UAB clinical field supervisor.

EDL 605 Residency in Instructional Leadership – 6 credit hours

The purpose of the Residency in Instructional Leadership course is to give the future leader authentic experiences on a continuum of observing, participating, and leading in K-12 schools without the distraction of teaching responsibilities or other coursework requirements. This is achieved through a 10-consecutive day period in a K-12 school setting. The candidate earns 6 credit hours for the Residency. It must be the last course in the student's course of study in the Master's Degree in Instructional Leadership.

EDL 606 Supervision & Mentoring of Instructional Staff – 3 credit 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 includes supervising and evaluating teachers, mentoring new teachers, developing the ability to design and implement effective professional development for individual teachers and the entire staff, as well as learning how to facilitate teaming in the school that will impact student achievement. A final unit in the course will assist the future leader in seeking a mentor for him/herself.

EDL 607 Field Experiences in Supervision & Mentoring of Instructional Staff – 1 credit hour

This course provides the student with practical, authentic leadership experiences related to EDL 606 Supervision and Mentoring of Instructional Staff. These field experiences are conducted under the guidance of a trained mentor and UAB clinical field supervisor.

EDL 608 Organizational & Financial Management for Instructional Leaders – 3 credit hours

This course is designed to prepare instructional leaders with the knowledge and ability to apply finance 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 explore guidelines for creating safe school facilities.

EDL 609 Field Experiences in Organizational & Financial Management for Instructional Leaders – 1 credit hour

This course provides the student with practical, authentic leadership experiences related to EDL 608 Organizational & Financial Management for Instructional Leaders. These field experiences are conducted under the guidance of a trained mentor and UAB clinical field supervisor.

EDL 610 Legal and Ethical Foundations of School Leadership – 3 credit hours

The purpose of the course is twofold: 1) Candidates will gain a fundamental knowledge of ethical principles based on the Alabama Educator Code of Ethics and 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.

EDL 611 Field Experiences in Legal and Ethical Foundations of School Leadership – 1 credit hour

This course provides the student with practical, authentic leadership experiences related to EDL 610 Legal and Ethical Foundations of School Leadership. These field experiences are conducted under the guidance of a trained mentor and UAB clinical field supervisor.

EDL 612 Instructional Leadership for Diverse Populations - 3 credit hours

The purpose of this course is to prepare leaders who will provide instructional leadership for all students. Issues related to equity, diversity and their implications for educational settings will be analyzed. Candidates will explore the construct of diversity as it relates to: race, gender, special needs populations, socio-economic status, culture, sexual orientation, and second language learners. Candidates will be challenged to examine best instructional leadership practices toward these critical issues and to develop sensitive and proactive responses to changing demographics. Candidates will assess the leadership capacities needed to ensure access, academic rigor and social equity for all members of the school community.

EDL 613 Field Experiences for Instructional Leadership for Diverse Populations – 1 credit hour.

This course provides the student with practical, authentic leadership experiences related to EDL 612 Instructional Leadership for Diverse Populations. These field experiences are conducted under the guidance of a trained mentor and UAB clinical field supervisor.

614. Planning for Change. Survey of selected theoretical and operational bases for decision making in problem identification and analysis, staff development, and assessment and evaluation of human and program effectiveness in grades N-12. Prerequisites: EDL 611, 612, and 613.

615. Nonthesis Research in Educational Leadership. Prerequisite: 12 hours in educational leadership.

617. Politics of Education. Education leaders learning to take action within the complex maze of political relations within schools, between school and their communities, and within levels of government. Prerequisite: Admission to master's program in educational leadership or approval by instructor.

618. Ethics and Leadership. An examination of ethical issues and dimensions of ethical decision making. Prerequisite: Admission to master's program in educational leadership or approval by instructor.

619. School-Based Problem Solving. An analysis and application of techniques for school-based problem solving. Prerequisite: Admission to master's program in educational leadership or approval by instructor.

620. Public School Organization and Administration .

621. The School Principalship. Changing role and responsibilities of school principal; organization, discipline, instructional supervision, and community relations.

622. Clinical Supervision for Administrators and Supervisors. Knowledge, skills, and competencies for assisting teachers in improvement of curriculum and instruction.

625. Education Management. An overview of education management techniques for the improvement of the education enterprise and student learning. Prerequisite: Admission to master's program in educational leadership or approval by instructor.

630. School and Community .

631. Education and the Political Environment. Educational policy making and governance as political process; political theory and structure.

635. Survey of School Law. Laws and court decisions affecting public education. Cases establishing mandates for public school practices.

637. Legal Liability and the Educator. Legal liability in administration and teaching. Cases pertaining to education.

640. Introduction to Community Education. Structure, purpose, and processes of community education and community schools.

641. Community Education for School Administrators.

642. Operation and Administration of the Community Education Program. Practical aspect.

643. Community Resources Workshop. Teaching-learning resources available in the local community.

660. Administration Leadership I . Practical applications in organizational management and leadership behavior.

685. Workshop in Administration and/or Supervision. Field workshop. 1-3 hours.

690. Internship in Educational Leadership. Field leadership experience; minimum of 300 clock hours of field experience in administration under direction of both field supervisor and university director. Prerequisite: Permission from director of internships. 1-6 hours.

691. Practicum in Educational Leadership. Field work on practical problem on project. Prerequisite: 9 hours in educational leadership at UAB. 3-6 hours.

692. Individual Readings in Educational Leadership. Prerequisite: Permission of instructor. 1, 3, 6 hours.

694. Seminar in Educational Leadership I . 1-3 hours.

695. Seminar in Community Education. 1-3 hours.

696. Practicum in Community Education. 3-6 hours.

* **698. Nonthesis Research in Education Leadership.** 1, 3, or 6 hours.

* **699. Thesis Research.** Prerequisites: Admission to candidacy and 9 hours in educational leadership.

An exploration of the relationship among concepts, generalizations, and theoretical models found in the behavioral and social sciences. The application of these to administrative practice in educational settings is addressed.

701. Organizational Leadership and Decision Making I. Knowledge and skills related to educational leadership.

702. Organizational Leadership and Decision Making II. Knowledge and skills related to educational leadership.

703. Theories and Practices for Supervision Leadership.

704. Education Law and Policy Development.

705. The Management of Educational Programs and Services.

706. Current Issues in Community Education.

707. International Aspects of Community Education. Comparative analysis of community education worldwide.

708. Administrative Leadership II. Concepts and skills applied to educational administration and supervision.

709. Theories of Educational Leadership. Concepts and theoretical bases for practice in educational administration and supervision.

710. Mentoring for Educational Leadership. Preparing educational practitioners to become effective mentors for aspiring future leaders.

712. School System Administration.

713. Leadership of Special Education Programs. Comprehensive study of organization and leadership of special education programs; role of special education administrator, processes and structures for delivery of services to exceptional students.

714. Advanced School Business Management.

715. Nonthesis Research in Educational Leadership. Individual research on significant problem or development in educational leadership; proposed research plan must be approved by faculty member supervising the research.

716. Workshop in Administration and/or Supervision. Field workshop. 1-3 hours.

717. Leading Change Through Action Research. The purpose of this course is to strengthen knowledge and skills in the areas of effective leadership and systemic organizational change. The background knowledge for leading change is the presentation of 12 realities about people and organizations, as outlined in J. Patterson's book *Coming Even Cleaner About Organizational Change*. Based on these realities, 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. 3 hours credit.

717L. Field Experience for Leading Change Through Action Research. 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. 1 hour credit.

718. Essential Skills for Organizational Leadership. 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. 3 hours credit.

718L. Field Experience for Essential Skills for Organizational Leadership. 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. 1 hour credit.

719. Mentoring & Coaching Skills for School Leaders. 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. 3 hours credit.

719L. Field Experience for Mentoring & Coaching Skills for School Leaders. 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. 1 hour credit.

720. Field Project in Educational Leadership. Field work on practical problems and projects in educational leadership; plan for actual project must be approved in advance by faculty member supervising the work. 1-6 hours.

721. Administration of Staff Personnel. Personnel administration in public education; practices, problems, and current developments.

722. Current Issues in Educational Leadership. Prerequisites: Graduate standing and permission of instructor.

723. Administration of Educational Programs and Services. Development, implementation, and evaluation of educational programs. Primarily for Ed.S. students continuing their preparation principalship.

724. Seminar in Educational Leadership II. 1-3 hours.

726. Advanced Clinical Supervision for Administrators and Supervisors. In-depth study of competence needed by administrators and supervisors providing leadership in improvement of instruction.

727. Leading the Adult Learning Community. 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. 3 hours credit.

727L. Field Experience for Leading the Adult Learning Community. 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. 1 hour credit.

728. Management of the Learning Organization. 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. 3 hours credit.

728L. Field Experience for Management of the Learning Organization. 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. 1 hour credit.

729. Advanced Research in Educational Leadership. Field or basic research. 1, 3, or 6 hours.

730. Advanced Focus on the Principalship. Advanced knowledge and skills related to school leadership.

731. Law, Ethics, and Policy for Educational Leaders. 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. 3 credit hours.

731L. Field Experience for Law, Ethics, and Policy for Educational Leaders. 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. 1 hour credit.

EDL 732. Leadership of Special Programs. 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. 3 credit hours.

EDL 732L. Field Experience for Leadership of Special Programs. 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. 1 hour credit.

746. Practicum in Instructional Leadership. Course required in the Ed.S. program for candidates who completed the Class A Administrative Certification before 2009, [before program redesign]. The course content consists of the Practicum activities chosen by the candidate from the menu of Critical Leadership Activities from the Practicum Handbook. The candidate will be required to have a mentor (the same one as for all coursework) and the mentor will assist the candidate in selecting meaningful leadership experiences. Candidates will conduct leadership activities at any time during the four semesters of the Ed.S. program. Where possible, candidates should acquire experiences in diverse settings. The experiences may be conducted at the elementary, middle school, high school, or central office level. 1 credit hour.

748. Current Issues and Problems in School Administration. Prerequisite: Admission to doctoral studies.

750. Issues and Problems in School Finance.

752. Advanced Educational Planning.

755. Advanced School System Administration. Duties and responsibilities of superintendent of schools. Prerequisite: Admission to doctoral studies.

756. Current Legal Problems in Alabama Education. Prerequisite: Admission to doctoral studies.

762. Futurism in Community Education. Predicting and planning; what others say about future; developing personal predictions. Prerequisite: Admission to doctoral studies.

770. Advanced Administrative Leadership.

772. Advanced Technology of Educational Planning. Quantitative techniques. Prerequisite: Admission to doctoral studies.

792. Directed Study in Educational Leadership. Prerequisites: Admission to doctoral studies and advance permission of instructor. 3 hours.

796. Individual Readings in School Law. Prerequisite: Admission to doctoral studies. 3-6 hours.

797. Doctoral Internship in Educational Leadership. Field leadership experience. Prerequisite: Admission to doctoral studies. 1-12 hours.

* **798. Nondissertation Research.** Prerequisite: Admission to doctoral studies. 1-12 hours.

* **799. Dissertation Research.** Prerequisites: Prerequisite: Admission to doctoral studies, admission to candidacy, and permission of faculty advisor. 1-12 hours.

University of Alabama (Tuscaloosa) Courses Offered at UAB in the Joint Doctoral Program in Educational Leadership

AEL 590. **Research Methods in Education.** Library familiarization, types of research, measurement, data collection, and basic statistical analysis.

AEL 602. **Advanced Educational Leadership.** Basic concepts, group interaction on selected presentation of assigned research.

AAP 634. **Legal Aspects of Personnel Administration.** Principles governing personnel management in public school systems.

AEL 650. **Organizational Theory.** 3 hours.

AEL 651. **Educational Planning II.** Processes, concepts, and tools

Health Education Overview of Our Programs

The Health Education program at the University of Alabama at Birmingham prepares professionals for a variety of careers in health education. At the *master's level*, students acquire advanced knowledge and skills which enable them to enter professions in community, worksite and agency settings (*MAEd, Community Health*) or school health education (*Alternative Masters Program (AMP) – Teacher Education*). Graduates in the *PhD program* develop advanced training to become leading researchers, clinicians and faculty in higher education. We 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.

Admission Process

Consideration for admission to graduate study in health education will occur each Fall and Spring term. The completed application packet must be received by the Health Education Program from the Graduate School by the dates shown:

Term	Deadline
Fall	April 30
Spring	October 30

Admission to graduate study in health education is initiated through the Graduate School and all required materials are to be submitted per specified instructions delineated by the Graduate School.

Each applicant seeking admission to a health education program (MAEd, AMP-TEP, PhD) must include with the other required materials, a typewritten statement of professional purpose that reflects the applicant's background, development, pertinent work-related experience, professional career objectives and specified ways that completion of this program will contribute to his/her goal for becoming a health education professional.

Standardized Test Scores and GPA Requirements

GPA 2.5 or better and
GRE 850 or better (combined score of verbal and quantitative) or MAT 40 or better

Applicants who do not meet these standards may be considered for admission if the faculty determines the candidate brings something unique to the learning community; however, applicants who have GPA's below 2.5; GRE scores below 850, or a MAT score of 35 or lower will not be considered.

Applications are reviewed by the health education faculty. Applicants deemed to have acceptable scores, strong references, appropriate statement of purposes, and grades will be contacted for an interview with the Admissions Committee. Applicants should not infer they have been admitted into the program if granted an admissions interview. Selection will be made by the faculty after reviewing the applicant's credentials in their entirety, and some candidates meeting minimum requirements may not be admitted. Candidates participating in the interview may be given one of two decisions: a) admit b) not admit. Students are notified of their admission status following the interview.

Non-Degree Seeking Students

Potential students may take classes prior to admission to the Health Education Program as "non-degree seeking" students. However, non-degree seeking students are limited to 12 hours of coursework. Non-degree seeking students may enroll in elective courses with the permission of the instructor. 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. 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

Dispositions

Health Education 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, they will be dismissed from the Health Education program and not allowed readmission.

Programs of Study

The MAEd masters program in community health is designed to prepare individuals for advanced health education careers in agency, schools, worksites, and allied health care settings. This program is aligned with the *National Commission for Health Education Credentialing* and prepares students to sit for the CHES/MCHES certification. 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 choose between thesis or non-thesis options and select elective course work in a related field or allied health area.

MAEd -Thesis Option Thesis required (33 hours course work required)

NOTE: No individual course grade below "C" will be accepted. Each course with a grade below "C" must be repeated.

MAJOR COURSES (18 hours)

- HE 610 Foundations of Health Education (pre or co requisites HE 223, HE 343)
- HE 631 Planning and Evaluating Health Education/Promotion Programs (prerequisites: HE 223, HE 343, HE 610)
- HE 640 Content Issues I or HE 641, Content Issues II
- HE 642 Health Behavior and Health Education (prerequisites: HE 223, HE 343, HE 610)
- HE 689 Methods and Materials for Planning Health Education Programs (prerequisites: HE 223, HE 343, HE 610)
- HE 697 Evaluation of Health Education Programs (prerequisites: HE 223, HE 343, HE 610)

ADDITIONAL REQUIREMENTS

Students must have these courses previously, OR take them with HE 610:

- HE 223 Introduction to Epidemiology and Disease Impact (pre or co requisite with HE 610)
- HE 343 Theories and Determinants of Health Behavior (pre or co requisite with HE 610)
- HE 601 Current Readings in Health Education

RESEARCH COURSES (6 hours)

- EPR 609 Statistical Methods and Research in Education: Intermediate. Prerequisite: EPR 608
- EPR 692. Introduction to Educational Research Design

THESIS (6 hours)

ELECTIVE (3 hours) MUST be an approved health education elective. Choose from one of the following:

- | | |
|--------|-------------------------------------|
| HE 502 | Mental Health and Stress Management |
| HE 508 | Drug Use and Abuse |
| HE 523 | Human Sexuality |
| HE 621 | Health Communication |
| HE 611 | School Health Programs |

HE 691	Special Topics in Health Education
HE 693	Advanced Field Experience in Health Education

MAEd - Non-Thesis Option (33 hours course work required.)

NOTE: No individual course grade below "C" will be accepted. Each course with a grade below "C" must be repeated.

MAJOR COURSES (18 hours)

- HE 610 Foundations of Health Education (pre or co requisites HE 223, HE 343)
- HE 631 Planning and Evaluating Health Education/Promotion Programs (prerequisites: HE 223, HE 343, HE 610)
- HE 640 Content Issues I or HE 641, Content Issues II
- HE 642 Health Behavior and Health Education (prerequisites: HE 223, HE 343, HE 610)
- HE 689 Methods and Materials for Planning Health Education Programs (prerequisites: HE 223, HE 343, HE 610)
- HE 697 Evaluation of Health Education Programs (prerequisites: HE 223, HE 343, HE 610)

ADDITIONAL REQUIREMENTS Students must have these courses previously, OR take them with HE 610:

- HE 223 Introduction to Epidemiology and Disease Impact (pre or co requisite with HE 610)
- HE 343 Theories and Determinants of Health Behavior (pre or co requisite with HE 610)
- HE 601 Current Readings in Health Education

RESEARCH COURSES (6 hours)

- EPR 609 Statistical Methods and Research in Education: Intermediate. (prerequisite EPR 608)
- EPR 692. Introduction to Educational Research Design

RELATED FIELD OF STUDY (9 hours) MUST be an approved health education elective. Choose from the following:

HE 502	Mental Health and Stress Management
HE 508	Drug Use and Abuse
HE 523	Human Sexuality
HE 621	Health Communication
HE 611	School Health Programs
HE 691	Special Topics in Health Education
HE 693	Advanced Field Experience in Health Education

Comprehensive Examination Non-Thesis Option Only

Students in the Non-Thesis MAEd program are required to successfully complete a comprehensive examination. This examination is intended to allow students to demonstrate the appropriate aptitude for advanced level health education. The process encompasses the content knowledge and critical thinking skills that Health Education faculty believes every student graduating from this program should possess. A student is not allowed to attempt the comprehensive examination more than twice. If the student does not successfully pass comps after the second attempt, they will be dismissed from the Health Education program and not allowed readmission.

Alternative Master's Program (AMP) - Teacher Education

The Alternative Masters Program (**AMP**) is designed for individuals with a baccalaureate degree in a non-teacher education program who wish to become certified teachers. The program is also available to certified teachers who wish to change their teaching field. Students entering this program are not required to have a bachelor's degree in the same field. Prerequisite course work may therefore be required.

PREREQUISITE COURSEWORK

HE 141	Personal Health
HE 223	Introduction to Epidemiology & Disease Impact
HE 343	Theories & Determinants of Health Behavior (prerequisites HE 141, HE 223)
HE 402	Mental Health and Stress Management
HE 408	Drug Use & Abuse
NTR 220	Contemporary Issues in Nutrition
HE 423	Human Sexuality
HE 431	Planning and Evaluating Health Education/Promotion Programs (prerequisites HE 342, HE 343)
HE 432	Administration of Health and Fitness Programs (prerequisites HE 342, HE 343)
EPR 414	Human Development

REQUIRED COURSEWORK (43-49 semester hours)

HE 689	Materials & Methods of Teaching Health Education (prerequisite 610)
EHS 600	Transition into Teaching
EHS 556	Classroom Management
ECY 600	Intro to Exceptional Learners
EDT 610	Computer-Based Instructional Technology
EPR 511	Intro to Measurement and Evaluation in Education
EDR 551	Reading in the Content Area

HE 695 Junior/Secondary Health Education (9.0)

EDU 500 Education as a Profession

COURSES IN THE TEACHING FIELD (at least one-third of the program shall be Teaching Field courses)

HE 610 Foundations of Health Education

HE 611 School Health Programs

HE 601 Current Readings in Health Education

HE 621 Health Communications

HE 642 Health Behavior and Health Education

ADDITIONAL COURSES:

EPR 607 Microcomputer Applications

EPR 608 Statistical Methods and Action Research

Health Education/Health Promotion (PhD)

Graduate program director (Education): *David Macrina*, dmacrina@uab.edu

Graduate program director (Public Health): *Diane Grimley*, dgrimley@uab.edu

The PhD program in Health Education/Health Promotion has been designed to provide students with the academic and practical experiential background to become leading practitioners and researchers in health education and health promotion. The program combines the resources of academic units from the University of Alabama at Birmingham (Schools of Education and Public Health) and the University of Alabama (College of Human Environmental Sciences).

Admission to PhD program

Student applications are reviewed by a joint admissions committee composed of members of the participating academic units. Applicants should meet the admissions requirements of the graduate school, including submission of scores on the Graduate Record Exam (GRE). Admission to the program is competitive. Evidence of scholarship, a clear statement of career goals and research interest, professional recommendations, and professional experience are among the factors receiving strong consideration. 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.

Program of Study

The PhD degree program through the School of Education will require students to complete a minimum of 72 credit hours: 36 hours of coursework, 12 hours of research internship, and 24 hours of dissertation research. The requirements for the PhD degree through the School of Public Health is a minimum of 67 credit hours: 43 hours of coursework, 12 hours of research internship and 12 hours of dissertation research.

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 their advisor.

The specific components of the PhD program in health Education and Health Promotion are outlined below.

PhD through the School of Education

I. Health Education and Promotion Courses

(UA = HHE, UAB-Public Health = HB, UAB-Education = HE)

A. Advanced Theoretical and Scientific Bases of Health Education

and Health Promotion (HHE 605, HB 750, HE 705)

II. Advanced Research and Statistical Methods

A. Multivariate/Multiple Regression Analysis 3 hr

B. Advanced Epidemiological Research Methods 3 hr

C. Data Management/Computer Technology 3 hr

D. Evaluation/Research Methods 3 hr

Subtotal 12 hr

III. Coursework in the Social and Behavioral Sciences Minor 12 hr

IV. Research Internship 12 hr

V. Dissertation 24 hr

PhD through the School of Public Health

I. Health Education and Promotion Courses

(UA = HHE, UAB-Public Health = HB, UAB-Education = HE)

A. Advanced Theoretical and Scientific Bases of Health Education

and Health Promotion (HHE 605, HB 750, HE 705) 3 hrs

B. Health Communications Research (HHE 607, HB 730, HE 701)	3 hrs
C. Planning and Administration of Health Education and Health Promotion (HHE 606, HB 760, HE 710)	3 hrs
D. Doctoral Studies Seminar (HHE 604, HB 770, HE 692a)	3 hrs
	12 hrs
II. Advanced Research and Statistical Methods	
A. Advanced Epidemiological Research Methods	4 hrs
B. Data Management / Computer Technology	3 hrs
C. Intermediate Statistical Analysis/ Statistical Methods	3 hrs
D. Advanced Health Program Evaluation	3 hrs
E. Intermediate Statistical Analysis II/ Statistical Methods and Research in Education: Intermediate	3 hrs
	16 hrs
III. Program Evaluation/Research Methods/Statistics Electives	6 hrs
IV. Social and Behavioral Sciences Electives	9 hrs
V. Research Internship	12 hrs
VI. Dissertation Research	12 hrs

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, Administration of Health Education, Health Education Planning and Evaluation, Health Education Methods, Materials and Delivery, and Research Design and Statistics.

These requirements may be corequisite components in the program.

The PhD degree program will require students to complete a minimum of 72 credit hours: 36 hours of coursework, 12 hours of research internship, and 24 hours of dissertation research.

Students entering the program with a master's degree may transfer appropriate coursework to this program, but 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 their advisor.

The specific components of the PhD program in Health Education/Health Promotion are outlined below.

I. Health Education/Promotion Core Courses

(UAB-Education = HE, UAB-Public Health = HB, UA = HHE)

A. Advanced Theoretical and Scientific Basis of Health Education and Health Promotion (HHE 605, HB 750, HE 705)	3 hr
B. Planning and Administration of Health Education and Health Promotion (HHE 606, HB 760, HE 710)	3 hr
C. Health Communications Research (HHE 607, HB 730, HE 710)	3 hr
D. Doctoral Studies Seminar (HHE 604, HB 770, HE 695)	3 hr
	12 hr

Subtotal

II. Advanced Research and Statistical Methods

A. Multivariate/Multiple Regression Analysis	3 hr
B. Advanced Epidemiological Research Methods	3 hr
C. Data Management/Computer Technology	3 hr
D. Evaluation/Research Methods	3 hr
Subtotal	12 hr
	12 hr

III. Coursework in the Social and Behavioral Sciences Minor

IV. Research Internship **24 hr**

V. Dissertation **24 hr**

Total **72 hr**

Course Descriptions

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.

Health Education - HE

HE 621. Health Communication. Skills appropriate for selected health problems; problem solving and referrals.

HE 623. Human Sexuality. Biological, sociological, and cultural aspects of sexuality.

HE 631. Planning and Evaluating Effective Health Education and Promotion Programs. Program planning and curriculum development for school, agency, and health care settings. Need assessment, objective setting, methodology, and evaluation are emphasized.

HE 632. Administration of Health and Fitness Programs. Administrative theory applied to health and fitness settings.

HE 601. Current Readings in Health Education. Review of literature in health education. Development of annotated bibliography pertinent to professional practice. Prerequisite: Permission of advisor.

HE 602. Alcohol and Society Seminar. Effects of alcohol on individual health, family relations, and community life. Prerequisite: Permission of instructor.

HE 606. Issues in Disease Control. Nature and distribution of disease; communicable and nutritional diseases of childhood; possibilities for prevention. Prerequisite: HE 223 or permission of instructor.

HE 610. Foundations of Health Education. Issues in health education; school, community, or patient health education. Prerequisite: Permission of instructor.

HE 611. School Health Programs. National, state, and local factors influencing school health programs; influences of official and nonofficial agencies. Historical perspective, present and future directions of profession and school health. Prerequisites: HE 342, 343, 431, and 489.

HE 612. Workshop in Health. Concepts and methods to increase proficiency. Comprehensive health education K-6 or 7-12; health education in school, community, or both. 3 to 6 hours.

HE 640. Content Issues I. Drugs, death, human sexuality, nutrition, international health, legislation, and physical and spiritual dimensions of health. Decision making and problem solving. Implication of research, computer applications.

HE 641. Content Issues II. Selected health issues. Personal characteristics of population (age, sex, emotional well-being) and external factors (societal and environmental); interventions and other approaches and solutions. Prerequisite: Admission to graduate program in HE and permission of instructor.

HE 642. Health Behavior and Health Education. Examination of theories and models that assist health educators to increase healthy behaviors of youth and adults. Opportunities to apply what you have learned to assist others with healthful actions. Determinants of successful client-professional relationships (acceptance of cultural differences, active communication, thorough preparation, appropriate modifications, and shared responsibility for outcomes). Prerequisite: HE 610.

HE 689. Materials and Methods of Health Education. Ethical, theoretical, and practical aspects of health education; teaching techniques, decision-making skills, curricular development, organization skills, and techniques. Prerequisites: HE 342, 431, 434, and 489.

HE 691. Special Topics in Health Education. Topics in school and community health education; development of new ways to examine situations. Prerequisite: Completion of HE core courses. 3 or 6 hours.

HE 692. Supervised Research in Health Education. Research problem based on school, community, or public health education needs. Prerequisite: Permission of advisor and EPR 508 or 509. 3 or 6 hours.

HE 693. Advanced Field Experience. Professional practice and research supervised by qualified health education professionals in approved health education work setting. 3 or 6 hours.

HE 695. Junior/Secondary Health Education. Student teaching. Prerequisite: HE 610, 689, and other courses identified by advisor. 9 hours.

HE 697. Evaluation of Health Education Programs. 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 for a defined population at risk.

HE 698. Nonthesis Research. 1-6 hours.

HE 699. Thesis Research. Supervised research project. Prerequisite: Admission to candidacy and permission of advisor. 1, 2, 3, or 6 hours.

HE 700. Seminar in Health Education. Presentation of health education research.

HE 701. Special Topic in Health Education. Topics in school and/or community health education; development of new ways to examine situations. Prerequisite: Permission of advisor. 3 or 6 hours.

HE 702. Supervised Research in Health. Research problem based on school, community, or public health education needs. Prerequisite: Permission of advisor. 3 or 6 hours.

HE 703. Advanced Field Experience. Professional practice and research supervised by qualified health education professionals in approved health education work setting. 3 or 6 hours.

HE 705. Advanced Theoretical and Scientific Basis of Health. Analysis of knowledge, attitude and behavior change strategies, and resulting effect on health status.

HE 710. Planning and Administration of Health Education/Health Promotion Programs. Three basic phases of comprehensive health education and promotion programs (planning, implementation and evaluation). Demonstrate competencies for a graduate-level health educator. Propose effective implementation and evaluation activities in practice settings (school, occupational, clinical and community agency). Different field experiences will be offered each year. Discussion of case studies selected from professional literature and health agencies.

HE 720. Evaluation of Health Education Programs. Evaluation protocols in health education settings; needs assessments, process and formative evaluations, cost benefits, summary reports.

HE 730. Evaluation Research Methods. Theory and application of behavioral evaluation research including preparation of research NIH type proposals.

HE 731. Health Education Planning and Promotion.

HE 732. Evaluation of Health Education Programs.

HE 740. Evaluation of Health Education Programs.

HE 798. Nondissertation Research.

HE 799. Dissertation Research. Prerequisite: Admission to candidacy.

Health Behavior HB

HB 600. Social and Behavioral Science Core.- This course is structured to provide students with a basic "starting point" for developing the required competencies in this area. The course consists of information delivery (e.g., lectures, readings), practice and application exercises, and knowledge integration and synthesis activities. Successful completion of this course will enable you to describe the role of social and community factors in both the onset and solution of public health problems; identify the causes of social and behavioral factors that affect health of individuals and populations; identify basic theories, concepts and models; apply ethical principles to public health program planning, implementation and evaluation; specify multiple targets and levels of intervention; identify individual, organizational and community concerns, assets, resources and deficits; apply evidence-based approaches in the development and evaluation of interventions; describe the merits of social and behavioral science interventions and policies; describe steps and procedures for the planning, implementation and evaluation of public health programs; and identify critical stakeholders for the planning, implementation and evaluation of public health programs, policies and interventions. Course will be graded by letter. 3 hours

HB 600Q. Social and Behavioral Science Core Online. This course is structured to provide students with a basic "starting point" for developing the required competencies in this area. The course consists of information delivery (e.g., lectures, readings), practice and application exercises, and knowledge integration and synthesis activities. Successful completion of this course will enable you to describe the role of social and community factors in both the onset and solution of public health problems; identify the causes of social and behavioral factors that affect health of individuals and populations; identify basic theories, concepts and models; apply ethical principles to public health program planning, implementation and evaluation; specify multiple targets and levels of intervention; identify individual, organizational and community concerns, assets, resources and deficits; apply evidence-based approaches in the development and evaluation of interventions; describe the merits of social and behavioral science interventions and policies; describe steps and procedures for the planning, implementation and evaluation of public health programs; and identify critical stakeholders for the planning, implementation and evaluation of public health programs, policies and interventions. Course will be graded by letter. Course is offered online.

HB 602. Alcohol and Drug Abuse.-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.

HB 603. Behavioral Interventions for Cardiovascular Risk Reduction.- This course is designed to examine interventions that are used to decrease the risk of developing cardiovascular disease (CVD) by modifying health behaviors. The course will begin with a thorough review of the occurrence, etiology, and consequences of CVD among various subpopulations. This is followed by a systematic review of the literature on existing behavioral interventions to reduce health risks among various subpopulations. Based on this literature review, this course will conclude with the identification of key elements to the design of successful behavioral interventions to reduce the occurrence of CVD. Course will be graded by letter.

HB 604. High Technology Approaches to Health Communications and Behavior Change Interventions.- 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. Course will be graded by letter.

HB 608. Women's health and Social Behavior. 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. Course will be graded by letter.

HB 609. African-American Health Issues.- 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. Course will be graded by letter

HB 610. Health Promotion/Disease Prevention: Advanced Theory and Practice.- 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 and 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. Course will be graded by letter.

HB 611. Mental Illness as a Public Health Issue.-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. Course will be graded by letter.

HB 624. Advanced Theory and Practice in Behavioral Science.-Advanced review of selected behavioral science concepts and theories useful for developing health promotion programs; social cognitive theory and the transtheoretical model of change are examined in depth. This course may be required for some MPH- students. Course will be graded by letter. Prerequisite: HB 600.

HB 630. Health Communications: Theory and Practice.- 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. Course will be graded by letter.

HB 635. 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.

HB 638Q. Public Health Promotion and Aging Seminar.-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. Course offered on-line.

HB 641. Research Methods in Behavioral Sciences.-Review of research methodology in behavioral sciences. Formulation of research questions, causality, experimental and quasi-experimental designs, reliability and validity, reporting findings. Prerequisite: Permission of instructor. Course will be graded by letter.

HB 643. Health Program Evaluation.-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. Pre-requisite HB 641.

HB 660. Adolescent Health: A Social and Behavioral Perspective.- 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.

HB 680. Health Promotion Through Radio Outreach.- 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 educate people about risk factors for cardiovascular disease. Pass/No Pass

HB 692. Principles and Practices of Community Organization. - 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. Course will be graded by letter. Prerequisite: Permission of Instructor.

HB 695. Seminar on Selected Health Behavior Topics.-Seminar covering a variety of health behavior topics. Prerequisite: Permission of instructor. Pass/No Pass.

HB 697. Internship.-Field experience under joint direction of appropriate faculty member and qualified health education specialist. Written report specifying activities, products, and outcomes of experience submitted upon completion of internship. Pass/No Pass. 3,6,9 hours.

HB 698. Master's Directed Research.-Independent study with guidance of appropriate faculty. Includes activities such as literature review and evaluation. Pass/No Pass. 1 - 9 hours.

HB 699. Master's Project Research.-Research for project under direction of research project committee. Pass/No Pass. 1 - 9 hours

HB 701. Theory-Based Measurement Development.-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 600.

HB 714. Survey Research Methods.-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. Course will be graded by letter. Prerequisites: Doctoral standing or Permission of Instructor.

HB 720. Neighborhood Influences on Health Behavior.-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 its 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. Course graded by letter.

HB 730. Health Communication Research. In-depth exposure to current research involving media strategies used to persuade individuals to adopt new lifestyles. Critically examines major research conducted during last decade regarding single subjects, groups, communities, and media intervention. Focus on all media, including print, audiovisual, radio, and television.

HB 740. Evaluation Research: Health Promotion/Disease Prevention Research. Theory and applications of original behavioral repopulation, selection of measurement, data collection, design and analytical techniques, and preparation of evaluation research report. NIH-type research proposal required. Prerequisite: Doctoral student or advanced master's student with permission of instructor.

HB 750.Advanced Theoretical and Scientific Basis of Health Education and Promotion.-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. Course graded by letter. 3 hours.

HB 760. Planning and Administration of Health Education and Promotion Programs.- 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. Course graded by letter. Prerequisites: HB 750 and HB 730.

HB 770. Doctoral Studies Seminar.- 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. Course will be graded by letter. Prerequisites: HB 750, HB730 and HB 760.3 hours.

HB 780. Health Promotion and Aging Seminar.-Problems of aging and public health solutions for older Americans examined. Sub-areas of aging explores biological, social, behavioral, and economic aspects of aging. Community-based research/intervention project required. Course will be graded by letter.3 hours.

HB 798. Doctoral Directed Research.-Independent study with guidance of senior public health faculty. Pass/No Pass. 1-9 hours.

HB 799. Dissertation Research.-Research for dissertation under direction of dissertation committee. Pass/No Pass. Prerequisite: Students must be admitted to candidacy in order to register for this class.1 - 9 hours.

Education Psychology and Research (EPR)

510. **Introduction to Measurement and Evaluation in Education.** Basic concepts and principles of measurement and evaluation of personal and academic progress in classroom. Emphasis on elementary descriptive statistics and measurement techniques used in student evaluation. (For Early Childhood/Elementary majors only) 3 Hours.

511. **Measurement and Evaluation in Education.** Basic concepts and principles of measurement and evaluation of personal and academic progress in classroom. Emphasis on elementary descriptive statistics and measurement techniques used in student evaluation. (For Secondary education majors only) 3 Hours.

596. **Introduction to Qualitative Methods in Educational Research.** Qualitative research methods and techniques and their application to qualitative research design. Introduction to types of qualitative information, methods of data collection and analysis, and presentation of results and appropriateness of qualitative design. 3 Hours.

607. **Microcomputer Applications to Statistical Analysis.** Use of microcomputers in computations of descriptive statistics. Prerequisite or Corequisite: EPR 608. 1 hour.

608. **Statistical Methods and Action Research.** Statistical methods for describing sets of data, differences and relationships infused in an action research paradigm. Included are conceptualizing, implementing action research with computer applications. Corequisite: EPR 607. 3 Hours.

609. **Statistical Methods and Research in Education: Intermediate.** Basic inferential techniques including hypothesis testing and parametric and nonparametric techniques. Assumptions, rationale, and interpretation of analysis of variance techniques. Prerequisites EPR 607/608 or basic statistics course. 3 Hours.

610. **Child Psychology.** Human development through infancy, preschool, and preadolescence. 3 Hours.

611. **Adolescent Psychology.** Social, emotional, and cultural aspects of adolescence affecting classroom and school behavior. 3 Hours.
612. **Computer Assisted Qualitative Research.** Provides opportunity to learn several popular qualitative computer packages including QSR N6, Atlas ti, MAXqda, and InVivo. 3 Hours.
614. **Lifespan Human Development.** Psychosocial, cognitive, moral, physical and cultural aspects of development from conception through death and dying Prerequisite: General psychology. 3 Hours.
616. **Personality Theories for the Helping Professions.** Discussion of major theoretical perspectives of the development of personality: Prerequisite: general psychology. 3 Hours.
622. **Learning Theories.** Application of learning theories to educational practice. Behavioral theories, information processing, biochemical basis of memory and learning, as well as other major learning theories. Prerequisite: General Psychology. 3 Hours.
627. **Individual Testing in Guidance III (K-ABC).** Administration, scoring, interpretation, and use of Kaufman Assessment Battery for Children (K-ABC). Prerequisite: EPR 629 and permission of instructor. 1-3 Hours.
628. **Individual Testing in Guidance I (Stanford-Binet).** Administration, interpretation, and use of Stanford-Binet intelligence scale. Prerequisite: Permission of instructor. 4 Hours.
629. **Individual Testing in Guidance II (Wechsler Scales).** Administration, interpretation, and use of Wechsler intelligence scales. Prerequisite: Permission of instructor. 4 Hours.
630. **Clinical Assessment in Education.** Individual intelligence, personality, and projective tests used by school psychologists. Prerequisite: Permission of program coordinator. 3 Hours.
688. **Seminar on Current Issues in Measurement and Evaluation in Schools.** Issues of standardized testing and classroom assessment for teachers and administrators. 3 Hours.
691. **Independent Readings in Educational Psychology and Research.** Prerequisites: Permission of advisor and instructor. May be repeated for total of 6 hours. 3 hours.
692. **Introduction to Educational Research Design.** Literature of educational research. Rationale of library and empirical research. Research on current educational issues. Prerequisite: EPR 607/608. 3 Hours.
695. **Survey Methods in Education Research.** Overview of the basic principles, applications, and types of survey research in education. 3 Hours.
696. **Qualitative Research: Inquiry and Analysis** – Development of skills necessary to conduct qualitative research data collection, analysis, interpretation and presentation of findings. Prerequisite EPR 596 or equivalent. 3 Hours.
698. **Individual Non-thesis Research in Educational Psychology.** Prerequisite: permission of instructor. 3 Hours.
710. **Computer Applications and Advanced Statistical Methods** – Multiple regression techniques using microcomputers with mainframe access. Structuring appropriate research questions, hypotheses, analyzing and interpreting results. Prerequisites EPR 607, 608, 609. 3 Hours.
728. **Seminar on Research in Education.** Assisting school personnel in interpreting research findings. Prerequisite: Master's degree. 3 Hours.

792. Mixed Methods Approaches in Educational Research – Overview of mixed methods research, including the history and philosophy of mixed methods research, relevant emerging literature, types of research problems and designs, and the writing of mixed methods studies. Prerequisites EPR 609, 596, 696. 3 Hours.

793. Doctoral Seminar in Research Evaluation and Design – Presentation and analysis of research in students' areas of interest. Prerequisite: Advanced graduate standing and graduate courses in statistics and research design. 3 Hours.

796. Qualitative Research: Doctoral Seminar – Focus on development of dissertation research proposal, qualitative methodology and means of analysis. 3 Hours.

Physical Education

Degrees offered include the Master of Arts in Education 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. The teacher certification program links teacher certification with the graduate program in physical education. For example, the M.A. Ed. 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).

Master of Arts in Education and "A" level teaching certificate; Nonthesis (31-3 7 34 hours)

Teaching Field: At least 1/3 of the program shall be teaching field courses. (18 hours)

PE 645	Motor Development	3
PE 647	Teaching Strategies and Issues in K-12 Physical Education	3
PE 643	Curriculum Development in Physical Education	3
PE 649	Adapted Physical Education	3
	600-level electives as approved by advisor	6

Survey of Special Education Coursework: Required if not previously completed (0-3 hours)

ECY 600	Introduction to Special Education	0-3
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Additional Courses: (13 -16 hours)

EPR 608	Statistical Methods and Research in Education	3
EPR 607	Microcomputer Applications to Statistics	3
Foundations and Professional Studies	(see approved list)	3
EDT 610	Technology Competency	3
Elective	(as approved by advisor)	3

Master of Arts in Education and "A" level teaching certificate; Thesis (31-34 hours)
Teaching Field: At least 1/3 of the program shall be teaching field courses. (18 hours)

PE 645	Motor Development	3
PE 647	Teaching Strategies and Issues in K-12 Physical Education	3
PE 643	Curriculum Development in Physical Education	3
PE 649	Adapted Physical Education	3
PE 699	Thesis	6

Survey of Special Education Coursework: Required if not previously completed (0-3 hours)

ECY 600	Introduction to Special Education	0-3
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Additional Courses: (13 hours)

EPR 608 609	Statistical Methods and Research in Education: Intermediate	3
EPR 607	Microcomputer Applications to Statistics	1
Foundations and Professional Studies	(see approved list)	3
EDT 610	Technology Competency	3
EPR 692	Introduction to Educational Research	3

Alternative A (Nontraditional 5th-Year Physical Education program) Nonthesis (37-40 hours)

Additional requirements are 49 hours of prescribed coursework. Contact Student Services in Suite 100 Education Building, UAB for specific courses required.

Curriculum and Teaching:

PE 643	Curriculum Development in Physical Education	3
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Professional Studies:

EDF 604	Social Philosophies and Education	3
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Survey of Special Education Coursework: Required if not previously completed. (0-3 hours)

ECY 600	Introduction to Exceptional Learners	0-3
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Technology:

EDT 610	Technology Competency	3
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Evaluation of Teaching and Learning:

EPR 608	Statistical Methods and Research	3
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EPR 607	Microcomputer Applications in Statistical Analysis	1
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Reading :

EDR 551	Reading in the Content Area	0-3
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Internship:

PE 696	Elementary/Secondary Physical Education Internship	9
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Teaching Field:

At least 1/3 of the program shall be teaching field courses (12)

PE 645	Motor Development	3
PE 647	Teaching Strategies and Issues	3
PE 649	Adapted Physical Education	3
PE 607	Coaching Young Athletes	3

Ed.S. Degree (31-37 hours)

Teaching Field:

At least 1/3 of the program shall be teaching field courses (21 hours)

PE 726	Supervised Research in Physical Education	3
PE 728	Seminar in Physical Education	3
	600- and 700-level Physical Education courses	15

(PE 643, 645, 647 and 649 must be taken if comparable courses were not part of the master's program

Survey of Special Education Coursework: Required if not previously completed. (0-3 hours)

ECY 600	Introduction to Special Education	0-3
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Additional Courses:

EPR 692	Introduction to Educational Research	3
EPR 609	Statistical Methods and Research: Intermediate	3
EPR 607	Microcomputer Application	1
	Technology Competency	0-3
Electives with Permission of advisor	600- or 700-level Professional Studies or Teaching Field courses	3

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 comprises 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 a Muscle Research Laboratory, a Strength Performance Laboratory, and a Body Composition/Energy Metabolism Laboratory. Wide arrays of field experiences are also available in local agencies and clinics. In addition to Graduate School admission requirements, prospective students must have completed undergraduate coursework in physiology, anatomy, and chemistry. First-year students begin in the fall term. Listed below are the courses required in the program and a sample of elective courses.

M.A.Ed. Program

Admission Requirement and Prerequisites

In addition to the general admission requirements of the Graduate School, the following prerequisites apply to these programs. The prerequisites are not part of the graduate program. Applicants without the prerequisites may be admitted conditionally and take up to 12 semester hours of graduate work while completing the prerequisites. Specific course prerequisites are determined on an individual program basis by the student's advisors.

Plan I (27 hours and thesis)

Major Courses (12-15 hours)

Course	Course Name	Semester Hours
PE 637	Exercise Physiology I	3
PE 638	Exercise Physiology II	3
EPR 692	Research Methods	3
PE 642	Practicum in Exercise Physiology	3
EPR 609	Statistical Methods and Research in Education	3
	Thesis	6
	Related Field	6-9

Plan II (36 hours of coursework)

Major Courses (12-15 hours)

Course	Course Name	Semester Hours
PE 637	Exercise Physiology I	3
PE 638	Exercise Physiology II	3
EPR 692	Research Methods	3
EPR 609	Statistical Methods and Research in Education	3

Elective in Major	3
Thesis Substitution	12
Related Field	6-9

Sample Major Electives for Plan I and II

PE 656	Advanced Sport Psychology
PE 640	Advanced Techniques in Conditioning the Athlete
PE 639	Exercise Prescription for High Risk Populations
PE 672	Advanced Treatment of Athletic Injuries
PE 674	Sport Performance and Nutrition
PE 645	Motor Development
PE 695	Problems in Physical Education
PE 630	Mechanical Analysis of Motor Skills
PE 585	Principles of Fitness Leadership

Sample Courses for Related Fields, Plan I and II

NTR 601	Medical Nutrition
NTR 618	Nutritional Biochemistry I
NTR 619	Nutritional Biochemistry II
NTR 650	Body composition & energy Metabolism
PHA 602	Epidemiology of Chronic Disease
GER 540	Biology of Aging
HE 502	Mental Health & Stress Management
HE 532	Administration of Health & Fitness Programs

Course Descriptions

Physical Education (PE)

601. Introduction to Sport Administration. Planning, organizing, staffing, managing, directing, and evaluating sport and athletic programs.

607. Principles of Coaching. Philosophy, physiology, pedagogy, athletic training, and law related to coaching.

615. Sport Facility Planning. Factors influencing the planning, funding, and construction of a variety of sports facilities.

630. Mechanical Analysis of Motor Skills. Application of principles of physics to human movement. Analysis through videotape and cinematography techniques. Prerequisite: PE 307 or equivalent.

631. Foundations of Physical Education. Overview of various subfields of physical education.

632. Supervision of Physical Education. Study of skills required to supervise teachers of physical education and in other related fields.

636. Current Readings in Physical Education. Individual readings on contemporary topics and issues in physical education. Prerequisite: Permission of advisor.

637. Physiology of Exercise I. Description of basic organ systems and their functioning in relationship to the physiology of exercise.

638. Physiology of Exercise II. Applied exercise physiology information, techniques, and research methods.

639. Exercise Prescription for High Risk Populations. Lecture and laboratory practice; physiological basis of exercise testing and training. (Prepares students to take ACSM Exercise Specialist certification examination.) Prerequisites: PE 400 and BY 115.

640. Advanced Techniques in Conditioning the Athlete. Advanced training principles; developing testing and training programs for athletes. Prerequisites: PE 400, BY 115 and 116.

642. Practicum in Physiology. Practical experience and observations in human physiology. Seminars by medical, dental, and nursing faculty. Effects of drugs, diet, exercise, and disease on human body. Prerequisite: PE 641. 3 or 6 hours.

643. Curriculum Development in Physical Education. Trends in methodology, programming, and scheduling.

645. Advanced Motor Development. Factors influencing development of motor skills across lifespan.

647. Teaching Strategies and Issues in K-12 Physical Education. Design, implementation, and evaluation of appropriate physical education programs for elementary and secondary schools.

649. Adapted Physical Education. Current research and teaching methodology in adapted physical education; nature of selected disabilities, implications for physical education.

650. Social Aspects of Sport. The purpose of this course is 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.

651. Issues and Problems in Coaching. This course is designed to allow the students to approach issues and problems from a practical perspective, particularly related to legal duties.

652. Measurement and Evaluation of Athletes. This course is designed to help athletic coaches locate, select, and construct quality sport skill tests. Students will review reasons why coaches should measure and evaluate athletes, and survey sound testing procedures.

655. Motor Learning. Factors influencing learning and performance of motor skills.

656. Advanced Sport Psychology. Relationship of psychology to sports performance.

663. Challenge Course Fundamentals I. Improvement of self-concept and social 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, and conflict resolution and physical fitness.

664. Challenge Course Fundamentals II. This course continues introducing to the background, philosophy, ethical issues, risk management required for 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 course 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.

665. Adventure Processing and Facilitation. This course provides the skills necessary for facilitating a variety of groups-educational, recreational, corporate-indoor experience programs. The curriculum includes the Experiential Learning Cycle, stages of group development, leading group discussion, active listening, frontloading, debriefing, 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 programs to various groups. How to facilitate and lead group discussions with diverse groups will be emphasized.

666. Organization and Administration of Adventure Education. Students will synthesize their experience in adventure leadership, instruction and programming to explore the details of managing an adventure program. Topics include risk 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

672. Advanced Treatment of Athletic Injuries. Seminar and practical experience. Conducted by certified trainers at UAB Sports Medicine Clinic.

674. Sport Performance and Nutrition. Nutrition, rest, and training research relating to coach-player-doctor-trainer relationship, legal implications relating to competitive athletics.

690. Seminar in Sports Administration.

694. Special Projects in Physical Education. Independent projects supervised by faculty. Prerequisite: Permission of advisor. 1, 2, 3, or 6 hours.

695. Problems in Physical Education. Contemporary topics in physical education (class meeting format). Prerequisite: Permission of advisor. 3 or 6 hours.

696. Elementary/Secondary Physical Education Internship. Clinical placement in approved school. Required in nontraditional 5th-Year Program. Prerequisite: Completion of appropriate coursework. 9 hours.

697. Advanced Field Experience in Physical Education. Clinical placement in approved sites. Prerequisite: PE 647 or 48 9 . 3 or 6 hours.

698. Coaching Internship (Individual Sport). 100 clock hours of experience with veteran coaches. Prerequisite: PE 407 or 607.

* **699. Thesis Research.** Supervised research project. Prerequisite: Admission to candidacy and permission of advisor. 1, 2, 3, or 6 hours.

710. Special Topics in Physical Education. Special courses offerings on contemporary topics. Prerequisite: Permission of instructor.

715. Advanced Field Experience in Physical Education. Supervised field experiences in public school clinical sites. Prerequisite: PE 488 or 647. 3 or 6 hours.

718. Practicum in Exercise Physiology. Practical experience and observations in human exercise physiology. Prerequisite: PE 641 and permission of advisor.

720. Research Design and Methodology. Measurements and research design in areas of biomechanics, motor learning, motor development, sport psychology, and exercise physiology. Prerequisite: EPR 692 or equivalent.

726. Supervised Research in Physical Education. Independent student research supervised by a full-time program faculty member. Prerequisite: Permission of advisor, and EPR 609 and 692. 3 or 6 hours.

728. Ed.S. Thesis Research. Prerequisite: Admission to candidacy, research methods and sufficient course work in area of emphasis to be able to formulate a problem, develop a research design, and write a thesis proposal. Permission of advisor and instructor. Pass/Fail. 3 or 6 hours.

729. Seminar in Physical Education. Development of thesis presentation. Prerequisite: Permission of advisor. 3 hours

Engineering

Biomedical Engineering (Ph.D., M.S.B.M.E.)

Degrees Offered: Ph.D., M.S.B.M.E.

Phone: (205) 996-6936

E-mail: uabbmegrad@uab.edu

Web site: www.eng.uab.edu

Faculty

Joel L Berry, Research Associate Professor, (Biomedical Engineering); Medical Device Design, Cardiovascular Biomechanics, Cardiovascular and Orthopedic Tissue Engineering, Medical Device Entrepreneurship

Allan C. Dobbins, Associate Professor (Electrical Engineering); Human and Machine Vision, Neural Computation, Brain Imaging, Scientific Visualization

Alan Eberhardt, Professor (Theoretical and Applied Mechanics); Solid Mechanics, Injury Biomechanics, Biomedical Implants, Analytical and Numerical Methods in Biomechanics

Vladimir G. Fast, Associate Professor (Physics); Cardiac Electrophysiology

Dale S. Feldman, Associate Professor (Bioengineering); Biomaterials, Soft-Tissue Biomechanics, Polymeric Implants

Ho-Wook Jun, Assistant Professor (Bioengineering); Biomimetic Nanotechnology, Biomaterials, Tissue Engineering

Andrew E. Pollard, Professor (Biomedical Engineering); Simulation and Modeling of Electrical Signals of the Heart

Jack M. Rogers, Associate Professor (Bioengineering); Computer Simulations of Re-Entry, Signal Analysis of Cardiac Arrhythmias

Yuhua Song, Assistant Professor, (Materials Science and Engineering); Computational Biomechanics, Computational Biology, Multiscale Modeling

Donald B. Twieg, Professor, (Biomedical Engineering); Medical Imaging, Magnetic Resonance Imaging (MRI) Techniques, Functional MRI of Brain and Heart

Timothy M. Wick, Professor and Chair, (Chemical Engineering); Orthopedic and Cardiovascular Tissue Engineering, Regenerative Medicine, Bioreactor and Bioprocess Design, Cryopreservation, Cell Adhesion

Xincheng Yao, Assistant Professor, (Optics); Optical Imaging of Neural Function, Optical Coherence Tomography (OCT)

Adjunct Faculty

Andreas Anayiotos, Associate Professor, (Engineering); Professor, Department of Mechanical Engineering and Materials Science and Engineering, Cyprus University of Technology, Cardiovascular Fluid Mechanics, Cardiovascular Modeling, Computational Hemodynamics

Martha W. Bidez, Professor, (Biomedical Engineering); President and CEO, BioEchos, Injury Biomechanics, Automotive Safety

Glenn S. Fleisig, Assistant Professor, (Biomedical Engineering); Research Director, American Sports Medicine Institute, Sports and Injury Biomechanics

Richard A. Gray, Associate Professor, (Biomedical Engineering); Biomedical Engineer, Office of Science and Engineering Laboratories, Center for Devices and Radiological Health, US Food and Drug Administration, Optical Mapping of Re-Entry Fibrillation and Defibrillation

Rodolphe Katra, Assistant Professor (Biomedical Engineering); Principal Scientist, Research & Technology, Corventis Medical, Remote Disease Monitoring and Prediction, Cardiac Electrophysiology

Secondary Faculty

Franklin Amthor, Professor, (Psychology); Neurophysiology of Vision Computer Graphics

Susan L. Bellis, Assistant Professor, (Physiology Biophysics); Integrin Biology/Implant Surfaces

James Broome, Professor, (Prosthodontics); Polymers, Adhesives, Physical and Mechanical Testing, Clinical Research

Brigitta Brott, Assistant Professor (Cardiovascular Disease); Angiogenesis, cardiac angioplasty, coronary artery disease, cardiac catheterization, interventional cardiology and stents

John O. Burgess, Professor, (Prosthodontics); Clinical Trials, Caries Models, Dental Materials

David T. Curiel, Professor, (Pulmonary and Critical Care); Gene Therapy

Derrick Dean, Associate Professor (Materials Science and Engineering), Polymers

Lawrence J. DeLucas, Professor, (Optometry); Protein Crystal Growth

Evangelos Eleftheriou, Associate Professor, (Mechanical Engineering); Mechanical Systems, Automated Manufacturing, and Mechanical Design

Rotem Elgavish, Assistant Professor (Neurology); Neuroengineering applications in the diagnosis and treatment of epilepsy

Hassan Fathallah-Shaykh, Associate Professor, (Neurology); Systems biology of cancer, the dynamics of molecular networks, biological rhythms, and modeling/analysis of microarray data

Paul D. R. Gamlin, Professor, (Vision Sciences); Eye Movements, Pupillary Light Reflex

Timothy J. Gawne, Assistant Professor, (Vision Sciences); Central Visual Processing

Ken Hoyt, Assistant Professor, (Radiology); Contrast-enhanced ultrasound imaging with a focus on the associated bioeffects, contrast agent targeting, and the potential for localized drug delivery

Raymond E. Ideker, Professor, (Cardiovascular Disease); Study of Cardiac Arrhythmia, Cardioversion and Electrical Ablation for Treatment Of Arrhythmia

Tom Jannett, Professor, (Electrical and Computer Engineering); Control Systems, Biomedical Instrumentation, Modeling and Simulation, Intelligent Sensor Networks

Amjad Javed, Assistant Professor, (Oral and Maxillofacial Surgery); Bone, cartilage development and remodeling, Adipogenesis, Gene knock-out models, Transcriptional regulation of skeletal cell differentiation

Vicki Johnson, Assistant Professor, (School of Nursing); Community Health Outcomes & Systems

Kent T. Keyser, Professor, (Vision Sciences); Neurotransmitters and Receptors

Hyunki Kim, Assistant Professor (Radiology); Breast, pancreatic, and brain cancer imaging

Dennis F. Kucik, Associate Professor, (Pathology); Cell adhesion and motility

William R. Lacefield, Professor, (Prosthodontics); Coatings for Implants, Dental Ceramics and Alloys, Porcelain

Chris M. Lawson, Professor, (Physics); Nonlinear Optics, Fiber Optics, Optical Sensor

Lei Liu, Associate Professor (Optometry); Low vision visual function and rehabilitation

Mary MacDougall, Professor, (Oral and Maxillofacial Surgery); Genetic dental diseases, tooth development, mineralized matrix, gene regulation

Michael McCracken, Associate Professor, (Prosthodontics); Dental Implants, Biomimetic Materials, Growth Factors

Jay M. McDonald, Professor and Chair, (Pathology); Cell signaling in bone disease, AIDS and cancer

Erwin Montgomery, Professor (Neurology); Deep Brain Stimulation

Joanne E. Murphy-Ullrich, Professor, (Pathology); Regulation of cell death and motility by cell adhesion signaling and role of growth factor control in diabetic and fibrotic diseases

L. Burt Nabors, Associate Professor, (Neurology); Brain Tumor Treatment & Research Program.

Alfred Paige, Assistant Professor, (Neurology); Treatment of epilepsy, seizure localization, and epilepsy surgery

Vladimir Parpura, Associate Professor (Neurobiology); Ion channels and Synaptic Function Systems Neuroscience and Vision

Steven Pogwizd, Professor, (Cardiovascular Disease)

Charles W. Prince, Professor, (Nutrition Sciences); Dental Nutrition, Bone Biochemistry, Vitamin D, Calcium and Phosphorus Metabolism

Firoz Rahemtulla, Professor, (Oral Biology); Connective Tissue Biochemistry

Michelle Robbin, Professor, (Radiology); Hemodialysis patient ultrasound, ultrasound contrast agents and vascular ultrasound

Rosalia Scripa, Professor, (Materials Science and Engineering); Ceramics and Glass, Extractive Metallurgy, Semiconductor of Crystal Growth, Electronic-Magnetic Materials

Jere Segrest, Professor (Gerontology/Geriatrics/Palliative Care); Plasma Lipoprotein Structure and Function

Murat Tanik, Professor (Electrical and Computer Engineering); Software Systems Engineering, Integrated Systems Design, Process Engineering

Gregg Vaughn, Professor (Electrical and Computer Engineering); Digital Signal Processing, Applications of Microprocessors, Digital Communications

Kristina M. Visscher, Assistant Professor (Neurobiology); Human behavior and brain activity using precise behavioral measurements (including psychophysics and tracking of eye movements), functional magnetic resonance imaging (fMRI) and electroencephalography (EEG).

Yogesh Vohra, Professor, (Physics); Biotechnology, Nanostructured Materials

Harrison Walker, Assistant Professor (Neurology); Deep brain stimulation for the management of Parkinson's disease and other movement disorders

Yuhua Zhang, Assistant Professor (Ophthalmology); Advanced retinal imaging technology

Yong Zhou, Assistant Professor (Pulmonary/Allergy/Critical Care); Myofibroblast differentiation and emphysema

Program Information

M.S.B.M.E. Program

The Master of Science in Biomedical Engineering prepares students for entry into the doctoral program, biomedical industry, or professional school. Primary research areas are biomedical imaging, biomedical implants and devices, cardiac electrophysiology, multiscale computational modeling, tissue engineering and regenerative medicine. Other research opportunities are available through our ongoing collaborations with the UAB Medical and Dental Schools. With the terminal degree, employment is usually found in

healthcare delivery, medical devices, pharmaceuticals, biomedical imaging, instrumentation, medical sales and marketing, regulatory agencies, or computer application groups. For admission to the program, a student should have earned a bachelor's degree in Biomedical Engineering, engineering or a closely related field. Students with undergraduate degrees in the physical sciences, life sciences, or mathematics will also be considered for admission; however, such students must demonstrate competence in engineering areas usually found in an undergraduate engineering curriculum. In some cases, preparatory courses in engineering may be required, with specific recommendations made by the BME Graduate Program Committee. Admission is competitive, and successful applicants will usually present scores of at least 550 on the verbal and at least 750 on the quantitative sections of the GRE General Test. Typical students have an undergraduate GPA of 3.5 or greater and have participated in at least one research project while an undergraduate (e.g., laboratory research, senior design). The Master's degree requires a minimum of 24 semester hours of graduate coursework beyond the Bachelor's. This includes: BME 517 Engineering Analysis, BME 670 Quantitative Physiology, three 1-hour Departmental seminar courses (BME 601), at least one 3-hour Biostatistics course. Additional coursework is a combination of graduate level life sciences and bioengineering courses selected in consultation with your thesis advisor and approved by the BME Graduate Program Committee. The student's research advisor and the Graduate Program Committee work to devise an individualized curriculum developed to ensure each student obtains the coursework to provide an in-depth knowledge of both quantitative methods and human physiology necessary to succeed in completion of the thesis research.

The majority of students carry out research leading to a thesis (plan I option). To receive a Master's degree in BME, the student must publish their research in a peer-review journal article; typically a first-author publication. The student is expected to present their research at a scientific or technical conference' preferably relevant national or international meeting. Publication of at least one peer-reviewed manuscript is a requirement for graduation from the BME MSBME program. Plan I students must register for at least 6 semester hours of BME 699 (thesis research) and successfully defend a thesis based on their research.

Ph.D. Program

The Ph.D. degree prepares students for careers in industry and academics. Students entering the doctoral program will possess an M.S. or be currently enrolled in the D.M.D./Ph.D. or M.D. /Ph.D. program at UAB. The majority of our Ph.D. students enter the UAB BME Graduate program as M.S. students. However, students are not automatically matriculated into the Ph.D. program following a successful defense of their M.S. Only Plan I M.S. students are considered for the Ph.D. program; these students do not have to reapply to the Graduate School but instead petition the BME Graduate Program Committee. The decision is based on the student's academic record as well as recommendations from the student's M.S. thesis committee. Students who have earned a M.S. degree elsewhere may apply directly to our Ph.D. program.

Admission to the PhD program is competitive, and successful applicants will usually present scores of at least 550 on the verbal and at least 750 on the quantitative sections of the GRE General Test. Typical students have a graduate GPA of 3.5 or greater and have their previous research in a peer-review journal. Students admitted to the Doctoral program typically receive a competitive stipend that usually includes payment of tuition.

The PhD degree requires a minimum of 18 semester hours of graduate coursework beyond the Master's. This includes: BME 517 Engineering Analysis, BME 770 Quantitative Physiology, and at least one 3-hour Biostatistics course (BST 621) if not taken as part of the students Master's program. One additional statistics course is strongly recommended for the PhD degree (BST621 and 622). Additionally, PhD students must complete three semester hours of Departmental Seminar (BME 701). At least 12 hours of Dissertation Research (BME 799) is required for the Ph.D. degree. Additional graduate level life sciences and/or bioengineering coursework may be required in conjunction with the student's dissertation research committee. The program of study for each student is defined by the student and the Research Advisor

and approved by the Graduate Program Committee during the student's first year of doctoral study. Near the completion of the course plan, a written proposal for the dissertation research must be submitted and presented to the Dissertation Committee before the student can be admitted to candidacy for the degree. A dissertation that presents the results of the student's original research must be successfully defended.

PhD students are required to publish two additional manuscripts, typically first-author peer-review publications. PhD students will also present their research in a BME seminar near their end of their studies. PhD students are expected to present their research at a relevant national or international meeting scientific or technical conference.

NIBIB Supported T-32 Predoctoral Training Grant

National Institute of Biomedical Imaging and Bioengineering (NIBIB) has awarded an interdisciplinary predoctoral training grant to UAB that is entitled "Nanotechnology in Biosensors and Bioengineering". It is a five year program that started on September 1, 2007. Benefits to participating graduate students include: graduate stipends of \$25,000 per year, full tuition and health insurance, and a travel award of \$1,000 per year. The purpose of this grant is to implement a training program at the interfaces of physics, chemistry, materials science and engineering, and biomedical engineering that will reduce the time from discovery of a new tool in nanotechnology to its application in medical devices, tissue engineering, and biosensors for earliest detection of molecular signatures of disease.

For more information regarding this training program, visit
<http://www.uab.edu/cnmb/graduate/index.html>.

Additional Information

Deadline for Entry Term(s):	Fall
Deadline for All Application Materials to be in the Graduate School Office:	February 1
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 detailed information, contact Dr. Timothy M. Wick, Professor and Chair, BME Graduate Program Director, UAB Department of Biomedical Engineering, 807 Shelby Interdisciplinary Biomedical Research Bldg., 1825 University Blvd., Birmingham AL 35294-2182.

Telephone 996-6936

E-mail uabbmegrad@uab.edu

Web www.eng.uab.edu

Course Descriptions

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.

Biomedical Engineering (BME)

598 Biomedical Product Development. Design and development issues of the medical products industry. Consideration of the impact of legal, regulatory and marketing issues, business ethics and economics will be addressed. 3 credit hours.

508 Biofluids. 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. 3 credit hours.

512 Biomechanical Measurements. Observation, measurement and analysis of basic biomechanical variables such as stress, strain, pressure and flow. Emphasis on basic experimental examples and using the computer for data acquisitions, processing, analysis and preparation of laboratory reports. 3 credit hours.

517 Engineering Analysis. Solutions to engineering problems involving ordinary and partial differential equations; Laplace transforms, power series, Bessel functions, Legendre polynomials, Fourier series, Fourier integral and transform, Sturm-Liouville and separation of variables. 3 credit hours.

520 Implant-Tissue Interactions. An overview of implant biocompatibility including tissue histopathology, histology of implant response and the regulatory process for medical devices. 3 credit hours.

523 Living Systems Analysis. Basic concepts and techniques of measurement processing and analysis of data from living systems, Statistics, analysis of variance, regression analysis. Labs include blood flow data acquisition and analysis, implant biocorrosion testing, evaluation and analysis of cell proliferation and apoptosis. 3 credit hours.

535. Tissue Engineering. 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. Prereq: BME 210. 3 hours

542 Principles of Medical Imaging. Medical imaging modalities such as x-ray, CT, Nuclear imaging. Principles and physics of interaction of ionizing radiation with matter, bremsstrahlung, attenuation coefficients, compton scatter, nuclear disintegration of radionuclides and generation of medical radionuclides. 3 credit hours.

543 Medical Image Processing. A lab-based introduction to processing, analysis and display techniques for medical imaging. 3 credit hours.

546 Principles of MRI. Technical fundamentals of NMR imaging and applications. Governing physics, MR imaging techniques and clinical role of MR imaging. 3 credit hours.

550 Computational Neuroscience. Computational principles used by the nervous system. Topics include biophysics of axon and synapse, sensory coding with emphasis on vision and audition, planning and decision-making and synthesis of motor responses. Emphasis on a systems approach throughout. Simulations. 3 credit hours.

561 Bioelectric Phenomena. Quantitative methods in the electrophysiology of neural, cardiac and skeletal muscle systems. 3 credit hours.

562 Cardiac Electrophysiology. Semi-quantitative methods in cardiac electrophysiology Analysis of the electrocardiogram, cellular dynamics, propagation in the heart including spiral waves, and the effect of electric fields on the heart. 3 credit hours.

571 Continuum Mechanics of Solids. 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. 3 credit hours.

580 Biomolecular Modeling: In this course we will review fundamentals of structural biology: genetic sequence to protein structure and function, nucleic acid and membrane structure and function, introduce major computational methods for biomolecular modeling and their applications. Throughout the course, the students are given hands-on exercises in computational structural biology using different software tools in the computer lab. Co - requisites: BME 517 (or ME 567) or the permission of Instructor. 3 credit hours.

601, 701. Seminars in Biomedical Engineering. Current topics in biomedical engineering technology and applications. Pass/Fail. 1 hour each.

616, 716. Instrumental Methods of Analyses. Techniques used to evaluate biomaterials: FTIR, AES/XPS, AFM/STM, electrochemical corrosion evaluations, and mechanical testing. 3 credit hours.

619 Advanced Biofluids. Bioelectric signals, transduction devices and processes; analog and digital signal processing; system response characteristics. 3 credit hours.

623, 723. Biocompatibility. Wound Healing. Study of principles of healing and methods to enhance, and clinical applications. 3 credit hours.

633, 733. Biomechanics: Tissue Mechanics I Fundamentals of hard and soft tissue mechanics. Biomechanical problems, with emphasis on bone, ligament, tendon and cartilage. 3 credit hours.

637, 737. Biomechanics: Tissue Mechanics II . Advanced topics in tissue mechanics, including structure-function analysis and modeling of trabecular bone, biphasic theory for articular cartilage. 3 credit hours.

646-746. Biomedical Optics: Principles and Imaging. A brief description of the planned course is: This course covers fundamentals of light-matter interactions and principles of biomedical optics imaging techniques, such as confocal microscopy, multiphoton microscopy, optical coherence tomography, photoacoustic tomography, etc. 3 credit hours.

647, 747. Medical Imaging: Advanced MRI and fMRI. Advanced MRI techniques, functional MRI methods including spectroscopy, perfusion and diffusion imaging. 3 credit hours.

664, 764. Neural Computation. The principal theoretical underpinnings of computation in neural networks, understanding the relationship between the different approaches: dynamical systems, statistical mechanics, logic, Kalman filters, and likelihood/Bayesian estimation. 3 credit hours.

665, 765. Computational Vision. Study of biological and artificial vision from a theoretical perspective. Begins with a comparative survey of visual systems and examines vision algorithms and architectures. 3 credit hours.

670, 770. Quantitative Physiology. Study of physiological problems using advanced mathematical techniques. Topics covered include: mechanics, fluid dynamics, transport, electrophysiology of cell membranes, and control systems. Prereq: BME 517 OR ME 567. 3 credit hours.

676, 776 Fracture Mechanics. Linear elastic mechanics, Griffin energy balance, Airy & Westergaard solutions, elastic-plastic fracture mechanics, materials testing and applications. 3 credit hours.

691, 791 Special Topics in (Area). Course syllabus and grading policy required. 1-6 hours.

693, 793 **Internship in BME**. Course syllabus and grading policy required. 1-6 hours.

697 **Journal Club in (Area)**. 1 hour each.

698. **Non-thesis Research**. Pass/Fail, 1-12 hours.

699. **Thesis Research**. Prerequisite: Admission to candidacy. Pass/Fail. 1-12 hours.

706. **Introduction to Biomedical Instrumentation**. Instrumentation used in measurement of physiological parameters. Prerequisites: EE 351 3 credit hours.

707 **Biomedical Instrumentation and Signal Processing I, II**. Bioelectric signals, transduction devices and processes, analog and digital signal processing, system response characteristics. Prerequisite: BME 630. 3 hours each.

798. **Non-dissertation Research**. Pass/Fail. 1-12 hours.

799. **Dissertation Research**. Prerequisite: Admission to candidacy. Pass/Fail. 1-12 hours

Civil Engineering (M.S.C.E., Ph.D.*)

*The Ph.D. is offered through a joint program with the University of Alabama in Huntsville.

Degree Offered: M.S.C.E., Ph.D.

Director: Dr. Robert W. Peters

Phone: (205) 934-8430

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Primary Faculty

Lianxiang Du, Assistant Professor (Civil, Construction, and Environmental Engineering); Construction Materials with emphasis in Portland Cement Concrete, Controlled Low Strength Materials, and Soil Stabilization

Fouad H. Fouad, Chair and Professor (Civil, Construction, and Environmental Engineering); Structural Engineering Concrete Structures, Precast Concrete Products, Concrete Materials; Sustainable Engineering Design

Wilbur A. Hitchcock, Professor (Civil, Construction, and Environmental Engineering); Construction Engineering Management, Structural Engineering

Jason T. Kirby, Assistant Professor (Civil, Construction, and Environmental Engineering); Environmental Engineering, Hydraulics, Hydrology; Sustainable Engineering Design

Melinda M. Lalor, Associate Professor (Civil, Construction, and Environmental Engineering); Environmental Engineering, Surface Water Quality, Watershed Management, Pollution Prevention, Sustainable Development

Robert W. Peters, Professor (Civil, Construction, and Environmental Engineering); Environmental Engineering, Water and Wastewater Treatment, Physical/Chemical Treatment, Soil and Ground Water

Remediation, Sonication/Acoustic Cavitations, Advanced Oxidation Processes, Water Chemistry, Energy Conservation; Sustainable Engineering Design

Talat F. Salama, Assistant Professor (Civil, Construction, and Environmental Engineering); Construction Engineering Management, Structural Engineering, Finite Element Modeling; Sustainable Engineering Design

Virginia P. Sisiopiku, Associate Professor (Civil, Construction, and Environmental Engineering); Traffic Engineering, Intelligent Transportation Systems, Traffic Operations, Traffic Safety

Nasim Uddin, Associate Professor (Civil, Construction, and Environmental Engineering); Structural Engineering, Structural Dynamics, Infrastructure Rehabilitation, Hazard Mitigation

Christopher Waldron, Assistant Professor (Civil, Construction, and Environmental Engineering); Structural Engineering, Bridge Design

Secondary Appointment Faculty

Heshmat Aglan, Professor & Associate Dean (Tuskegee University); Mechanical Engineering, Structural Mechanics, Polymer Modified Pavement

Ashraf Z. Al-Hamdan, Lecturer (University of Alabama in Huntsville); Subsurface Remediation, Contaminant Transport Modeling & Waste Resources Planning & Management

Bo Dowswell, PhD., P.E.; Structural and Steel Design, Shell Structures

Alan Eberhardt, Associate Professor (Biomedical Engineering); Solid Mechanics, Biomechanics, Analytical and Numerical Methods

Tarek El-Misalami, PhD, Assistant Professor (Misr University for Science and Technology, Cairo, Egypt); Construction Engineering Management

Joseph J. Gauthier, Associate Professor (Department of Biology); Applied and Environmental Microbiology

Wood Herren, Attorney at Law (Bradley Arant Law Firm); Corporate and International Law

Lee Moradi, PhD., PE, Director of Engineering (Center for Biophysical Sciences and Engineering); Structural Engineering and Analyst, Constitutive Properties of Concrete Masonry Units Subjected to Blast, System Performance and Design.

Loring Rue, Professor (Department of Surgery); Chief, Section of Trauma, Burns, and Surgical Critical Care (injury and crash injury research)

Edmund P. Segner, Jr., Professor Emeritus, (Civil, Construction, and Environmental Engineering); Structural Engineering, Structural Mechanics

Admission Requirements

In addition to the 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 a program accredited by the Accreditation Board for Engineering and Technology (ABET). 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 M.S.C.E. 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 (A = 4.0) 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 scores achieved on the GRE General Test. Admission to the program is competitive and is based on all available evidence; for admission in good academic standing, scores above 500 on each component of GRE General Test are preferred. Minimum scores of 550 on the Test of English as a Foreign Language (TOEFL) and a 3.5 on the Test of Written English (TWE) are also required for those applicants whose native language is not English. These test scores will be used primarily if an applicant fails to meet minimum standards for admission in good standing and is being considered for admission on probation.
5. Verification of registration by examination as a Professional Engineer (P.E.) will satisfy criteria 2, 3, and 4 above.

M.S.C.E. 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 an 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 term. *Enrollment in Civil Engineering Graduate Seminar (CE 641) is required at least once per academic year.*

Plan I (Thesis Option)

1. In addition to the general Graduate School requirements, the student must successfully complete at least 33 semester hours of graduate credit, including:
 - (a) A minimum of 18 semester hours in civil engineering;
 - (b) 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.
 - (c) A minimum of 9 hours of CE 699 - Masters Thesis Research.

2. 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.

Plan II (Nonthesis Option): Research/Design Emphasis

1. The student must successfully complete at least 33 semester hours of graduate credit including:
 - a) A minimum of 24 semester hours in civil engineering;
 - b) 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
 - c) A minimum of 3 hours of CE 698 – Nonthesis Research under the direction of the graduate study committee chair, resulting in a committee approved written report.

2. 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.

Plan II (Nonthesis Option): Construction Engineering Management Emphasis

1. The student must successfully complete at least 33 semester hours of graduate credit, including the following:

a) A minimum of 24 semester hours of construction management courses from the CCEE Department, which may be satisfied from among the following courses: CE 600, CE 601, CE 602, CE 603, CE 604, CE 605, CE 606, CE 692 , or an approved construction management course; and

b) A minimum of 6 semester hours from the MBA program, which may be satisfied from among the following courses; MBA 609, MBA 610, MBA 611, MBA 650, or an approved course from the MBA program; and

d) a minimum of 3 hours of CE 698 – Nonthesis Research under the direction of the graduate study committee chair, resulting in a committee approved written report.

2. 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 design project.

Areas of Specialization

Specialization programs are available in the fields of environmental engineering, structural engineering/structural mechanics, construction engineering management; and transportation engineering. Supporting courses are offered in geotechnical engineering, optimization, engineering law and other areas. *Enrollment in the Civil Engineering Graduate Seminar series (CE 641/741) is required of all graduate students at least once per academic year.*

Required Courses for Specialization in Environmental Engineering

In addition to the M.S.C.E. program requirements, the following undergraduate classes (plus all associated prerequisites) are generally required of all M.S.C.E. students specializing in environmental engineering:

CE 236 Environmental Engineering

CE 337 Hydraulics

CE 344 Civil Engineering Analysis

CE 430 Water Supply and Drainage Design

or

CE 480 Water and Wastewater Treatment

Required Courses for Specialization in Structural Engineering/Structural Mechanics

In addition to the M.S.C.E. program requirements, the following undergraduate classes (plus all associated prerequisites) are generally required of all M.S.C.E. students specializing in structural engineering/structural mechanics:

CE 332	Soil Engineering
CE 344	Civil Engineering Analysis
CE 360	Structural Analysis
CE 450	Structural Steel Design
CE 455	Reinforced Concrete Design

Required Courses for Specialization in Construction Engineering Management

In addition to the M.S.C.E. program requirements, the following undergraduate classes (plus all associated prerequisites) are generally required of all M.S.C.E. students specializing in construction management.

CE 395	Engineering Economics
CE 497	Construction Engineering Management

Required Courses for Specialization in Transportation Engineering

In addition to the M.S.C.E. program requirements, the following undergraduate classes (plus all associated prerequisites) are generally required of all M.S.C.E. students specializing in transportation engineering.

CE 344	Civil Engineering Analysis
CE 345	Transportation Engineering

Ph.D. Programs

This is a joint program with the University of Alabama in Huntsville (UAH). A typical student entering the program would already have a degree in Civil Engineering from an ABET accredited program. 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. *Enrollment in the Civil Engineering Graduate Seminar (CE 741) at least once per academic year 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.

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.

For additional details, please refer to the CCEE website: <http://www.eng.uab.edu/cee>

Additional Information

For detailed information, contact Jennifer A. Vinson, Administrative Associate (jav@uab.edu), UAB Department of Civil, Construction, and Environmental Engineering, HOEN 140, 1530 3rd Ave., S., Birmingham, AL 35294-4440. Physical location: 140 Hoehn Building, 1075 13th Street South, Birmingham, AL, Telephone # (205) 934-8430.

CE Specialty Certificate Program

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 (B.S.C.E., M.S.C.E., Ph.D.) 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. Construction Engineering Management
2. Structural Engineering
3. Environmental Engineering
4. Transportation Engineering
5. Geotechnical Engineering

Civil Engineering (B.S.C.E.) graduates who complete the Certificate Program will have greater depth in specific technical area. The certificates also allow a means for practicing engineers to acquire expertise beyond a Bachelor 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 M.S.C.E. degree.

Students who wish to pursue a CE Certificate must be admitted to the Department as either undergraduate or graduate students (B.S.C.E. or M.S.C.E. 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 B.S.C.E. 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 www.eng.uab.edu/cee.

For more information, please contact Jennifer A. Vinson, Administrative Associate, 140 Hoehn Engineering Building, 1075 13th Street South, telephone (205) 934-8430, e-mail jav@uab.edu

Course Descriptions

Unless otherwise noted, all courses are for 3 semester hours of credit.

Civil Engineering (CE)

Environmental Engineering

530. Water Supply and Drainage Design. Water requirements; wastewater characteristics. Hydraulics and design of sewers; distribution, and reuse of water. Development of water supplies; design considerations. Prerequisite: CE 337.

533. Solid and Hazardous Waste Management. Overview of waste characterizations, regulations, and management options.

534. Air Quality Modeling and Monitoring. Atmospheric pollutants, effects, reactions, and sources. Air pollution meteorology and dispersion modeling. Ambient monitoring. Prerequisite: ME 251.

537. Environmental Experimental Design and Field Sampling. Experimental design, sensitivity analyses, water sampling, and flow monitoring. Receiving water chemical reactions. Field investigations. Lecture and laboratory. Prerequisite: CE 344.

580. Water and Wastewater Treatment. Physical unit operations, and chemical / biological unit processes for water and wastewater treatment. Design of facilities for treatment. Treatment and disposal of sludge. Prerequisite: CE 236.

631. Environmental Law. Law as it applies to the practicing environmental engineer. New and emerging regulations.

632. Industrial Water and Wastewater Treatment. Solid wastes and wastewaters from various industries. Assessment of treatability, system design, and equipment selection. Prerequisite: CE 480.

636. Stormwater Pollution Management. 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. Prerequisite: CE 430.

638. Water and Wastewater Chemistry. Aquatic chemistry. Chemical behavior of pollutants in receiving waters. Fate of common pollutants. Chemical kinetics in natural waters. Photochemical reactions. Modeling of wastewater discharges. Prerequisite: ENH 601 or CH 235.

639. Sediment Sources and Controls. Erosion and sediment transport in urban areas; design of common erosion control practices. Prerequisite: CE 430.

640. Wastewater Treatment Engineering. Wastewater sources and characteristics. Design and operation of wastewater treatment facilities, including grit removal, oil and grease removal, dissolved air floatation, 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. Prerequisite: CE 480.

641. Civil Engineering Graduate Seminar. Seminar focusing on guest presentations of various civil, construction, and environmental engineering topics of interest for CE Masters students. Mandatory enrollment at least once per academic year. 1 hour.

681. Environmental Chemistry. Chemical equilibrium, acid/base, chemical concepts in pollutant behavior. Chemical kinetics, redox system, hydrolysis; pesticides, chemical wastes. Prerequisite: CE 638.

682. Water Treatment Engineering. Water sources and characteristics. Design and operation of water treatment facilities including lime softening operations, coagulation, flocculation, clarification, dissolved air floatation, filtration, disinfection, absorption, ion exchange, and sludge disposal. Prerequisite: CE 480.

683. Water and Wastewater Treatment Processes Laboratory. Construction and evaluation of bench-scale treatment processes. Treatability of water and wastewater. Coagulation of sedimentation, settleability of biological sludges, aerobic biological treatment, chemical treatment, water softening toxicity, disinfection; and sludge treatment processes. Prerequisite: CE 682.

685. Engineering Hydrology. Hydrologic principles: hydrologic cycle, precipitation data, stream flow measurements. Applications to engineering problems: stream flow analysis, watershed management. Prerequisite: CE 236.

686. Engineering Hydrogeology. 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. Prerequisites: CE 485 & MA 252.

687. Stormwater Detention Pond Design. Stormwater problems and control methods, urban hydrology prediction procedures for drainage and water quality studies. Detention pond design basics, limitations and multiple benefits. Prerequisite: CE 430.

731. Environmental Law. Law as it applies to the practicing environmental engineers. New and emerging regulations.

732. Industrial Water and Wastewater Treatment. Solid wastes and waste waters from various industries; assessment of treatability, system design and equipment selection. Prerequisite: CE 480.

736. Stormwater Pollution Management. Quality and quantity of urban stormwater. Receiving water problems and sources of pollutants. Runoff quality and quantity characterizations. Erosion control. Selection and design of controls; regulations. Prerequisite: CE 430.

738. Water and Wastewater Chemistry. Aquatic chemistry. Chemical behavior of pollutants in receiving waters. Fate of common pollutants. Chemical kinetics in natural waters. Photochemical reactions. Modeling of wastewater discharges. Prerequisite: ENH 601 or CH 235.

739. Sediment Sources and Controls. Erosion and sediment transport in urban areas; design of common erosion control practices. Prerequisite: CE **430**.

740. Wastewater Treatment Engineering. Wastewater sources and characteristics. Design and operation of wastewater treatment facilities, including grit removal, oil and grease removal, dissolved air floatation, 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. Prerequisite: CE 480.

741. Civil Engineering Graduate Seminar. Seminar focusing on guest presentations on various civil, construction, and environmental engineering topics of interest for CE Ph.D. students. Mandatory enrollment at least once per academic year. 1 hour.

781. Environmental Chemistry. Chemical equilibrium, acid/base, chemical concepts in pollutant behavior. Chemical kinetics, redox system, hydrolysis, pesticides, chemical wastes. Prerequisite: CE 638 or CE 738.

782. Water Treatment Engineering. Water sources and characteristics. Designs and operation of water treatment facilities including lime softening operations, coagulation, flocculation, clarification, dissolved air floatation, filtration, disinfection, adsorption, ion exchange, and sludge disposal. Prerequisite: CE 480.

783. Water and Wastewater Treatment Processes Laboratory. Construction and evaluation of bench-scale treatment processes. Treatability of water and wastewater. Coagulation of sedimentation,

settleability of biological sludges, aerobic biological treatment, chemical treatment, water softening toxicity, disinfection, sludge treatment processes. Prerequisite: CE 682 or CE 782.

785. Engineering Hydrology. Hydrologic principles: hydrologic cycle, precipitation data, stream flow measurements. Applications to engineering problems; stream flow analysis, watershed management. Prerequisite: CE 236.

786. Engineering Hydrogeology. 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. Prerequisites: CE 485 & MA 252.

787. Stormwater Detention Pond Design. Stormwater problems and control methods, urban hydrology prediction procedures for drainage and water quality studies. Detention pond design basics, limitations and multiple benefits. Prerequisite CE 430.

Structural Engineering and Structural Mechanics

516. Mechanical Vibrations. Free and forced single-degree-of-freedom systems. Multiple-degree-of-freedom systems. Damped, forced two-degree-of-freedom systems. Single continuous systems. Prerequisites: CE 215 and CE 220.

520. Advanced Mechanics. Variation of stress at a point, including determination of principal and maximum shear stress. Basic problems involving symmetrical deformation; thick-wall cylinders, sphere, and rotating disk. Torsions of noncircular sections. Curved beams. Failure theories. Unsymmetrical bending, shear center. Prerequisites: CE 220.

526. Foundation Engineering. 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; estimate stresses in soil masses; lateral resistance of piles and pile group; retaining walls, sheetpiles and coffer-dams. Prerequisite: CE 332 and CE 455.

553. Design of Wood Structures. Design and detailing of timber structures. Properties and specifications for dimension and glulam timbers. 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 Specification standards. Prerequisite: CE 360.

554. Design of Masonry Structures. 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. Prerequisite: CE 360.

556. Prestressed Concrete Design. Principles and concepts of design in prestressed concrete including elastic and ultimate strength analyses for flexural, shear, bond, and deflection. Principles of concordancy and linear transformation for indeterminate prestressed structures. Prerequisite: CE 455.

557. Concrete Technology. 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. Specification writing to ensure good quality concrete and field inspection procedures. Case studies of problems in concrete construction. Prerequisite: CE 222.

561. Introduction to the Finite Element Method. Concepts and applications of the finite element method. Development and applications of basic finite elements. Software use. Prerequisite: CE 220.

564. Structural Dynamics. Closed form and numerical solutions to single degree-of-freedom structural models. Analysis of multistory frames. Computer applications and seismic analysis. Techniques of modal analysis. Prerequisites: CE 215 and CE 360.

567. Wind and Seismic Loads. Methods of calculating loads on structures caused by extreme winds and earthquakes. Calculation of wind loads on various types of structures according to theory and code. Determination of earthquakes loads on structures using structural dynamics and codes. Prerequisite: CE 360.

568. Bridge Engineering. 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. Prerequisites: CE 450 and CE 455.

612. Theory of Elasticity. Equations of linear reduction to plane stress, plane strain, and generalized plane strain. Airy and Love stress functions in solution of problems. Prerequisite: CE 220.

615. Theory of Elastic Stability. Static stability of bars, beams, trusses, and rigid frames. Dynamic stability of bars. Energy method applied to buckling problems. General theory of elastic stability. Prerequisite: CE 220.

617. Theory of Plates and Shells. 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 shells. Prerequisite: CE 220.

641. Civil Engineering Graduate Seminar. Seminar focusing on guest presentations of various civil, construction, and environmental engineering topics of interest for CE Masters students. Mandatory enrollment at least once per academic year. 1 hour.

650. Advanced Structural Steel Design. Beams, columns, tension members, and connections; current research. Prerequisite: CE 450.

655. Advanced Reinforced Concrete. Beam, column, and slab actions; current research. Prerequisite: CE 455.

660. Structural Mechanics. Elastic beam deflections, beam columns, lateral torsional buckling, column stability, plastic design, plate bending, yield line theory. Prerequisite: CE 360.

662. Advanced Structural Analysis. Analysis of indeterminate structures using classical and matrix methods. Use of large-scale computer programs. Prerequisite: CE 360.

663. Finite Element Methods. Theory and applications in structural mechanics. Plane stress, plane strain, axisymmetric problems, solids, plates, shells, nonlinear systems. Prerequisite: CE 561.

712. Theory of Elasticity. Equations of linear reduction to plane stress, plane strain, and generalized plane strain. Airy and Love stress functions in solution of problems. Prerequisite: CE 220.

715. Theory of Elastic Stability. Static stability of bars, beams, trusses, and rigid frames. Dynamic stability of bars. Energy method applied to buckling problems. General theory of elastic stability. Prerequisite: CE 220.

717. Theory of Plates and Shells. 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. Prerequisite: CE 612 or CE 712.

741. Civil Engineering Graduate Seminar. Seminar focusing on guest presentations on various civil, construction, and environmental engineering topics of interest for CE Ph.D. students. Mandatory enrollment at least once per academic year. 1 hour.

750. Advanced Structural Steel Design. Beams, columns, tension members, and connections; current research. Prerequisite: CE 450.

755. Advanced Reinforced Concrete. Beam, column, and slab actions; current research. Prerequisite: CE 455.

763. Finite Element Methods. Theory and applications in structural mechanics. Plane stress, plane strain, axisymmetric problems, solids, plates, shells, nonlinear systems. Prerequisite: CE 561.

Transportation Engineering Courses

621. Transportation Engineering Seminar. Seminar focusing on student research and guest presentations of various topics of interest to Masters Transportation Engineering students. 1 hour.

622. Traffic Flow Theory. 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. Prerequisite: CE 345.

623. Non-Motorized Transportation Design and Planning. 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.

624. Simulations Models for Transportation Applications. 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. Prerequisite: CE 345.

625. Intelligent Transportation Systems*, Graduate. Legal, institutional and planning issues. system architecture, telecommunication technologies. Advanced user services, intermodal systems. Deployment programs, cost and benefit evaluation.

641. Civil Engineering Graduate Seminar. Seminar focusing on student research and guest presentations of various civil, construction, and environmental engineering topics of interest for CE Masters students. Mandatory enrollment at least once per academic year. 1 hour.

642. Highway Materials and Construction. Properties of materials used in highway construction. Construction methods and management. Prerequisites: CE 322 and CE 345.

643. Pavement Design and Construction. Analysis of stresses and strains in pavement systems. Design and construction of flexible and rigid pavement, base courses and subgrades. Effects of loading on pavement life. Prerequisites: CE 345.

644. Civil Engineering Analysis. Sampling and experimental design. Hypotheses testing. Decision analyses. Multiple regression analyses. Nonparametric methods. Analysis of experimental data in civil engineering research; hypothesis testing, regression, experimental design, nonparametrical analysis. Prerequisite: CE 344.

646. Traffic Engineering Operations. Highway and intersection capacity analysis, traffic signal timing and phasing, coordination, signal networks, freeway operations, nonsignalized traffic control techniques. Prerequisite: CE 345.

647. Engineering Optimization and Modeling. Mathematical techniques for analysis of systems. Project scheduling, optimization, and simulation applied to civil engineering system analysis. Prerequisite: CE 344, EE 130 or EE 134.

648. Urban and Transportation Planning. Land use planning for transportation systems; trip generation, trip distribution, and traffic assignment. Prerequisite: CE 345.

693. Applied Research in Civil and Environmental Engineering. Research tools, including elements of experimental design and proposal preparation. Effective communication, literature searches, and exploratory data analysis. Prerequisite: Permission of instructor.

721. Transportation Engineering Seminar. Seminar focusing on student research and guest presentations of various topics of interest to PhD. Transportation Engineering students. 1 hour.

722. Traffic Flow Theory. Microscopic and macroscopic traffic flow characteristics. Traffic flow analytical techniques including care-following models, traffic stream models, shock wave analysis. Queuing analysis and gap acceptance. Simulation models for network analysis. Prerequisite CE 345.

723. Non-Motorized Transportation Design and Planning. 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.

724. Simulation Models for Transportation Applications. 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. Prerequisite: CE 345.

725. Intelligent Transportation Systems. Legal, institutional and planning issues. System Architecture, telecommunication technologies. Advanced user services, intermodal systems. Deployment programs, cost and benefit evaluation.

741. Civil Engineering Graduate Seminar. Seminar focusing on guest presentations on various civil, construction, and environmental engineering topics of interest for CE PhD. students. Mandatory enrollment at least once per academic year. 1 hour.

Construction Engineering Management Courses

600. Sustainable Construction. 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 recourse efficiency, economics, ethics, waste, human health, environmental justice, and industrial ecology; (2) Alternative practices that significantly reduce adverse environmental impacts of built infrastructures, and (3) Explore past and present thinking of engineering practitioners in this newly emerging discipline.

601. Construction Methods. This course provides an overview of construction methods, building systems, material and equipment used in the construction of buildings, earthwork, bridges and roads. Excavation, formwork, concrete, masonry, and steel erection methods. Types of foundations that can be used for a project are presented.

602. Construction Contracting, Bidding, and Estimating. Estimation of construction project costs: direct and indirect, labor, material, and equipment costs. Overhead and profit, bidding computer-based estimating. Introduction to the U.S. legal system as it applies to civil engineering and construction. Fundamental concepts of contract and tort law, claims, risk management, business formation and licensing, agency, insurance and bonding, and real property.

603. Construction Accounting and Financial Management. This course covers financial accounting and cost control concepts dealing with the integration and management of both company and project-level revenue and expense. It shows how effective cost control methodology and data is essential to monitoring and controlling current project budgets as well as developing accurate future bids. The course

covers accounting systems unique to construction companies and financial analysis methods typically employed; progress payment disbursement; forecasting and trends; cash flow life cycle theory; computer applications; project funding; and the use of cost information and associated reports.

604. International Construction Contracts and Law. 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. Required bonding and other risk allocation vehicles are discussed.

605. Project Management. This course 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.

606. Advanced Project Management. Directed study of selected topics in construction management. The schedule of classes will list topics selected. Topics will include: business policy and problems relating to construction companies, contractors' organization, financial management, project management, supervision, costs analysis and equipment economics, team building, professional ethics, leadership and topics in construction law.

631. Environmental Law. Law as it applies to the practicing environmental engineer. New and emerging regulations.

649. Engineering Liability. Laws related to liability for engineering design in the context of projects liability and construction projects; roles and liabilities between various parties involved in construction projects.

658. Engineering Management. Management techniques for practicing engineers. Students will learn management and leadership skills, how to work in teams, as well as professional issues on ethics.

692. Civil Engineering Capstone. The 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.

731. Environmental Law. Law as it applies to the practicing environmental engineer. New and emerging regulations.

749. Engineering Liability. 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.

758. Engineering Management. Management techniques for practicing engineers. Students will learn management and leadership skills, how to work in teams, as well as professional issues on ethics.

Other Courses

690. Special Topics in (Area). 3 hours.

691. Individual Study in (Area). 3 hours.

698. Nonthesis Research. 3, 6, 9 hours.

699. Thesis Research. Prerequisite: Admission to candidacy. 3, 6, 9 hours.

790. Special Topics in (Area). 3 hours.

791. Individual Study in (Area). 3 hours.

798. Nondissertation Research. 3, 6, 9, 12 hours.

799. Doctoral Dissertation. Prerequisite: Admission to candidacy. 3, 6, 9, 12 hours.

Master in Engineering – Construction Management

The Department of Civil, Construction, and Environmental Engineering is pleased to announce its newest program, a Masters in Engineering – Construction Management. 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 Bachelors degree from an 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 for U.S. Citizens;
4. Must submit at least two letters of recommendation
5. Must schedule an interview with the Program director or coordinator.
6. Student must successfully complete at least 33 semester hours of graduate credit;

Master in Engineering - Construction Management Courses

628. Construction Management Capstone Case Study, Part 1. Students review case studies involving project planning and risk assessment or individual topical study (1 hour).

629. Construction Management Capstone Case Study, Part 2. Students review case studies emphasizing project control and coordination or individual topical study (1 hour).

630. Construction Management Capstone Case Study, Part 2. Students review case studies emphasizing technology advancements in construction methods and project management, or individual topical study (1 hour).

669. Advanced Project Management. 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. 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 (3 hours).

670. Construction Estimating and Bidding. 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 (3 hours).

671. Construction Liability and Contracts. 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 (Prerequisites CE 669 and CE 670 or approval by the Project Director) (3 hours).

672. Construction Methods and Equipment. Provides students a big-picture understanding of the construction methods employed to bring the concepts and designs of architects and engineers to physical realty. The focus areas include earthmoving, heavy construction, building construction, and process plants. Students will understand the planning and deployment of equipment, materials, labor, and subcontractors required in the construction process. The course is strengthened with guest lectures from industry practitioners and student interaction with construction industry participants as parts of the group semester project. (Prerequisites: CE 669 or approval by the Program Director) (3 hours).

673. Techniques of Project Planning and Control. Provides a thorough understanding of the project scheduling process in construction planning and control. Students learn the relationship between the work breakdown structure, organization breakdown structure, and the activities used in developing project schedules. The Critical Path Method (PM) and the Precedence Diagram Method (PDM) are discussed in detail to include hand calculations and powerful computer software products. The use of scheduling techniques for project control, resources constraint management, cash flow management, and project completion date management are investigated and the importance of communications in the planning and controlling process emphasized. (Prerequisites: CE 669, and CE 670) (3 hours).

674. Overview of Green Building Design and Construction (LEED). 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 SystemTM certification exam (Prerequisite: CE 672) (3 hours).

675. Fundamentals of Financial & Managerial Accounting for Non-Financial Managers. Provides an extensive overview of accounting concepts for non-financial managers. Students will learn the basic elements of accounting (Generally Accepted Accounting Practices). They will understand 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. (Prerequisite: CE 669, CE 670, CE 673, and CE 677) (3 hours).

676. Construction Project Risk Management. This course addresses the methodologies employed in the engineering and construction industries to assist in national 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, CE 670, and CE 673) (3 hours).

677. Construction Accounting and Finance. 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, CE 670, and CE 672) (3 hours).

678. Construction Business Systems and Information Technology. The use of information management systems design and construction operations is studied in detail. Emerging technology and state-of-the-art equipment and software will be discussed. The importance of information technology and equipment, and benefit cost tradeoffs for different company and project sizes will be discussed and investigated by students. A large portion of the course effort is the student group investigative topical research project and oral presentation (Prerequisites: CE 669, CE 670, and CE 672) (3 hours).

679. Construction Methods – Detailing and Finishing. This course is an extension of the concepts and technical terminology introduced in Construction Methods and Equipment. Topics explored in this course include green desing/sustainable constructin, finishing systems, windows and cladding, HVAC/plumbing, and roofing. The International Building Code will be examined, as well as, fundamental engineering, design, and construction methods. Upon completion students will be better equipped to read and understand drawings and specifications, necessary skills for detailed estimating of cost and time (Prerequisite: CE 671) (3 hours).

680. Construction Management Capstone Studies. 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 (3 hour).

684. Construction Project Administration. This course is designed to provide a comprehensive overview of the important business, legal, and management aspects of construction management with emphasis on administrative procedures. The course is an extension of Advanced Project Management concepts with specific focus on the construction management issues facing owners, engineers, constructors, architects, and students. International business topics will also be discussed (Prerequisite: CE 669) (3 hours).

688. Strategic Management & Leadership Applications in a Global Environment. This course is designed to prepare students to face the demanding management and leadership challenges facing industry leaders as competition becomes ever more globalized. 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. Organization design and management, selection and use of technology, and methodologies for measuring and monitoring performance are all fundamental working concepts necessary to think strategically in a changing world business environment. 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 (3 hours).

689. Building Information Modeling (BIM) Techniques. 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 (3 hours).

694. Sustainable Construction. 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 will include: (1) Issues of recourse 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 (3 hours)

695. International Construction Contracts & Liability. 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 (3 hours)

Computer Engineering (Ph.D.*)

Degree Offered:	Ph.D.
Director:	Dr. Yehia Massoud
Phone:	(205) 934-8440
E-mail:	massoud@uab.edu
Web site:	www.eng.uab.edu

Faculty

Gregory A. Franklin, Assistant Professor (Electrical and Computer Engineering); Electric Utility Power Systems, Power System Protection and Control, Power Line Communication

M. R. Haider, Assistant Professor (Electrical and Computer Engineering); Analog, Mixed-signal, and RF Circuit and System Design, Low-power Electronics, Implantable Systems, Inductive Powering, Energy Harvesting, Impulse-based Wireless Communication

Thomas C. Jannett, Professor and Graduate Program Director (Electrical and Computer Engineering); Intelligent Control, Biomedical Instrumentation, Modeling and Simulation, Intelligent Sensor Networks

Yehia Massoud, Professor and Chair (Electrical and Computer Engineering); Electronic Design and Applications in Nanotechnology and Biotechnology

Murat M. Tanik, Professor (Electrical and Computer Engineering); Software Systems Engineering, Integrated Systems Design, Process Engineering

Gregg L. Vaughn, Professor (Electrical and Computer Engineering); Digital Signal Processing, Applications of Microprocessors, Digital Communication

See the graduate catalog of the University of Alabama at Huntsville (UAH) for the Electrical and Computer Engineering faculty of that university.

Program Information

The Ph.D. degree prepares students for professional and research careers in industry and academia. The Ph.D. 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 Ph.D. 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. A score of at least 550 on the verbal and quantitative sections of the Graduate Record Examination (GRE);
3. An acceptable score on the TOEFL examination for international students 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.

Program Requirements

The course of study leading to the Ph.D. includes a minimum of 48 semester hours of course work beyond the bachelor's degree (excluding dissertation research). A student's advisory committee may allow appropriate course work pursued in completing a master's degree to be counted towards the 48 hour course work requirement, but a maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour course work requirement for the Ph.D. 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.

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.)
Graduate Catalog Description	http://main.uab.edu/show.asp?durki=95245

For detailed information, contact

Dr. Yehia Massoud, Graduate Program Director

UAB Department of Electrical and Computer Engineering. BEC 259D

1530 3rd Avenue South, Birmingham, Alabama 35294-1170.

Telephone 205-934-8440

E-mail ElecCompEng@uab.edu

Web www.eng.uab.edu

Course Descriptions

See the graduate catalog of the University of Alabama at Huntsville (UAH) for doctoral courses that university.

See the listing for the master's degree in electrical engineering (M.S.E.E.) for courses at the 500 level.

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.

Electrical and Computer Engineering (EE)

601. Electrical and Computer Engineering Seminar. Research presentations delivered by faculty, students, and invited guests. Technical writing and development of verbal presentations. Writing a research paper. Maximum of 3 credit hours applicable toward the M.S.E.E. degree. Prerequisite: permission of instructor. 1-3 hours.

610. Technical Communication for Engineers. Workshop-oriented course producing technical memoranda, proposals, and conference and/or refereed-journal papers with oral presentations related to these work products. Prerequisite: Graduate standing in Engineering and successful performance on a written pretest.

621. Random Variables and Processes. Theory underlying analysis and design of communication, stochastic control, data gathering, and data analysis systems. Prerequisite: Coursework in communication systems or permission of instructor.

622. Advanced Communication Theory. Analysis of performance of analog modulation techniques in presence of noise. Prerequisites: Coursework in communication systems and random variables and processes.

624. Digital Communication. Design of digital communication systems. Prerequisites: Coursework in communication systems and random variables and processes.

625. Coding and Information Theory. Entropy, channels and channel capacity, RLL codes, error correcting codes, cyclic codes, cryptography, convolutional codes, trellis coded modulation. Prerequisite: Coursework in random variables and processes.

626. Digital Image Processing. Digital image processing fundamentals, image transformations, image enhancement, image restoration, image compression, image segmentation, and image presentation. Prerequisite: Coursework in systems analysis.

628. Telecommunications I. Advanced topics. Prerequisite: Permission of instructor.

629. Telecommunications II. Advanced topics. Prerequisite: Permission of instructor.

632. Introduction to Computer Networking. Computer networking fundamentals. Layered network model and correspondence to real systems. Discussion of Ethernet, token ring, TCP/IP LAN and other protocols. Exploration of Internet and similar systems. Network application models. Simulation of networks. Permission of instructor.

633. Experiments in Computer Networking. 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. Prerequisite: Coursework in computer networking including TCP/IP protocols.

635. Telecommunication Systems. System organization and structure. Data transmission. Prerequisite: Permission of instructor.

636. Advanced Digital Design. Large-scale class project. Sample topics include math coprocessors, text coprocessors, CRT controllers, and data encryption devices. Prerequisite: Permission of instructor.

639. Advanced Microprocessors. Topics covering both hardware and software issues. Individual or group term project. Prerequisite: Permission of instructor.

640. Object-Oriented Design. Study and practice of the object-oriented methodology for developing software designs. Implementation consequences. Application of object-oriented methodologies to specific problems using object-oriented language. Prerequisite: Coursework in object-oriented programming.

641. Modern Control I. Discrete-time and sampled-data and systems. State variable models, state feedback and estimation. Optimal control and estimation. Predictive control.. Prerequisite: Coursework in control systems or permission of instructor.

642. Intelligent Systems. Organization and characteristics of intelligent systems. Optimization. Evolutionary algorithms. Neural network and fuzzy logic algorithms. Intelligent control. Prerequisite: Permission of instructor.

643. System Identification and Adaptive Control. Modeling of systems using structure identification, parameter estimation, and model validation. Controller design based on input-output models. Parameter adaptive control. Prerequisite: Permission of instructor.

650. Software Engineering. 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. Prerequisite: Permission of instructor.

651. Software Engineering Large Systems I. Introduces advanced integrated software systems development paradigms. Notions of process and integrated system views. Modeling-in-the-large and modeling-in-the-small are discussed and related to levels in Object Oriented Design and programming. Prerequisite: Permission of instructor.

652. Software Engineering Large Systems II. Builds on the advanced integrated software systems development paradigms. 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. Prerequisites: Permission of instructor.

657. Enterprise Information Architecture Engineering. Study and practice of the enterprise architecture engineering for developing multi-tiered enterprise level systems. Methodologies for design and implementation of large-scale information systems. Distributed computing, clients, servers, operating systems and databases. Prerequisite: Permission of instructor.

661. Advanced Electrical Machinery I. Synchronous machine theory. Prerequisites: Permission of instructor.

662. Advanced Electrical Machinery II. Induction machine theory. Prerequisite: Permission of instructor.

663. Control of Synchronous Machines. Methods for control of synchronous machines. Prerequisite: Permission of instructor.

671. Computer Applications in Power Systems. Analysis of power systems operation. Prerequisite: Permission of instructor.

672. Power System Overvoltages. Events causing overvoltages. System protection. Prerequisite: Permission of instructor.

673. Reliability of Power Systems. Component reliability using standard industrial techniques. Prerequisite: Permission of instructor.

674. Economic Operation and Control of Power Systems. Economic control of thermal generating stations and hydrothermal stations. Computer control of power systems. Prerequisite: Permission of instructor.

***690. Special Topics in (Area).** Prerequisite: Permission of instructor. 1-12 hours.

***691. Special Problems in (Area).** Prerequisite: Permission of instructor. 1-12 hours.

***697. Project.** Graduate project for Plan II Master's students. Prerequisite: Permission of instructor. 3 hours.

***698. Nonthesis Research.** Does not count towards a degree. 1-12 hours.

*699. **Master's Thesis.** Master's thesis for Plan I Master's students. Prerequisite: Admission to candidacy. 1-12 hours.

701. **Electrical and Computer Engineering Seminar.** Research presentations delivered by faculty, students, and invited guests. Technical writing and development of verbal presentations. Writing a research paper. Maximum of 3 credit hours applicable toward the Computer Engineering Ph.D. degree. Prerequisite: permission of instructor. 1-3 hours.

724. **Digital Communications.** Design of digital communications systems. Prerequisites: Coursework in communication systems and random variables and processes.

725. **Coding and Information Theory.** Entropy, channels and channel capacity, RLL codes, error correcting codes, cyclic codes, cryptography, convolutional codes, trellis coded modulation. Prerequisite: Coursework in random variables and processes.

726. **Digital Image Processing.** Digital image processing fundamentals, image transformations, image enhancement, image restoration, image compression, image segmentation, and image presentation. Prerequisite: Coursework in systems analysis.

728. **Telecommunications I.** Advanced topics. Prerequisite: Permission of instructor.

729. **Telecommunications II.** Advanced topics. Prerequisite: Permission of instructor.

733. **Experiments in Computer Networking.** 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. Prerequisite: Coursework in computer networking including TCP/IP protocols.

740. **Object-Oriented Design.** Study and practice of the object-oriented methodology for developing software designs. Implementation consequences. Application of object-oriented methodologies to specific problems using object-oriented language. Prerequisite: Coursework in object-oriented programming.

742. **Intelligent Systems.** Organization and characteristics of intelligent systems. Optimization. Evolutionary algorithms. Neural network and fuzzy logic algorithms. Intelligent control. Prerequisite: Permission of instructor.

743. **System Identification and Adaptive Control.** Modeling of systems using structure identification, parameter estimation, and model validation. Input/output models. Parameter adaptive control. Prerequisite: Permission of instructor.

750. **Software Engineering.** 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. Prerequisite: Permission of instructor.

751. **Software Engineering Large Systems I.** Introduces advanced integrated software systems development paradigms. Notions of process and integrated system views. Modeling-in-the-large and modeling-in-the-small are discussed and related to levels in Object Oriented Design and programming. Prerequisite: Permission of instructor.

752. **Software Engineering Large Systems II.** Builds on the advanced **integrated software systems development paradigms.** 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. Prerequisites: Permission of instructor.

761. Advanced Electrical Machinery I. Synchronous machine theory. Prerequisites: Permission of instructor.

762. Advanced Electrical Machinery II. Induction machine theory. Prerequisite: Permission of instructor.

763. Control of Synchronous Machines. Methods for control of synchronous machines. Prerequisite: Permission of instructor.

771. Computer Applications in Power Systems. Analysis of power systems operation. Prerequisite: Permission of instructor.

772. Power System Overvoltages. Events causing overvoltages. System protection. Prerequisite: Permission of instructor.

773. Reliability of Power Systems. Component reliability using standard industrial techniques. Prerequisite: Permission of instructor.

774. Economic Operation and Control of Power Systems. Economic control of thermal generating stations and hydrothermal stations. Computer control of power systems. Prerequisite: Permission of instructor.

***790. Special Topics in (Area).** 1-12 hours.

***791. Individual Study in (Area).** 1-12 hours.

***798. Nondissertation Research.** Does not count towards a degree. 1-12 hours.

***799. Dissertation Research.** Prerequisite: Admission to candidacy. 1-12 hours.

Electrical Engineering (Ph.D.* , M.S.E.E.)

Degree Offered: M.S.E.E.

Director: Dr. Yehia Massoud

Phone: (205) 934-8440

E-mail: massoud@uab.edu

Web site: www.eng.uab.edu

Faculty

Dale W. Callahan, Associate Professor (Electrical and Computer Engineering); Wireless Communication, Digital Signal Processing, Telecommunication

David A. Conner, Professor Emeritus (Electrical and Computer Engineering); Electrical Networks, Electromagnetics, Mathematical Modeling of Electrical Phenomena

Gregory A. Franklin, Assistant Professor (Electrical and Computer Engineering); Electric Utility Power Systems, Power System Protection and Control, Power Line Communication

David G. Green, Instructional Associate Professor (Electrical and Computer Engineering); Computer Networking, Software Engineering, Embedded Computer Systems

M. R. Haider, Assistant Professor (Electrical and Computer Engineering); Analog, Mixed-signal, and RF Circuit and System Design, Low-power Electronics, Implantable Systems, Inductive Powering, Energy Harvesting, Impulse-based Wireless Communication

Thomas C. Jannett, Professor and Graduate Program Director (Electrical and Computer Engineering); Control Systems, Biomedical Instrumentation, Modeling and Simulation, Intelligent Sensor Networks

Jon R. Marstrander, Instructor (Electrical and Computer Engineering); Electronics, Digital Systems, Digital Signal Processing, Image Processing

Yehia Massoud, Professor and Chair (Electrical and Computer Engineering); Electronic Design and Applications in Nanotechnology and Biotechnology

Dalton Nelson, Assistant Professor (Electrical and Computer Engineering); Fuzzy Logic and Intelligent Control Methodologies

Murat M. Tanik, Professor (Electrical and Computer Engineering); Software Systems Engineering, Integrated Systems Design, Process Engineering

Gregg L. Vaughn, Professor (Electrical and Computer Engineering); Digital Signal Processing, Applications of Microprocessors, Digital Communication

Program Information

The Master of Science in Electrical Engineering (M.S.E.E.) prepares students for a professional career in industry or entry into a doctoral program or professional school. The M.S.E.E. program builds upon the broad foundation provided by a Bachelor of Science in Electrical Engineering by supplying depth in specific areas of electrical and computer engineering through advanced coursework and a thesis or project experience.

Admission Requirements

Requirements for admission to the electrical engineering master's degree program include the following:

1. A bachelor's degree in electrical or computer engineering.
2. A 3.0 (A = 4.0) 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. An acceptable score on the GRE General Test and the TOEFL, if applicable.

Verification of registration by examination as a Professional Engineer (P.E.) will satisfy Admission Criteria 3 and 4.

Conditional admission may be given to students who fail to meet one or more of the requirements for unconditional admission. If admitted, student will be advised of measures necessary to correct deficiencies.

Financial Support

Assistantships may be available for well-qualified students admitted into the M.S.E.E. 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.

Program Requirements

Assuming that a student possesses appropriate academic preparation for this degree, 33 semester hours of course work 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; and
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; and
4. Successful completion of a project developed through registration for at least 3 semester hours of EE 697.

Additional Information

Deadline for Entry Term(s):	Fall, Spring, Summer
Deadline for All Application Materials to be in	Six weeks before term begins

the Graduate School Office:	
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
Graduate Catalog Description	http://main.uab.edu/show.asp?durki=95253

For detailed information, contact

Dr. Yehia Massoud, Graduate Program Director
 UAB Department of Electrical and Computer Engineering. BEC 259D
 1530 3rd Avenue South, Birmingham, Alabama 35294-1170.

Telephone 205-934-8440

E-mail massoud@uab.edu

Web www.eng.uab.edu

Course Descriptions

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.

Electrical and Computer Engineering (EE)

518. **Wireless Communications.** Wireless communication system topics such as propagation, modulation techniques, multiple access techniques, channel coding, speech and video coding, and wireless computer networks. Prerequisite: Coursework in systems analysis or permission of instructor.

523. **Digital Signal Processing.** Digital filter analysis and design. FFT algorithms. Applications of DSPs in engineering problems such as data acquisition, control, and I/O. Lecture and computer laboratory. Prerequisite: Coursework in systems analysis or permission of instructor.

527. **Industrial Control.** Power control devices and applications. Relay logic and translation to other forms. Programmable logic controllers. Proportional-integral-derivative (PID) control techniques. Modern laboratory instrumentation and man-machine interface software. Lecture and laboratory. Prerequisites: Coursework in programming, systems analysis, and basic electronics, or permission of instructor.

531. **Analog Integrated Electronics.** 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 emphasize design techniques. Lecture and laboratory. Prerequisites: Coursework in systems analysis and basic electronics, or permission of instructor. 4 hours.

532. **Introduction to Computer Networking.** Computer networking and engineering standards related to networking. Network hardware, Ethernet, token ring, ISDN, ATM, networking protocols including TCP/IP protocol suite. Internetworking, LANs, and typical applications. Required use of computer laboratory's

networking. Lecture and computer laboratory. Prerequisites: Coursework in programming and digital logic.

533. Engineering Software Solutions. Project planning, specification, design, implementation, and testing of software solutions for engineers. Waterfall model of development and agile development methods will be covered. Use of software tools. Four projects. Lecture and computer laboratory. Prerequisite: Coursework in object-oriented programming or permission of instructor.

537. Microprocessor Applications. Application of microprocessors in engineering problems such as data acquisition, control, and real-time input/output. Lecture and laboratory. Prerequisite: Coursework in microprocessors and assembly language programming, or permission of instructor.

538. Intermediate Microprocessors. Advanced microprocessor topics including cache design, pipelining, superscalar architecture, design of control units, microcoding, and parallel processors. Comparison of advanced contemporary microprocessors. Prerequisite: Coursework in microprocessors and assembly language programming, or permission of instructor.

542. Computer Networking Protocols. Hands-on laboratory course covering topics in networking. TCP/IP, routing, LAN configurations, windows and Linux configurations, protocol analysis. Lecture and laboratory. Prerequisite: Coursework in networking.

547. Internet/Intranet Application Development. Development of applications and models using Internet/Intranet technologies such as Java, JavaScript, conferencing systems, Dynamic HTML, server side scripting, multi-tier models, and XML. Lecture and computer laboratory. Prerequisite: Coursework in object-oriented programming or permission of instructor.

548. Software Engineering Projects. Builds on Object-Oriented concepts. Coverage for Unified Modeling Language is expanded and Design Patterns are incorporated. Provides a project environment for implementation of systems using Object-Oriented techniques. Lecture and computer laboratory. Prerequisite: Coursework in object-oriented programming or permission of instructor.

552. VHDL Digital Systems Design. 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 tools. Lecture and laboratory. Prerequisite: Coursework in microprocessors and assembly language programming.

558. Medical Instrumentation. Fundamental operating principles, applications, and design of electronic instrumentation used in measurement of physiological parameters. Class design project. Prerequisite: Coursework in electronics.

561. Machinery II. 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. Prerequisite: Coursework in electrical machinery.

571. Power Systems I. Components of power systems and per-unit representation. Introduction to symmetrical components. Modeling of generators, transformers, and transmission lines for system studies. The power-flow problem and the power system stability problem. Prerequisite: Coursework in electrical machinery.

572. Power Systems II. 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. Prerequisite: Permission of instructor.

573. Protective Relaying of Power Systems. Symmetrical components, sequence networks, and short-circuit calculations. Instrument transformers and their performance under fault conditions. Protective devices and protective relaying units. Protection schemes and relay coordination for transformers, transmission lines, buses, and generators. Prerequisite: Coursework in electrical machinery.

574. Industrial Power Systems. 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. Prerequisite: Permission of instructor.

585. Engineering Operations. Economic, procedural, planning, and control aspects of engineering projects. Prerequisite: Permission of instructor.

***590. Special Topics in (Area).** Prerequisite: Permission of instructor. 1-12 hours.

***591. Special Problems in (Area).** Prerequisite: Permission of instructor. 1-12 hours.

***595. Integrated System Design.** Successful completion and oral defense of a team design project. Prerequisite: Permission of instructor.

601. Electrical and Computer Engineering Seminar. Research presentations delivered by faculty, students, and invited guests. Technical writing and development of verbal presentations. Writing a research paper. Maximum of 3 credit hours applicable toward the M.S.E.E. degree. Prerequisite: permission of instructor. 1-3 hours.

605. Information Engineering Seminar. Guest speakers will address various industry topics, trends and directions. Students will complete a set of exercises to assess individual learning styles, leadership attributes, management styles, and professional goals. Prerequisite: Graduate status in Master of Engineering Program (IEM).

606. Technical Project Management. Focuses on the concepts of project management and the development of practical strategies for managing technical projects. Prerequisite: Graduate status Master of Engineering Program (IEM).

607. Information Engineering Technologies. Provides an overview of the technologies for information engineering. Prerequisite: Graduate status in Master of Engineering Program (IEM).

608. Strategic Management. Addresses strategic decisions and simulations. The focus is on decision-making under conditions of uncertainty. Prerequisite: Graduate status in Master of Engineering Program (IEM), EE 605, and EE 606.

609. Information Engineering Software. Software and software design issues for information engineering. Prerequisite: Graduate status in Master of Engineering Program (IEM), EE 605, and EE 607.

610. Technical Communication for Engineers. Workshop-oriented course producing technical memoranda, proposals, and conference and/or refereed-journal papers with oral presentations related to these work products. Prerequisite: Graduate standing in Engineering and successful performance on a written pretest.

611. Special Topics in Information Engineering. Exploration of a current topic related to information engineering. Prerequisite: Graduate status in Master of Engineering Program (IEM), EE 605, EE 606, EE 607, EE 608, and EE 609.

612. Technical Entrepreneurship. Covers technical business startups including proposals, finance, product development, market strategy, strategic alliances, and leadership. Prerequisite: Graduate status in Master of Engineering Program (IEM), EE 605, EE 606, and EE 608.

613. Information Engineering Security. Security, privacy, and related issues/technologies for information engineering. Prerequisite: Graduate status in Master of Engineering Program (IEM), EE 605, and EE 607, EE 609, and EE 611.

614. Technology Ventures. Catalog Data: Development and defense of a technical business plan. Examines legal, regulatory, and other related issues that impact the venture. Prerequisite: Graduate status in Master of Engineering Program (IEM), EE 605, EE 606, EE 608, and EE 612.

615. Information Engineering Design. System design of information engineering systems. Prerequisite: Graduate status in Master of Engineering Program (IEM), EE 605, EE 607, EE 609, EE 611, and EE 613.

616. Information Engineering Project. Project will allow students an opportunity to develop ideas and a body of work related to a specific area of interest under the direction of a faculty member/technical advisor. Prerequisite: Graduate status in Master of Engineering Program (IEM), EE 605, EE 606, EE 607, EE 608, EE 609, EE 611, EE 612, and EE 613.

621. Random Variables and Processes. Theory underlying analysis and design of communication, stochastic control, data gathering, and data analysis systems. Prerequisite: Coursework in communication systems or permission of instructor.

622. Advanced Communication Theory. Analysis of performance of analog modulation techniques in presence of noise. Prerequisites: Coursework in communication systems and random variables and processes.

624. Digital Communications. Design of digital communication systems. Prerequisites: Coursework in communication systems and random variables and processes.

625. Coding and Information Theory. Entropy, channels and channel capacity, RLL codes, error correcting codes, cyclic codes, cryptography, convolutional codes, trellis coded modulation. Prerequisite: Coursework in random variables and processes.

626. Digital Image Processing. Digital image processing fundamentals, image transformations, image enhancement, image restoration, image compression, image segmentation, and image presentation. Prerequisite: Coursework in systems analysis.

628. Telecommunications I. Advanced topics. Prerequisite: Permission of instructor.

629. Telecommunications II. Advanced topics. Prerequisite: Permission of instructor.

632. Introduction to Computer Networking. Computer networking fundamentals. Layered network model and correspondence to real systems. Discussion of Ethernet, token ring, TCP/IP LAN and other protocols. Exploration of Internet and similar systems. Network application models. Simulation of networks. Permission of instructor.

633. Experiments in Computer Networking. 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. Prerequisite: Coursework in computer networking including TCP/IP protocols.

635. Telecommunication Systems. System organization and structure. Data transmission. Prerequisite: Permission of instructor.

639. Advanced Microprocessors. Topics covering both hardware and software issues. Individual or group term project. Prerequisite: Permission of instructor.

640. Object-Oriented Design. Study and practice of the object-oriented methodology for developing software designs. Implementation consequences. Application of object-oriented methodologies to specific problems using object-oriented language. Prerequisite: Coursework in object-oriented programming.

641. Modern Control I. Discrete-time and sampled-data systems. State variable models, state feedback and estimation. Optimal control and estimation. Predictive control.. Prerequisite: Coursework in control systems or permission of instructor.

642. Intelligent Systems. Organization and characteristics of intelligent systems. Optimization. Evolutionary algorithms. Neural network and fuzzy logic algorithms. Intelligent control. Prerequisite: Permission of instructor.

643. System Identification and Adaptive Control. Modeling of systems using structure identification, parameter estimation, and model validation. Controller design based on input-output models. Parameter adaptive control. Prerequisite: Permission of instructor.

650. Software Engineering. 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. Prerequisite: Permission of instructor.

651. Software Engineering Large Systems I. Introduces advanced integrated software systems development paradigms. Notions of process and integrated system views. Modeling-in-the-large and modeling-in-the-small are discussed and related to levels in Object Oriented Design and programming. Prerequisite: Permission of instructor.

652. Software Engineering Large Systems II. Builds on the advanced integrated software systems development paradigms. 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. Prerequisites: Permission of instructor.

657. Enterprise Information Architecture Engineering. Study and practice of the enterprise architecture engineering for developing multi-tiered enterprise level systems. Methodologies for design and implementation of large-scale information systems. Distributed computing, clients, servers, operating systems and databases. Prerequisite: Permission of instructor.

661. Advanced Electrical Machinery I. Synchronous machine theory. Prerequisites: Permission of instructor.

662. Advanced Electrical Machinery II. Induction machine theory. Prerequisite: Permission of instructor.

663. Control of Synchronous Machines. Methods for control of synchronous machines. Prerequisite: Permission of instructor.

671. Computer Applications in Power Systems. Analysis of power systems operation. Prerequisite: Permission of instructor.

672. Power System Overvoltages. Events causing overvoltages. System protection. Prerequisite: Permission of instructor.

673. Reliability of Power Systems. Component reliability using standard industrial techniques. Prerequisite: Permission of instructor.

674. Economic Operation and Control of Power Systems. Economic control of thermal generating stations and hydrothermal stations. Computer control of power systems. Prerequisite: Permission of instructor.

682. Multivariable Systems. Analysis and design of multiple-output, multiple-input control systems. Prerequisite: Permission of instructor.

***690. Special Topics in (Area).** Prerequisite: Permission of instructor. 1-12 hours.

***691. Special Problems in (Area).** Prerequisite: Permission of instructor. 1-12 hours.

***697. Project.** Graduate project for Plan II Master's students. Prerequisite: Permission of instructor. 3 hours.

***698. Nonthesis Research.** Does not count towards a degree. 1-12 hours.

***699. Master's Thesis.** Master's thesis for Plan I Master's students. Prerequisite: Admission to candidacy. 1-12 hours.

Interdisciplinary Engineering (Ph.D)

Concentrations offered: Computational Engineering, Environmental Health Engineering

Faculty - Because of the interdisciplinary nature of this program, participating faculty come from various areas of engineering. A complete listing of all engineering faculty can be found at <http://www.uab.edu/engineering/school-profile/fac-staff-dir>.

Program Objectives

For more than a decade, research-focused centers at UAB and elsewhere have brought together expertise from many disciplines to solve problems. This same problem-solving approach is now finding its way into academic programs through the implementation of interdisciplinary graduate education. It is the premise of these interdisciplinary programs that students must be educated in more than one area to remain competitive and have successful careers whether they choose to stay in academia or work in industry. Industries are particularly interested in graduate education that emphasizes breadth of knowledge as well as depth in a particular field. Today's professional must be able to change, focus, and move between disciplines in order to keep up with rapid market shifts and technological advances.

The Ph.D. program in Interdisciplinary Engineering takes advantage of unique resources and strengths at UAB. This program fosters interdisciplinary interactions between the School of Engineering and medical and biomedical units and the Schools of Business, Natural Science and Mathematics, and Public Health. Students in Interdisciplinary Engineering will have the opportunity to develop a plan of study and research topic which incorporates course work and faculty expertise from two or more of these disciplines.

The students enrolled in the Interdisciplinary Engineering Ph.D. program will gain the skills needed 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 course work in two or more disciplines,
- provide collaborative interactions with students and faculty from a variety of disciplines,
- provide unique opportunities for interdisciplinary research, and
- facilitate continued development of high quality research programs supported by external funding.

Two tracks are available in the Interdisciplinary Engineering Ph.D. program – [Computational Engineering](#) and [Environmental Health Engineering](#).

Admission Requirements

Students applying to the Interdisciplinary Engineering Ph.D. program have completed an undergraduate degree in a supporting field, and must submit official transcripts and Graduate Record Exam (GRE) scores with their application. In general, a combined GRE score of at least 1100 (verbal and quantitative) and a minimum undergraduate grade point average of 3 on a 4 point scale are required for admission. Students for whom English is a second language should have a TOEFL (Test of English as a Foreign Language) score no less than 550 (100 on new Internet Based IBT TOEFL). The Interdisciplinary Engineering Admissions Committee reviews all applications completed and submitted and will make all admission decisions.

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 course work 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, 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 course work 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, M.D., DMD, etc., must complete at least 27 credit hours of course work 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 course work 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:

EGR 710 Introduction to Interdisciplinary Engineering (3 credit hours)

EGR 711 Methodology for Interdisciplinary Research (3 credit hours)

EGR 701 Interdisciplinary Engineering Seminar (1 credit hour; continuous enrollment)

A Comprehensive Exam is required of all doctoral candidates. The exam may include 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 Qualifying Exam, and completion of at least 48 hours of course work (in keeping with graduate school requirements), a student is admitted into doctoral candidacy.

A dissertation showing ability to conduct independent research, organizational, and presentation skills 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 Office of the Graduate School at least six weeks before the commencement at which the degree is to be conferred.

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 toolkits 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 an Enabling Technology Laboratory (ETLab). The ETLab provides software and hardware infrastructure and support for high-performance parallel and distributed computing, numerical tools, information technology-based computing environments, and computational simulation to UAB and Southern Research Institute (SRI) researchers. In collaboration with UAB interdisciplinary investigators, the ETLab has established 6.0+ Teraflops high performance computing clusters, including a recently added IBM Blue gene with 2048 processors and visualization infrastructure with stereoscopic and high resolution large displays. 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 has been 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 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.

Program Curriculum Examples

The Ph.D. in Interdisciplinary Engineering program encompasses a broad spectrum of possible fields of expertise in engineering and science and, as such, curriculums vary depending on the specific fields of research, and background of the student. The faculty from participating disciplines and schools are discussing the domain specific expertise and associated curriculum.

As an illustration of a typical curriculum by semester, two tracks are presented as examples below: (1) the Computational Engineering (CME) track, and (2) the Environmental Health Engineering (EHE) track.

Computational Engineering (CME) Track Curriculum

The CME track of the Interdisciplinary Engineering program takes advantage of UAB's diversified Schools of Engineering, Natural Science & Mathematics, Public Health, Dentistry and Medicine to produce Ph.D. candidates cross-trained in computational engineering from a variety of disciplines. The program provides students in-depth foundation and innovation opportunities in interdisciplinary aspects of enabling technologies - geometry generation and computer aided geometry design, mesh generation and adaptation, visualization, augmented reality and virtual reality, image processing and pattern recognition, design optimization, computational fluid dynamics, computational structural mechanics, high performance and parallel computing, and molecular dynamics applicable to disparate time and length-scale problems encountered in biomedical, biology, medicine and surgery, physics and biophysics, manufacturing, combustion, aeronautics and astronautics, and energy, environment and power.

Core Coursework

The core curriculum for the CME track includes 6 hours of Interdisciplinary Engineering core program courses and continuous enrollment in Interdisciplinary Engineering Seminar. In Introduction to Interdisciplinary Engineering, students are introduced to current trends and cutting-edge research in areas related to engineering that require interdisciplinary approaches. The Methodology for Interdisciplinary Research course presents a more detailed perspective on methods of approach for interdisciplinary problems, including experimental design, laboratory experimentation, physical modeling, simulation, and analysis. Students are expected to remain continuously enrolled in the Interdisciplinary Engineering Seminar course (fall and spring semesters) while they remain in the CME track. Because students are engaged in research throughout several departments, this regular meeting is important to maintain cohesion within the group and to encourage exchange of ideas from a variety of perspectives.

The core curriculum for the CME track includes two additional 3 hour courses: Advanced Engineering Mathematics I and Numerical Methods in Engineering. Both of these courses provide the student with the fundamental analytical and numerical skills that must be mastered before progressing to more advanced courses.

Elective Coursework

A minimum of 36 additional hours of coursework is required for post-baccalaureate students. 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. These courses are usually taken in Computer and Information Science, Mathematics, Biology, Physics, Biochemistry, Epidemiology, Biostatistics, or Medicine. In keeping with UAB Graduate School policy, up to 16 credits of the 36 hours can be as non-dissertation research credits, and up to 10 credits can be as lab rotations, seminars or directed study credits.

Dissertation Research

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.

A typical curriculum by semester for the CME track is given in Table A-1.

Table A-1. Typical curriculum for the CME track in the Interdisciplinary Engineering Program

Semester	Course 1	Course 2	Course 3	Seminar
1	EGR 710 Intro to Interdisciplinary Engineering	ME 567 Advanced Engineering Mathematics I	ME 750 Transport Phenomena	EGR 792 Interdisciplinary Engineering Seminar
2	ME 578 Introduction to Continuum Mechanics	ME 568 Advanced Engineering Mathematics II	ME 565 Numerical Methods in Engineering	EGR 792 Interdisciplinary Engineering Seminar
3	EGR 711 Methodology for Interdisciplinary Research	ME 713 Computational Fluid Dynamics I	ME 798 Non-Dissertation Research	EGR 792 Interdisciplinary Engineering Seminar
4	EPI 709 Theoretical Basis of Epidemiology	ME 780 Numerical Mesh Generation	ME 798 Non-Dissertation Research	EGR 792 Interdisciplinary Engineering Seminar
5	ME 781 Computational Structural Mechanics I	EPI 713 Risk Assessment of Environmental Hazards	ME 798 Non-Dissertation Research	EGR 792 Interdisciplinary Engineering Seminar
6	ME 799 Dissertation Research	EPI 788 Principles and Methods in Molecular Epidemiology		EGR 792 Interdisciplinary Engineering Seminar
7	ME 799			EGR 792

	Dissertation Research			Interdisciplinary Engineering Seminar
8	ME 799 Dissertation Research			EGR 792 Interdisciplinary Engineering Seminar

Abbreviations

EGR - General Engineering

EPI - Epidemiology

ME - Mechanical Engineering

Environmental Health Engineering (EHE) Track Curriculum

The EHE track of the Interdisciplinary Engineering program takes advantage of UAB's diversified Schools of Engineering, Natural Science & Mathematics, and Business, as well as the nationally renowned health sciences center, to produce Ph.D. candidates cross-trained in public health and environmental engineering from a variety of disciplines. The program provides students with an understanding of basic mechanisms through which agents alter environmental, human, and ecosystem health, and the skills needed to evaluate and implement remediation for environmental problems, in the context of engineering and public health.

Core Coursework

The core curriculum for the EHE track includes 6 hours of Interdisciplinary Engineering core program courses and continuous enrollment in Interdisciplinary Engineering Seminar. In *Introduction to Interdisciplinary Engineering*, students are introduced to current trends and cutting-edge research in areas related to engineering that require interdisciplinary approaches. The *Methodology for Interdisciplinary Research* course presents a more detailed perspective on methods of approach for interdisciplinary problems, including experimental design, laboratory experimentation, physical modeling, simulation and analysis. Students are expected to remain continuously enrolled in the Interdisciplinary Engineering Seminar course (fall and spring semesters) while they remain in the EHE track. Because students are engaged in research throughout several departments, this regular meeting is important to maintain cohesion within the group and to encourage exchange of ideas from a variety of perspectives.

The core curriculum for the EHE track also requires two additional 3 hour courses. These include a 3 hour course in Environmental Management and a course in Statistical Analysis. Several statistical analysis courses are taught throughout UAB, and students, in consultation with their faculty advisor, will select the course most relevant to their planned research.

Elective Coursework

A minimum of 36 additional hours of coursework is required for post-baccalaureate students. 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. These courses are usually taken in Environmental Health, Epidemiology, Biostatistics, Biology or Chemistry. In keeping with UAB Graduate School policy, up to 16 credits of the 36 hours can be as non-dissertation research credits, and up to 10 credits can be as lab rotations, seminars or directed study credits.

Dissertation Research

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.

An example curriculum by semester for the EHE track is presented in Table A-2. Actual curricula will vary with student's research interest and undergraduate background.

Table A-2. Example curriculum for the EHE track in the Interdisciplinary Engineering Program

Semester	Course 1	Course 2	Course 3	Course 4	Seminar
1	EGR 710 Introduction to Interdisciplinary Engineering	CE 785 Engineering Hydrology	ENH 702 Environmental Management	BST 621 Statistical Methods	EGR 792 Interdisciplinary Engineering Seminar
2	CE 537 Environmental Experimental Design and Field Sampling	CE 786 Engineering Hydrogeology	ENH 701 Environmental Chemistry	BY 570 Ecology	EGR 792 Interdisciplinary Engineering Seminar
3	EGR 711 Methodology for Interdisciplinary Research	CE 740 Wastewater Treatment Engineering	ENH 700 Scientific Basis of Environmental Health	BY 607 Microbial Ecology	EGR 792 Interdisciplinary Engineering Seminar
4	CE 736 Stormwater Pollution Control	XX 798 Non-Dissertation Research	ENH 711 Risk Assessment of Environmental Hazards	XX 798 Non-Dissertation Research	EGR 792 Interdisciplinary Engineering Seminar
5	XX 799 Dissertation Research				EGR 792 Interdisciplinary Engineering Seminar

6	XX 799 Dissertation Research				EGR 792 Interdisciplinary Engineering Seminar
7	XX 799 Dissertation Research				EGR 792 Interdisciplinary Engineering Seminar
8	XX 799 Dissertation Research				EGR 792 Interdisciplinary Engineering Seminar

Abbreviations:

BST - Statistical Methods

BY - Biology

CE - Civil Engineering

EGR - General Engineering

ENH - Environmental Health Sciences

Additional Information:

Deadline for Entry Term(s):	Fall: July 1· Spring: November 1, Summer: April 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.)

Contacts:

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Master of Engineering: Advanced Safety Engineering and Management (MEng)

(This program is totally online.)

[View PDF of Advanced Safety Engineering and Management \(MEng\) Admissions Checklist](#)

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

[View PDF version of the Advanced Safety Engineering and Management catalog description](#)

Degree Offered: MEng

Director: Martha W. Bidez

Phone: (205) 934-6528

E-mail: mbidez@uab.edu

Web site: <http://www.uab.edu/engineering/professional-programs/asem>

Instructors

The MEng in Advanced Safety Engineering and Management graduate program is taught by a team of practicing safety professionals with Dr. Martha Bidez serving as overall Course Master. Practitioner-Scholars facilitate online discussions on key topics of interest in their industry sector and provide industry-specific case studies.

Faculty

Martha Warren Bidez, PhD, Professor and Graduate Program Director; President & CEO, BioEchoes, Inc.

Jennifer M. Bailey, MSPH, Adjunct Faculty; Safety Manager, American Cast Iron Pipe Company

Edward (Ed) H. Kiessling, III, MSME, MSISE, MSCEE, PE, Adjunct Professor; Manager, Safety, Quality, and Management Services, [Marshall Space Flight Center - NASA](#)

Charles Herbert Shivers, PhD, PE, CSP, Adjunct Professor; Deputy Director Safety and Mission Assurance, Marshall Space Flight Center - NASA

Practitioner-Scholars

Lisa Capicik, Regional Safety Director, Brasfield & Gorrie

Augusta Dowd, JD, Partner, White, Arnold & Dowd

Earl R. Foust, Group President, the [Valmont Industries](#) Global Utility business and the Americas Lighting and Communications Structures Business

John (Johnny) A. Gerhart, President, 1914 Iron, Inc.

Kimberly Scheibe Greene, MS, MBA, Group President of Strategy & External Relations, Tennessee Valley Authority

Deborah L. Grubbe, PE, CEng, Owner and Principal, Operations and Safety Solutions, LLC

Donna S. Heidel, MS, CIH, Coordinator, Prevention through Design, CDC/NIOSH Education and Information Division

Roy W. Malone, Jr., Director, Deputy Manager, Space Shuttle Propulsion Office, [Marshall Space Flight Center - NASA](#)

Fred Manuele, PE, CSP, President, Hazards Ltd and renowned author in safety engineering

Charles S. Peek, Vice President & Works Manager, [American Cast Iron Pipe Company](#)

James Pratt, III, JD, Partner, Hare, Wynn, Newell & Newton

Van L. Richey, President and Chief Executive Officer, ACIPCO

Mark L. Rosenberg, MD, MPP, President and CEO of the [Task Force for Global Health](#)

Charles A. Shaw, PE, Corporate Safety and Health Manager, Alabama Power Company

Roger Sublett, PhD, President, Union Institute and University

Philip Zicarelli, PE, PLS, Director, Proposals and Sales Administration, KBR Power and Industrial

ASEM Admission Requirements

Admission to the UAB ASEM program requires

- a minimum of 5 years of professional work experience in the safety field, as evidenced by resume and 3 recommendations, one of which can be written and submitted by applicants as a self-recommendation
- a baccalaureate degree with at least a 3.0 GPA
 - A degree in engineering is not required.
 - Applicants not satisfying the grade point average requirement may receive admission on a provisional basis, subject to assessment and recommendation by the program director.

To apply, go to **Apply Yourself** and complete and submit your online application. Please refer to the [Advanced Safety Engineering and Management Admissions Checklist](#) for detailed information.

Acceptance will be determined by the ASEM Selection Committee.

Additional Information

Deadline for Entry Term(s):	Fall: July 1 Spring: November 1 Summer: April 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:	None
Comments:	The ASEM program is totally online. There are no on-campus classes, meetings, or activities.

For detailed information, contact

Martha Warren Bidez, PhD, Professor and Graduate Program Director
MEng in Advanced Safety Engineering and Management

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E-mail: mbidez@uab.edu

Web: <http://www.uab.edu/engineering/professional-programs/asem>

Course Descriptions

Unless otherwise noted, all courses are for 3 semester hours of credit.

Advanced Safety Engineering and Management – ASEM (EGR)

EGR 610 Introduction to System Safety – Prevention through Design. 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, 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. Students apply course content to their own business environment. Live participation in a weekly 1.5 hour forum is required. The EGR 610 forum is typically held on Sunday from 1:30-3:00 (Central Time). (The day & time are subject to change.) Note: Students are given some "free" misses, and faculty will work individually with those who have an unavoidable work conflict to find a solution. EGR 610 must be taken during the first semester.

EGR 611 Hazard Analysis and Waste Elimination. 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. They also develop financial models to make the "business case" that system safety eliminates waste. Live participation in a weekly 1.5 hour forum is required. The EGR 611 forum is typically held on Sunday from 1:30-3:00 (Central Time). (The day & time are subject to change.) Note: Students are given some "free" misses, and faculty will work individually with those who have an unavoidable work conflict to find a solution) Prerequisites: EGR 610 & EGR 614.

EGR 612 Engineering Risk: Assessment, Reduction, and Liability. 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 fault tree analysis, and prevention through design concepts. The role of a structured, formalized decision analysis process in preventing serious injuries and fatalities is also explored. Guests from industry and the legal profession facilitate online discussions and live classrooms regarding the role of the civil justice system in promoting or discouraging best corporate safety practices. Students engage in a Risk Mitigation Decision Analysis project, which is specific to their company and/or business sector. Live participation in a weekly 1.5 hour forum is required. The EGR 612 forum is typically held on Sunday from 1:30-3:00 (Central Time). (The day & time are subject to change.) Note: Students are given some "free" misses, and faculty will work

individually with those who have an unavoidable work conflict to find a solution. Prerequisites: EGR 610, EGR 611, & EGR 614.

EGR 613 Human Performance and Engineering Design. Companies 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 appropriate roles of engineers and other safety professionals in redesigning and/or preventing the creation of error-provocative environments, including their participation in safety design reviews, are discussed. Real-world case studies provide for an in-depth treatment 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 identify and re-design error-provocative environments in their own workplaces. Live participation in a weekly 1.5 hour forum is required. The EGR 613 forum is typically held on Sunday from 1:30-3:00 (Central Time). (The day & time are subject to change.) Note: Students are given some "free" misses, and faculty will work individually with those who have an unavoidable work conflict to find a solution. Prerequisites: EGR 610 & EGR 614.

EGR 614 Cross Road: Engineering Ethics and Acceptable Risk. 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 review current whistleblower protection law and assist students in determining whether or not their own company has ethical and legal procedures in place for transparent reporting of wrongdoing in the safety arena. Live participation in a weekly 1.5 hour forum is required. The EGR 614 forum is typically held on Sunday from 3:00-4:30 (Central Time). (The day & time are subject to change.) Note: Students are given some "free" misses, and faculty will work individually with those who have an unavoidable work conflict to find a solution. Prerequisite: EGR 610 or concurrent enrollment.

EGR 615 Leading through Climates of Change. All progressive companies are moving toward greater sustainability – protecting people, planet, and profits. To guide their companies through the technological changes required, engineers must have strong leadership skills. This course explores engineering leadership best practices in planning for and implementing change (physical, functional, and logical). Topics include system life cycle phases, hardware and software life cycles, market pressures vs. technology readiness, safety reviews of engineering change proposals and specification change notices, and resolution of ethical conflicts. Guest lecturers from diverse industries discuss their experiences in managing technological change in today's business environment. Live participation in a weekly 1.5 hour forum is required. The EGR 615 forum is typically held on Sunday from 3:00-4:30 (Central Time). (The day & time are subject to change.) Note: Students are given some "free" misses, and faculty will work individually with those who have an unavoidable work conflict to find a solution. Prerequisites: EGR 610 & EGR 614.

EGR 616 Policy Issues in Prevention through Design. 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 also engage in discussion board/blog posts on contemporary policy issues and participate in exercises related to federal rulemaking. Live participation in a weekly 1.5 hour forum is required. The EGR 616 forum is typically held on Sunday from 3:00-4:30 (Central Time). (The day &

time are subject to change.) Note: Students are given some "free" misses, and faculty will work individually with those who have an unavoidable work conflict to find a solution. Prerequisites: EGR 610 & EGR 614.

EGR 617 Crisis Leadership and Safety-Critical Design. 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; technical communications during code red situations; whistleblowers and crisis creation; safety-critical vs. flight-critical vs. mission-critical design; and mishap classes, categories, and costs. Throughout the semester, students participate in role play exercises that simulate engineering crises. Live participation in a weekly 1.5 hour forum is required. The EGR 617 forum is typically held on Sunday from 3:00-4:30 (Central Time). (The day & time are subject to change.) Note: Students are given some "free" misses, and faculty will work individually with those who have an unavoidable work conflict to find a solution. Prerequisites: EGR 610 & EGR 614.

EGR 618 Intrapreneurship and Calculated Risk Taking. 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 forum is required. The EGR 618 forum is typically held on Sunday from 1:30-3:00 (Central Time). (The day & time are subject to change.) Students are given some "free" misses, and faculty will work individually with those who have an unavoidable work conflict to find a solution. Prerequisites: EGR 610 & EGR 614.

EGR 619 Capstone Project: Development of an Advanced Safety Engineering and Management Plan. Students develop a comprehensive, advanced safety engineering and management plan that is consistent with the ANSI Z-10 standard for their individual business unit. 6 hours. EGR 619 must be taken during the final semester.

Master of Engineering: Information Engineering Management (M.Eng.)

Degree Offered: M.Eng.

Director: Dale W. Callahan

Phone: (205) 934-8480

E-mail: dcallahan@uab.edu

Web site: <http://www.uab.edu/iem>

Faculty

Don Appleby, Senior Systems Engineer, Mainline Information Systems, and IEM Director of Strategic Planning.

Dale W. Callahan, Associate Professor (Electrical and Computer Engineering); Entrepreneurship, Technology Ventures, Wireless Communications, Digital Signal Processing, Telecommunications

David A. Conner, Professor Emeritus (Electrical and Computer Engineering); Electrical Networks, Electromagnetics, Mathematical Modeling of Electrical Phenomena

Rusty Hyde, Chief Engineer, Hyde Engineering

David G. Green, Instructional Associate Professor (Electrical and Computer Engineering); Computer Networking, Software Engineering, Embedded Computer Systems

John Giordano, Vice President, Information Security - SunGard Wealth Management

Linda Lucas, Professor and Dean, School of Engineering

Kevin McCormack, President, DRK Research and Consulting

Brian M. Rabon, President, The Braintrust Consulting Group

Sanjay K. Singh, Associate Professor (Management, Information Systems and Quantitative Methods); Management Information Systems

Jennifer Skjellum, President, RunTime Computing Solutions, LLC

Murat M. Tanik, Professor (Electrical and Computer Engineering); Software Systems Engineering, Integrated Systems Design, Process Engineering

Gregg L. Vaughn, Professor (Electrical and Computer Engineering); Digital Signal Processing, Applications of Microprocessors, Digital Communications

IEM Admission Requirements

Admission to the UAB IEM requires

1. an undergraduate degree from a regionally accredited university,
2. work experience as evidenced by your resume and recommendations, and
3. interview with the acceptance committee.

To apply:

Go to [**Apply Yourself**](#) for the UAB Graduate School and fill out application.

- Should apply as **Graduate Application**.
- Please make sure you use an email and phone number where you can be contacted for an interview.
- 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 **Information Engineering and Management**.
- Under **Additional Information** you will be asked to upload a resume.

Once your application is complete, a member of the committee will contact you to do an interview.

Acceptance will be determined by the IEM Selection Committee.

Additional Information

Deadline for Entry Term(s):	Fall: July 1, Spring: November 1, Summer: April 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:	N/A

For detailed information, contact Dr. Dale Callahan, IEM, Hoehn 370, 1530 3rd Avenue South, Birmingham, Alabama 35294-4440.

Telephone: 205-934-8480.

E-mail: dcallahan@uab.edu

Web: www.uab.edu/iem

Course Descriptions

Unless otherwise noted, all courses are for 3 semester hours of credit.

Information Engineering and Management – IEM (EGR)

EGR 640 Teambuilding. This course will focus on the effective building and management of teams. Topics include team communication, facilitation skills, building consensus, and handling common problems. (2 hours)

EGR 641 Technical Project Management. This course teaches the fundamental concepts of technical project management using the PMBOK (Project Management Body of Knowledge) as a framework. Best practices will be reviewed along with practical insights based on real-world project management experience. Trends and directions in project management will also be discussed.

EGR 642 Information Engineering Technologies. This course is an introduction to systems engineering principles and their application to the design and deployment of large-scale information systems. Topics include managing complexity, technology infrastructure planning, risk management, quality assurance, systems management practices, and the systems engineering lifecycle.

EGR 643 Strategic Management. This course focuses on essential concepts from operations management, financial analysis, product marketing, and business strategy. Topics include the analysis and interpretation of financial statements, time value of money, and capital budgeting. Business simulation is used to develop decision-making skills and strategic thinking.

EGR 644 Information Engineering Software. This course focuses on the strategic role of software within the enterprise. Topics include the strategic value of software, the use of information for competitive advantage, and the development and marketing of software as a business.

EGR 645 Entrepreneurship. 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.

EGR 649 Effective Communication. 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.

EGR 650 Leadership. This course will focus on the development of professional leadership skills. Topics include the nature of leadership, leadership styles, and the essential principles of effective leadership. (1 hour).

EGR 651 Information Security. This course provides an introduction to information security engineering and its applicability to the protection of information assets. Class discussions will develop an understanding of the essential body of knowledge and the use of best practices to effectively manage security.

EGR 652 Technology Ventures. This course builds upon the topic of entrepreneurship with a focus on the process of developing and managing a successful venture. The objective is for clients to emerge with the knowledge and confidence needed to successfully manage, or start, a technology venture.

EGR 653 Process Engineering. This course provides a broad understanding of business process modeling with a focus on how to recognize inefficient business processes and revamp them utilizing the latest technologies and management techniques.

EGR 659 IEM Legacy Project. The IEM graduate project allows IEM clients to pursue an area of study that is (a) related to information engineering and management and (b) consistent with their professional development goals.

Master of Engineering: Construction Engineering Management (M.Eng.)

Degree Offered: M.Eng.

Director: Dale Wilbur Hitchcock

Phone: (205) 934-8480

E-mail: dcallahan@uab.edu

Web site: <http://www.uab.edu/iem>

Faculty

Wilbur A. Hitchcock, Professor (Civil, Construction, and Environmental Engineering); Construction Engineering Management, Structural Engineering

Dianne Gilmer, Instructor

CEM Admission Requirements

Admission to the UAB CEM requires

1. Bachelors degree from an accredited U.S. College or University
2. Personal interview with program manager

3. Two letters of recommendation
4. NO GRE REQUIRED

To apply:

Go to [**Apply Yourself**](#) for the UAB Graduate School and fill out application.

- Should apply as **Graduate Application**.
- Please make sure you use an email and phone number where you can be contacted for an interview.
- 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 **Information Engineering and Management**.
- Under **Additional Information** you will be asked to upload a resume.

Once your application is complete, a member of the committee will contact you for an interview.

Additional Information

Deadline for Entry Term(s):	Spring: November 1, Summer: March 31
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, IEM, Hoehn 130B, 1530 3rd Avenue South, Birmingham, Alabama 35294-4440.

Telephone: 205-975-5848.

E-mail: dgilmer@uab.edu

Web: <http://www.uab.edu/engineering/professional-programs/cem>

Course Descriptions

Unless otherwise noted, all courses are for 3 semester hours of credit.

Construction Engineering Management (CE)

CE 669 Advanced Project Management. 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. 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. 3 hours

CE 670 Construction Estimating and Bidding. 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. 3 hours

CE 671 Construction Liability and Contracts. 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. (Prerequisites: CE 669 and CE 670 or approval by the Program Director). 3 hours

CE 672 Construction Methods and Equipment. 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 focus areas include earthmoving, heavy construction, building construction, and process plants. Students will understand the planning and deployment of equipment, materials, labor, and subcontractors required in the construction process. The course is strengthened with guest lectures from industry practitioners and student interaction with construction industry participants as parts of the group semester project. (Prerequisites: CE 669 or approval by the Program Director). 3 hours

CE 673 Techniques of Project Planning and Control. Provides a thorough understanding of the project scheduling process in construction planning and control. Students learn the relationship between the work breakdown structure, organization breakdown structure and the activities used in developing project schedules. The Critical Path Method (CPM) and the Precedence Diagram Method (PDM) are discussed in detail to include hand calculations and powerful computer software products. The use of scheduling techniques for project control, resources constraint management, cash flow management and project completion date management are investigated and the importance of communications in the planning and controlling process emphasized. (Prerequisites: CE 669 and CE 670). 3 hours

CE 674 Overview of Green Building Design and Construction (LEED). 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 SystemTM certification exam. (Prerequisite: CE 672). 3 hours

CE 675 Fundamentals of Financial & Managerial Accounting for Non-Financial Managers. Provides an extensive overview of accounting concepts for non-financial managers. Students will learn the basic elements of accounting (Generally Accepted Accounting Practices). They will understand 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. (Prerequisite: CE 669, CE 670, CE673, CE 677). 3 hours.

CE 676 Construction Project Risk Management. 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, CE 670, CE 673). 3 hours.

CE 677 Construction Accounting and Finance. 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, 670, 672). 3 hours.

CE 679 Construction Methods – Detailing and Finishing. This course is an extension of the concepts and technical terminology introduced in Construction Methods and Equipment. Topics explored in this course include green design/sustainable construction, finishing systems, windows and cladding, HVAC/plumbing, and roofing. The International Building code will be examined, as well as fundamental engineering, design, and construction methods. Upon completion students will be better equipped to read and understand drawings and specifications, necessary skills for detailed estimating of cost and time. (Prerequisite CE 672) 3 hours

CE 680 Construction Management Capstone Case Study. (Prerequisites: CE 669, CE 670) (3 hours)
Students review case studies in three areas:

- Part 1: Students review case studies involving project planning and risk assessment or individual topical study.
- Part 2: Students review case studies emphasizing project control and coordination or individual topical study.
- Part 3: Students review case studies emphasizing technology advancements in construction methods and project management, or individual topical study.

Also set up as three – 1 hour courses:

CE 628 Construction Management Capstone Case Studies, Part 1 (1 hour)

CE 629 Construction Management Capstone Case Studies, Part 2 (1 hour)

CE 630 Construction Management Capstone Case Studies, Part 3 (1 hour)

CE 684 Construction Project Administration. This course is designed to provide a comprehensive overview of the important business, legal, and management aspects of construction management with emphasis on administrative procedures. The course is an extension of Advanced Project Management concepts with specific focus on the construction management issues facing owners, engineers, constructors, architects, and students. International business topics will also be discussed. (Prerequisite: CE 669 Advanced Project Management) 3 hours

CE 688 Strategic Management and Leadership Applications in a Global Environment. This course is

designed to prepare students to face the demanding management and leadership challenges facing industry leaders as competition becomes ever more globalized. 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. Organization design and management, selection and use of technology, and methodologies for measuring and monitoring performance are all fundamental working concepts necessary to think strategically in a changing world business environment. 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. (Prerequisite: CE 670 Estimating and Bidding) 3 hours

CE 689 Building Information Modeling (BIM) Techniques. 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. (Prerequisite: CE 670 Estimating and Bidding) 3 hours

Materials Engineering (Ph.D., M.S.Mt.E.)

Degree Offered:	Ph.D., M.S.Mt.E.
Director:	Dr. Derrick R. Dean
Phone:	(205) 934-8450
E-mail:	deand@uab.edu
Web site:	www.eng.uab.edu

Faculty

J. Barry Andrews, Professor and Chair (Materials Science and Engineering); Polymer and Metal Matrix Composites, Solidification, Physical Metallurgy, and Electronic Properties

Derrick R. Dean, Associate Professor and Graduate Program Director (Materials Science and Engineering); Structure-Property Relationships of Polymers and Multiphase Polymer Systems, including Blends, Nano- and Micro-Composites

Robin D. Foley, Associate Professor (Materials Science and Engineering); Materials Characterization, Physical Metallurgy, and Metals Casting

Amber L. Genau, Assistant Professor (Materials Science and Engineering); Solidification and Reconstruction and Analysis of 3D Images

Gregg M. Janowski, Associate Professor (Materials Science and Engineering); X-Ray Diffraction, Composite Materials, Physical Metallurgy, and Structure-Processing-Property Relationships

Haibin Ning, Research Assistant Professor (Materials Science and Engineering)

Selvum "Brian" Pillay, Assistant Professor (Materials Science and Engineering); Polymer Matrix Composites, Multiscale, Multiphase Composite Systems; Manufacturing and Processing, Design for Manufacture, Testing and Characterization

Rosalia N. Scripa, Professor (Materials Science and Engineering); Ceramics and Glass, Extractive Metallurgy, Semiconductor Crystal Growth, and Electronic-Magnetic Materials

Uday Vaidya, Professor (Materials Science and Engineering); Polymer Matrix Composites, Processes & Process Modeling, Nondestructive Evaluation and Dynamic Response

Admission Requirements

In addition to the general Graduate School admission requirements, requirements for admission to the M.S.Mt.E. and Ph.D. graduate programs include the following criteria:

1. A 3.0 (A = 4.0) or better GPA on all undergraduate degree major courses attempted; a minimum score of 1100 on GRE
2. For international applicants from non-English speaking countries, applicants should have a minimum score of 100 on the TOEFL, and 3.5 on the TWE.

Preparatory Courses

A student seeking a graduate degree in Materials Engineering without a Baccalaureate degree in Materials Engineering or similarly named program from an ABET accredited school must demonstrate competence at the undergraduate level in the areas of physical behavior of materials, thermodynamics, mechanical behavior of materials, instrumentation, and characterization. He/she may do this by passing all or some of the following courses depending on the student's academic background. Students may be exempted from individual courses if they demonstrate that they possess the knowledge from that course. However, the burden of proof is on the student. The decisions are based on a balance between assuring a sufficient background and imposing more extensive course demands. The preparatory courses must be taken on a pass/fail basis, with a "pass" being equivalent to a grade of B or better in the course. The courses that fulfill the preparatory requirements are:

MSE 280-Engineering Materials
MSE 281-Physical Materials I
MSE 603-Thermodynamics of Materials
MSE 381-Physical Materials II
MSE 382-Mechanical Behavior of Materials.
MSE 565-Characterization of Materials

M.S.Mt.E. Program

The following minimum requirements for a Master of Science in Materials Engineering apply to a student who has earned a baccalaureate degree in an ABET-accredited program 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. However, such a student 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." All full-time master's students must take MSE 601-Materials Science and Engineering Seminar every term.

Plan I (Thesis Option)

1. The student must successfully complete at least 24 semester hours of graduate course work, 9 of which may be at the 500 level, including

- 18 semester hours in materials science and engineering;
 - 3 semester hours in an approved course in mathematics, physical sciences, or other engineering discipline; and
 - 3 semester hours either in (1) materials science and engineering, (2) an approved course in mathematics, physical sciences, or another engineering discipline, or (3) an approved course in management.
2. The student must successfully complete and defend a thesis. The student must register for and successfully complete at least 9 semester hours of MSE 699-Master's Degree Thesis in addition to the 24 semester hours of course work.

Plan II (Nonthesis Option): Research/Design Emphasis

1. The student must successfully complete at least 33 semester hours of graduate credit, 9 of which may be at the 500 level, including
 - 24 semester hours of materials science and engineering course work;
 - 3 semester hours of course work in an approved mathematics, physical science, or other engineering discipline;
 - 3 semester hours either in (1) materials science and engineering, (2) an approved course in mathematics, physical sciences, or another engineering discipline, or (3) an approved course in management; and
 - 3 semester hours of MSE 698-Nonthesis Research involving an on-site design or research project (usually undertaken after completion of all course work).
2. The student must successfully complete a written comprehensive examination on all course work taken in the program or a comprehensive examination on the on-site research project topic. The latter option requires a publication-quality manuscript and oral presentation (with questions) deemed acceptable by the graduate committee.

Plan II (Nonthesis Option): Technology/Engineering Management Emphasis

1. The student must successfully complete at least 33 semester hours of graduate credit, including
 - 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-Administrative Theory and Practice; and
 - 3 semester hours of MSE 698-Nonthesis Research involving an on-site design or research project (usually undertaken after completion of all course work).
2. The student must successfully complete a written comprehensive examination on all course work taken in the program or a comprehensive examination on the on-site research project topic. The latter option requires a publication-quality manuscript and oral presentation (with questions) deemed acceptable by the graduate committee.

Ph.D. Program

The Ph.D. program in Materials Engineering is offered jointly with the Department of Metallurgical and Materials Engineering at the University of Alabama (Tuscaloosa). Each student is required to earn an M.S.Mt.E. as a step toward a doctoral degree. This requirement can be waived for a student entering the program with a master's degree in Materials Engineering or closely related field. The Ph.D. program requires a minimum of 18 hours of course work after the master's degree, successful completion of comprehensive examinations, and successful defense of a Ph.D. dissertation. All full-time doctoral students must take MSE 701-Materials Science and Engineering Seminar every term.

The requirements for a Ph.D. for a student with a master's degree are

- A minimum of 18 hours of approved graduate course work in metallurgical engineering, materials engineering, or fields supportive of these (6 hours may be at the 500 level and at least 3 semester hours but no more than 6 must be in supportive fields). Additional course work may be required at the discretion of the mentor and program director.
- Successful completion of a written examination covering the preparatory course sequence.
- Successful completion of a comprehensive examination as part of the admission-to-candidacy process.
- Successful defense of a research dissertation in metallurgical/materials engineering (minimum of 24 semester hours in MSE 799-Dissertation Research).

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 Spring semester-November 1st
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)
Comments	*To be considered for funding

For detailed information, contact Dr. Derrick R. Dean, Graduate Program Director, The University of Alabama at Birmingham, Department of Materials Science and Engineering, BEC 254, 1530 3rd Avenue South, Birmingham, AL 35294-4461.

Telephone 205-934-8450

Web www.eng.uab.edu

Course Descriptions

For doctoral courses at the University of Alabama (Tuscaloosa), see the graduate catalog of that university.

Unless otherwise noted, all courses are for 3 semester hours of credit.

Materials Science and Engineering (MSE)

501. Materials Processing. Processing of metals, glasses, ceramics, and composites. Powder processing, casting, welding, rapid solidification, and other advanced methods. 3 hours.

502. Frontiers of Materials. Recent advances in materials technology and application. Novel processing, structures, properties, and performance issues. 3 hours.

503. Degradation of Materials. Issues in long-term utilization of materials. Corrosion, high temperature oxidation, creep, fatigue, and their interactions. 3 hours.

507. Interpretation of Microstructure. Interpretation of metal and ceramic microstructures with respect to their general type and origin and their relationship to their composition, type of phase diagram, processing, and the driving forces and kinetics of their evolution. The student will learn to identify the prior processing of a material and design means for modification to produce alternate structures. 3 hours.

508. Nanomaterials. The emphasis of this course will be to introduce the basic tools of nanotechnology, building blocks of nanostructured materials, the behavior of materials with nanoscale structures and their technological applications, including automotive, medical, and electronic, etc. 3 hours.

509. Principles of Metal Casting. 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. 3 hours.

513. Composite Materials. 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. 3 hours.

530. Polymeric Materials. (Also CH 580.) Processing methods, structure-engineering-property relationships, and applications of polymeric materials. 3 hours.

533. Nondestructive Evaluation of Materials. Principles, applications and limitation of ultrasonic, vibration, acoustic emission, radiographic, magnetic particle, eddy current and other nondestructive testing methods. Intelligent sensors and health monitoring of real structures. 3 hours.

564. Metals and Alloys. Microstructures, properties, heat treatment, and processing of ferrous and nonferrous materials. 3 hours.

565. Characterization of Materials. 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. 4 hours.

570. Ceramic Materials. 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. 3 hours.

584. Electronic, Magnetic and Thermal Properties of Materials. Mechanisms behind rectifying junctions, transistors, paramagnetism, diamagnetism, and ferromagnetism. 3 hours.

601. Materials Science and Engineering Seminar. Required of all full-time M. S. students. 1 hour.

603. Thermodynamics of Materials. Atomistic and classical approaches to the understanding of the thermodynamics of solids, phase transformations, chemical reactions, and alloy systems. 3 hours.

613. Mechanical Behavior of Materials. Microstructural effects on the deformation mechanisms responsible for mechanical behavior of engineering materials. 3 hours.

614. Process Quality Engineering. 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. 3 hours.

615. Nucleation and Growth. Nucleation, growth, and phase transformations in materials. The roles of heterogeneities, boundaries, temperature, and free energy are addressed. 3 hours.

616. Microstructural Processes. Theory and application of the principal microstructural processes in materials, including recrystallization, grain growth, coarsening, and sintering. 3 hours.

623. Solidification. Plane-front, cellular, and dendritic growth of single and polyphase alloys as applied to normal and directional solidification. Influence of epitaxy and convection on solidification structures. 3 hours.

631. Polymer Structures/Morphology. Application of x-ray and electron diffraction, light electron and atomic force microscopy to crystal structure and morphology of polymers. Morphology-processing-property relationships, deformation mechanisms and orientation characterization. 3 hours.

632. Polymer Processing. Introduction to polymer processing. Design and analysis of plastic products and processes based on knowledge of the composition and physical and rheological behavior of the polymers. Product properties will be correlated with processing-induced morphology. 3 hours.

634. Design and Manufacture Technologies for Automotive Applications. Basics of lightweight materials, avenues on automotive component designs, emerging processing technologies in lost foam casting, thermoplastic composites and testing methodologies. 3 hours.

635. Advanced Mechanics of Composites. 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. 3 hours.

636. Engineering Fibers. 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. 3 hours.

637. Quantitative Microscopy. Quantitative description of microstructural features. Relationships between microstructural characteristics and properties. 3 hours.

643. Materials Characterization I. Fundamentals of materials characterization using electron and X-ray techniques. Topics include advanced crystallography, electron optics, and interactions of energetic electrons with solids. Some applications of X-ray diffraction will be addressed. Lecture and laboratory. 3 hours.

644. Materials Characterization II. Applications of materials characterization using electron and X-ray techniques. Topics include imaging and X-ray spectroscopy using scanning electron microscopy; imaging, diffraction, and X-ray spectroscopy using transmission electron microscopy; and advanced X-ray diffraction techniques. Lecture and laboratory. 3 hours.

653. Phase Diagrams. Analysis and interpretation of binary, ternary, and more complex phase diagrams including thermodynamic basis and construction. 3 hours.

667. Process Modeling and Simulation. 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. 3 hours.

690. Special Topics in (Area). Prerequisite: Permission of graduate study committee. 1-6 hours.

691. Individual Study in (Area). Prerequisite: Permission of graduate study committee. 1-6 hours.

698. Nonthesis Research. Prerequisite: Permission of mentor. 1-12 hours.

699. Thesis Research. Prerequisite: Admission to candidacy and permission of mentor. 1-12 hours.

701. Materials Science and Engineering Seminar. Required of all full-time Ph.D. students. 1 hour.

703. Thermodynamics of Materials. Atomistic and classical approaches to the understanding of the thermodynamics of solids, phase transformations, chemical reactions, and alloy systems. 3 hours.

713. Mechanical Behavior of Materials. Microstructural effects on the deformation mechanisms responsible for mechanical behavior of engineering materials. 3 hours.

714. Process Quality Engineering. 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. 3 hours.

715. Nucleation and Growth. Nucleation, growth and phase transformations in materials. The roles of heterogeneities, boundaries, temperature, and free energy are addressed. 3 hours.

716. Microstructural Processes. Theory and application of the principal microstructural processes in materials, including recrystallization, grain growth, coarsening, and sintering. Prerequisite: MSE 615 or 715. 3 hours.

723. Solidification. Plane-front, cellular, and dendritic growth of single and polyphase alloys as applied to normal and directional solidification. Influence of epitaxy and convection on solidification structures. 3 hours.

731. Polymer Structures/Morphology. Application of x-ray and electron diffraction, light, electron and atomic force microscopy to crystal structure and morphology of polymers. Morphology-processing-property relationships, deformation mechanisms and orientation characterization. 3 hours.

732. Polymer Processing. Introduction to polymer processing. Design and analysis of plastic products and processes based on knowledge of the composition and physical and rheological behavior of the polymers. Product properties will be correlated with processing-induced morphology. 3 hours.

734. Design and Manufacture Technologies for Automotive Applications. Basics of lightweight materials, avenues on automotive component designs, emerging processing technologies in lost foam casting, thermoplastic composites and testing methodologies. 3 hours.

735. Advanced Mechanics of Composites. 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. 3 hours.

736. Engineering Fibers. 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. 3 hours.

737. Quantitative Microscopy. Quantitative description of microstructural features. Relationships between microstructural characteristics and properties. 3 hours.

743. Materials Characterization I. Fundamentals of materials characterization using electron and X-ray techniques. Topics include advanced crystallography, electron optics, and interactions of energetic electrons with solids. Some applications of X-ray diffraction will be addressed. Lecture and laboratory. 3 hours.

744. Materials Characterization II. Applications of materials characterization using electron and X-ray techniques. Topics include imaging and X-ray spectroscopy using scanning electron microscopy; imaging, diffraction, and X-ray spectroscopy using transmission electron microscopy; and advanced X-ray diffraction techniques. Lecture and laboratory. Prerequisite: MSE 643 or 743. 3 hours.

753. Phase Diagrams. Analysis and interpretation of binary, ternary, and more complex phase diagrams including thermodynamic basis and construction. 3 hours.

767. Process Modeling and Simulation. 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. 3 hours.

790. Special Topics in (Area). Prerequisite: Permission of graduate study committee. 1-6 hours.

791. Individual Study in (Area). Prerequisite: Permission of graduate study committee. 1-6 hours.

798. Nondissertation Research. Prerequisite: Permission of mentor. 1-12 hours.

799. Dissertation Research. Prerequisite: Admission to candidacy and permission of mentor. 1-12 hours.

NIBIB Supported T-32 Predoctoral Training Grant

National Institute of Biomedical Imaging and Bioengineering (NIBIB) has awarded an interdisciplinary predoctoral training grant to UAB that is entitled "Nanotechnology in Biosensors and Bioengineering". It is a five year program that started on September 1, 2007. Benefits to participating graduate students include: graduate stipends of \$25,000 per year, full tuition and health insurance, and a travel award of \$1,000 per year. The purpose of this grant is to implement a training program at the interfaces of physics, chemistry, materials science and engineering, and biomedical engineering that will reduce the time from discovery of a new tool in nanotechnology to its application in medical devices, tissue engineering, and biosensors for earliest detection of molecular signatures of disease.

For more information regarding this training program, visit
<http://www.uab.edu/cnmb/graduate/index.html>.

Mechanical Engineering (M.S.M.E.)

Degree Offered: M.S.M.E.

Director: Roy Koomullil
Phone: (205) 934-0832
E-mail: rkoomul@uab.edu
Web site: <http://www.uab.edu/engineering/departments-research/me>

Faculty

Doug Boylan, Research Professor (Mechanical Engineering); Power Generation, Energy Sources and Environments

Gary Cheng, Associate Professor (Mechanical Engineering); Computational Fluid Dynamics, Multi-phase Combustion

Alan Eberhardt, Professor, (Biomedical Engineering); Solid Mechanics, Analytical and Numerical Methods in Biomechanics

Jay Goldman, Distinguished Service Professor (Engineering); Administrative Organization and System Design for Productivity and Quality Enhancement in Manufacturing and Service Industries

Yasushi Ito, Research Assistant Professor (Mechanical Engineering); Mesh Generation & Adaptation, Computational Fluid Dynamics

Jong-Eun Kim, Research Associate Professor (Mechanical Engineering); Computational Structural Mechanics, Fluid-Structure Interactions, Multidisciplinary Optimization

Roy P. Koomullil, Associate Professor (Mechanical Engineering); Computational Fluid Dynamics, Unsteady Flows, Generalized Overset Meshes

David L. Littlefield, Professor (Mechanical Engineering); Computational Structural Mechanics, High Impact and Blast analysis, Computational Methods

David McDaniel, Research Assistant Professor (Mechanical Engineering); High Performance Computing, Unstructured Meshes

Robert Meakin, Professor (Mechanical Engineering); Fluid Mechanics, Multiple-Body Dynamics, Computational Geometry, Domain Connectivity, and Computational Science and Engineering Software Project Management

Hassan Moore, Assistant Professor (Mechanical Engineering); Mathematical Education, Fiber Optics and LIDAR research

Robert H. Nichols, Research Professor (Mechanical Engineering); Computational Fluid Dynamics, Turbulence Modeling, Grid Generation Software

Tina Oliver, Assistant Professor (Mechanical Engineering); Mechanical Systems and Vehicle Dynamics and Design

Doug Ross, Assistant Professor (Mechanical Engineering); Computer-aided Geometry Design and Mesh Generation

Nick Santoro, Research Associate Professor (Mechanical Engineering); Power Generation, Finite Element Analysis, and Structural Analysis

Alan Shih, Research Professor (Mechanical Engineering); Computational Fluid Dynamics, Mesh Generation, Visualization Systems and Software

Bharat Soni, Chair and Professor (Mechanical Engineering); Computational Structures and Fluid Dynamics, Mesh Generation

Hessam Taherian, Instructor (Mechanical Engineering); Energy Efficiency, Solar-Thermal Water and Space Heating and Cooling, Building Energy Modeling, Heat Exchangers

Uday Vaidya, Professor (Materials Science and Engineering); Composite Material Characteristics, testing, and manufacturing processes

Peter M. Walsh, Research Professor (Mechanical Engineering); Combustion and gasification for industrial process heat and power generation, Carbon sequestration, Emissions control

M.S.M.E. Program 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. The usual criteria for admission in good standing follow:

- Not less than B-level scholarship overall or over the last 60 semester hours of earned credit; and
- The GRE aptitude test scores must meet a minimum of 1100 on quantitative and verbal portions combined. In addition, for foreign nationals, a minimum score of 550 (paper-based), 80 (IBT), or 213 (computer-based) on the TOEFL is required. Other standardized examination scores will also be considered.

A student not meeting these requirements may also be admitted, perhaps on probationary status, provided other information indicating likely success in the program is provided.

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).

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)
 - Six semester hours in committee-approved* mathematics courses
 - Eighteen semester hours in committee-approved* mechanical engineering courses or approved related courses, including at least three 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 (Master's Thesis Research) in addition to the 24 semester hours of course work.
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 Graduate Coordinator, 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 course work 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
 - o Six semester hours in approved mathematics courses
 - o 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:
 - o at least three (3) semester hours in a course outside the student's research or specialization area
 - o at least three (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
 - o At least three semester hours in approved mathematics courses
 - o At least six semester hours in approved mechanical engineering courses
 - o At least six semester hours in one of the following two management applications areas:
MBA 660 Business Statistics and either EC 520 Applied Forecasting or another approved advanced management course
 - o Three semester hours in MBA 632 Managerial Process/Behavior
 - o At least three semester hours in ME 698 Non-Thesis Research, involving design or research
 - o At least nine semester hours of engineering-oriented management coursework. Approved courses include: CE 658 Engineering Management, EE 585 Engineering Operations, EE 686 Technical Entrepreneurship I, EE 687 Technical Entrepreneurship II, and ME 601 Design Measurement and Enhancement of Work Systems
2. The student must make a presentation on the research project and submit a final report which must be approved by the project director.

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 student's undergraduate degree.

- ME 241 Thermodynamics I
- ME 321 Introduction to Fluid Mechanics
- ME 322 Introduction to Heat Transfer
- ME 360 System Modeling and Controls
- ME 370 Kinematics and Dynamics of Machinery
- ME 371 Machine Design
- CE 220 Mechanics of Solids

Additional Information

Deadline for Entry Term(s):	Fall: July 1, Spring: November 1, Summer: April 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.)

For detailed information, contact Dr. Roy Koomullil, Department of Mechanical Engineering, BEC 257, 1530 3rd Avenue South, Birmingham, Alabama 35294-4461.

Telephone: 205-934-0832

E-mail: rkoomul@uab.edu

Web: <http://www.uab.edu/engineering/departments-research/me>

Course Descriptions

Unless otherwise noted, all courses are for 3 semester hours of credit.

Mechanical Engineering (ME)

511. Intermediate Fluid Mechanics. Applications of fluid dynamic principles to engineering flow problems such as turbo-machinery flow and one-dimensional compressible flow. Vorticity and viscosity, potential flow, viscous flow, Navier-Stokes, solutions and boundary layers. ME 321 (Introduction to Fluid Mechanics) or equivalent is a prerequisite for this course.

521. Introduction to CFD Basics. 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.

530. Vehicular Dynamics. Introduction to the basic mechanics governing vehicle performance, analytical methods, and terminology. CE 215 (Dynamics) or equivalent is recommended as a prerequisite for this course.

545. Combustion. Theory and applications of combustion: thermochemistry, mass transfer, chemical kinetics, analysis of reacting systems, conservation equations, premixed flames, diffusion flames, droplet combustion, solid fuel combustion, pollutant emissions, and detonations. ME 321 (Introduction to Fluid Mechanics) or equivalent, and ME 322 (Introduction to Heat Transfer) or equivalent are prerequisites for this course. ME 242 (Thermodynamics II) or equivalent is recommended as a prerequisite for this course.

548. Internal Combustion Engines. Fundamentals of reciprocating internal combustion engines: engine types, 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 242 (Thermodynamics II) or equivalent is recommended as a prerequisite for this course.

549. Power Generation. 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 conversion. ME 242 (Thermodynamics) or equivalent is recommended as a prerequisite of this course.

554. Heating, Ventilation and AC. 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. ME 322 (Introduction to Heat Transfer) or equivalent is a prerequisite for this course.

555. Thermal Systems Design. 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. ME 322 (Introduction to Heat Transfer) or equivalent is a prerequisite for this course.

564. Introduction to Finite Element Method. 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. CE 220 (Mechanics of Solids) or equivalent is a prerequisite for this course.

575. Mechanical Vibrations. Free and forced single-degree-of-freedom systems. Multi-degree-of-freedom systems. Simple continuous systems.

583. Computer-Aided Engineering. Computer aided engineering concepts including geometry design, solid modeling and computer aided design (CAD) systems. Their applications to mechanical engineering problems in design and mechanical, thermal, power and energy systems, and computational field simulations explored. ME 321 (Introduction to Fluid Mechanics) or equivalent and CE 220 (Mechanics of Solids) or equivalent are prerequisites for this course. ME 130 (Introduction to Computational Engineering) or equivalent is a recommended prerequisite for this course.

590. Special Topics in (Area). 1-4 hours.

601. Design, Measurement, and Enhancement of Work Systems. Systems involving human performance.

610. Inviscid Fluid Mechanics. Kinematics and dynamics of real and perfect fluids. Potential flow around bodies. Flow-field solution techniques.

611. Advanced Fluid Mechanics I. Fundamental laws of motion for viscous fluid, classical solutions of the Navier-Stokes equations, inviscid flow solutions, laminar boundary layers, and stability criteria.

613. Introduction to Computational Fluid Dynamics. 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.

614. Advanced Computational Fluid Dynamics. Finite Volume Scheme, Eigen values 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.

615. Introduction to Turbulent Flows. 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.

642. Statistical Mechanics. The explanation of macroscopic thermodynamic properties and behavior, based upon the classical and quantum mechanics of atoms and molecules. ME 241 (Thermodynamics I) or equivalent is a prerequisite for this course.

650. Transport Phenomena. 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 321 (Introduction to Fluid Mechanics) or equivalent and ME 322 (Introduction to Heat Transfer) or equivalent are prerequisites for this course.

653. Convection Heat Transfer. Equations of convective heat transfer. Boundary layer equations. Internal and external laminar flows. Turbulent flows. Natural convection and combined convection. Convective heat transfer through porous media.

665. Computational Methods of Mechanical Engineering. Applications of digital computers to solution of problems in mechanical engineering, matrices, roots of equations, solution of simultaneous equations, curve fitting by least squares, differentiation and integration, differential and partial differential equations. MA 252 (Differential Equations) or equivalent and ME 130 (Introduction to Computational Engineering) or equivalent are recommended prerequisites for this course.

661. Mathematical Methods in Engineering I. Advanced ordinary differential equations; Eigen value problems; multi-variable calculus and implicit functions; curve, surface and volume representation and integration; Scalar and vector field theory; Fourier integrals and transforms; separation of variables and transform techniques for solution of partial differential equations. Differential Equations (MA 252) or equivalent is recommended as a prerequisite for this course.

662. Mathematical Methods in Engineering II. 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. ME 661 (Math Methods in EGR i) or equivalent is recommend as a prequistie for this course.

665. Computational Methods in Engineering. 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.

670. Introduction to Continuum Mechanics. 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. CE 220 (Mechanics of Solids and MA 252 (Differential Equations) or equivalents are prerequisites for this course.

679. Advanced Finite-Element Analysis. 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. ME 321 (Introduction to Fluid Mechanics) or equivalent, ME 322 (Introduction to Heat Transfer) or equivalent, and CE 220 (Mechanics of Solids) or equivalent are prerequisites for this course.

680. Numerical Mesh Generation. Mesh generation strategies, error analysis, and their role in field simulation systems and engineering applications, Structured and Unstructured meshing algorithms including algebraic, elliptic, parabolic, hyperbolic, advancing front, and Delaunay triangulation methods, computer aided geometry techniques and surface mesh generation schemes.

682. Computer-Aided Geometry Design. Bezier curves, polynomial interpolation, splines, NURBS, tensor product Bezier surfaces, composite surfaces, differential geometry, parametric curves and surfaces, decimation and refinement algorithms.

686. Design Optimization Techniques. Methods of numerical optimization techniques applied to engineering design. Methods for optimization of both single and multiple variable functions, constrained and unconstrained. Real-world problems as examples and student projects. Knowledge of a computer language is a prerequisite of this course.

690. Special Topics in (Area). 1-4 hours.

691. Individual Study in (Area). 1-4 hours.

693. Journal Club in Mechanical Engineering. 1 hour.

694. Mechanical Engineering Seminar. 1 hour.

698. Non-Thesis Research. 1-12 hours.

699. Master's Thesis Research. Prerequisite: Admission to candidacy. 1-12 hours.

Health Professions

Administration Health Services (DSc., Ph.D.)

Degree Ph.D.
Offered:

Co-
Director: Dr. Robert Hernandez (School of Health Professions)
Co-
Director: Dr. Susan K. Key (School of Business)

Phone: (205) 934-3113

E-mail: phdha@uab.edu

Web: <http://main.uab.edu/Shrp/Default.aspx?pid=77128> (School of Health Professions)
<http://main.uab.edu/sites/business/> (School of Business)

Faculty

Nell Adkins, Associate Professor (Accounting); Corporate Taxation, Market Effects of Taxation, Mergers and Acquisitions, Valuation of Intangible Assets

Eta Berner, Professor (Health Informatics); Evaluation of Clinical Decision Support Systems and Other Health Information Technologies

Janet M. Bronstein, Associate Professor (Health Care Organization and Policy); Public Health Policy, Social and Ethical Issues in Health Care, Medicaid

Jeffrey Burkhardt, Associate Professor (Health Services Administration); Health Care Finance, Applied Health Economics

Vicki Cox-Edmondson, Associate Professor (Management): Strategy, Entrepreneurship, Corporate Social Responsibility and Business Ethics, Organizational Behavior, and Constraints Management

Thomas DeCarlo, Professor, Ben S. Weil Chair in Industrial Distribution (Business); Strategic Issues in Sales Force development and Management, Interpersonal Persuasion and Decision Making, Marketing Communications

W. Jack Duncan, University Scholar and Professor (Management, Health Care Organization and Policy); Administrative Theory, Strategic Management of Health Care Organizations, Organizational Internal Analysis

Peter M. Ginter, Professor (Health Care Organization and Policy, Management); Strategic Management of Health Care Organizations and Government Agencies, Macroenvironmental Analysis

Gerald L. Glandon, Professor (Health Services Administration); Health Economics, Technology Evaluation, Policy Analysis

S. Robert Hernandez, Dr.P.H. (Professor and Director) Doctoral Program in Administration-Health Services for the School of Health Professions. Strategic Planning for Health Care Organizations, Health Care Organization Theory, Human Resources Management

Tee H. Hiett, Professor Emeritus (Health Services Administration); Health Care Computer Applications, Data Processing in Health Care

Robert E. Holmes, Professor (Management); Business Education and Reform, Entrepreneurship, Strategic Management

Howard W. Houser, Professor (Health Services Administration) History of Health Care Systems, General Administration, Comparative Health Systems

Eric Jack, Associate Professor (Operations Management); Project Management, Operations Planning and Management

Karen Kennedy, Associate Professor (Marketing); Cognitive Research, Diversity, Services Marketing, Organizational Culture, Interpersonal Trust Development, Qualitative Research Methods

Joshua C. Klapow, Assistant Professor (Health Care Organization and Policy); Outcome Evaluation, Health Related Quality of Life, Health Care Delivery Systems, Behavioral Medicine, Chronic Illness, Provider Behavior

Seung-Dong Lee, Professor (Economics); Microeconomics in Nonprofit Organizations, Econometric Studies in Health Care, International Economics

Warren S. Martin, Professor (Marketing); Survey Research, Marketing Strategy, Professional Sales Strategy, Decision Making

Stephen Mennemeyer, Associate Professor (Health Care Organization and Policy); Health Economics, Competitive Bidding, Cost-Effectiveness, Outcomes Research

Michael A. Morrisey, Professor (Health Care Organization and Policy); Health Economics, Health Care Markets, Health Insurance, Managed Care

George M. Munchus, Professor (Management); Human Resources Management, Labor Relations, Arbitration and Mediation

Philip Musa, Associate Professor (Information Systems); Knowledge Management; Systems Thinking

Steven J. O'Conner, Associate Professor (Health Services Administration); Health Care Policy and Management, Service Quality and Orientation, Stakeholder Analysis

Thomas L. Powers, Professor (Marketing); International Product Innovation, Marketing Strategy, Services Marketing, Industrial Marketing

Julio C. Rivera, Associate Professor (Information Systems); Telecommunications and Systems Analysis, Student and Faculty Computing Resources

Bisakha Sen, Assistant Professor (Health Care Organization and Policy); Health Economics, Labor Economics, Applied Microeconomics

Richard M. Shewchuk, Professor (Health Services Administration); Community-Based Intervention Development, Health and Long-Term Care Issues in Aging, Quantitative Methods

Tommie Singleton, Associate Professor (Information Systems); Systems Analysis and Design, Forensic Auditing and Systems Structure

Deborah W. Tanju, Professor (Accounting); Internal Auditing, Financial Accounting

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 development of mentoring relationships. Students may choose a specialization in either strategic management or health services research. 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, over 80 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 15 may be considered for early admission. The application deadline is March 1st. Although applications may be considered after March 1st, admission and financial aid priority is given to those applicants whose materials are complete by March 1st. Applications submitted after March 1st 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 1,000 (verbal plus quantitative) 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, and (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.

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 mentorship 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 15th
Deadline for All Application Materials to be in the Graduate School Office:	March 15

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 Program in Administration–Health Services Program, UAB School of Health Professions, Webb Building, Room 564, 1675 University Boulevard, Birmingham, AL 35294-3361.

Telephone 205-934-3113

Fax 205-975-6608

E-mail phdha@uab.edu

Web www.hsa.uab.edu

Course Descriptions

Unless otherwise noted, all courses are for 3 semester hours of credit. Courses numbers preceded with an asterisk indicate courses that can be repeated for credit, with stated stipulations.

Administration–Health Services (AH)

700. Health Economics. Economic concepts and their relevance to health care industry; financing and delivery arrangements employed in the U.S. health care system; role of economic factors in the development of public policy and implications of changes in public policy.

701. Administrative Theory. Covers the history of administrative theory and management as well as recent contributions and current issues in administrative theory and management; focus is on understanding the evolution of management thought and research and on developing areas of research interest that will contribute to the field.

702. Growth and Development of the U.S. Health Care System. Historical development of U.S. health care system; implications for solutions of current problems.

703. Philosophy of Science. Systems of thought and activities in the theory-building process, deriving hypotheses from the literature, understanding scientific theory, philosophy of science; applications to health services administration.

704. Multivariate Analysis. Survey course on the application of multivariate statistical techniques; emphasis on application to health-related research questions and interpretation.

705. Health Care Finance. 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.

706. Strategic Management Theory and Research. Overview of 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.

707. Research Methods. Issues of research design and research methods for organizational studies and health services research; integrates knowledge from quantitative courses with areas of research interest in the students' chosen fields.

712. Research in Organizational Behavior. Examination of topics and empirical research in organizational behavior; emphasis on important issues in the field, including areas of controversy and contemporary interest.

714. Marketing Strategy and Research. Examination of development of marketing strategy and strategic management process; research topics and implications of literature are explored.

715. Research in Organizational Theory. Topics and research in organization and management theory applied to health services organizations, including organization-environment relations, population ecology, interorganization relations, and strategic alliances.

716. Macroenvironmental Analysis. Examination of research literature that addresses external and internal environmental factors affecting strategic management.

718. Strategic Information Systems. Examination of current research on role of information systems in strategic management.

***720. Doctoral Seminar.** Presentations by faculty and Ph.D. candidates concerning current issues in particular areas of specialization. 1 hour.

722. Regression Analysis. Various approaches to regression analysis, including ordinary least squares and probability models such as logit and probit.

775. Strategic Planning and Management in Health Services. Assessment of strategic management literature applied to health services organizations; exploration of strategy formulation, strategic content, and implementation and evaluation topics for health care organizations.

***790. Independent Study and Research.** 1-12 hours.

***798. Nondissertation Research.** 1-6 hours.

***799. Dissertation Research.** Prerequisite: Admission to candidacy. 1-6 hours.

Clinical Laboratory Sciences (M.S.)

Degree Offered:	M.S.
Directors:	Dr. Kathy Nugent (Biotechnology) Dr. Vivian Pijuan-Thompson (Cytology) Dr. Todd Casanova (Professional Entry)
Phone:	(205) 934-7384 (Nugent) (205) 934-3378 (Pijuan-Thompson) (205) 934-1348 (Casanova)
Email:	knugent@uab.edu pijuan@uab.edu tcasanov@uab.edu
Web sites:	http://www.uab.edu/cds/academic/graduate/biotech (Biotechnology) http://www.uab.edu/cds/academic/graduate/ct (Cytology) http://www.uab.edu/cds/academic/graduate/cls (Professional Entry)

Faculty

Joanne Brock, Assistant Professor

Michelle Brown, Assistant Professor

Todd Casanova, Associate Professor (Clinical and Diagnostic Sciences); Hematology, Hemostasis, Body Fluids, Molecular Diagnostics

Joseph Garner, Assistant Professor

Pat Greenup, Associate Professor (Clinical and Diagnostic Sciences); Clinical Microbiology; Laboratory Operations Management, Infectious Diseases/Biodefense

Linda H. Jeff, Associate Professor (Clinical and Diagnostic Sciences); Clinical Microbiology; Immunology, Educational Methodology, Clinical Correlations

Kathy Nugent, Assistant Professor

Vivian Pijuan-Thompson, Assistant Professor

Tino Unlap, Associate Professor (Clinical and Diagnostic Sciences); Biotechnology; Recombinant DNA, Protein Chemistry

Program Information

Program Mission

The faculty members of the Clinical Laboratory Sciences Program (CLS) devoted to providing an excellent service to the community and its graduate. 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 instructions through didactic and hands on 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.

Programs

The Master of Science in Clinical Laboratory Science (M.S.) is pleased to offer three programs for degree completion: Biotechnology, Cytology, and Professional Entry.

Professional Entry

The Professional entry program is designed for students who hold a Bachelor of Science in biology, chemistry, or a related major, and who are not certified medical technologists and desire a career in clinical laboratory science. Such students, upon completion, will be eligible to take a national examination for certification as a Medical Technologist or Clinical Laboratory Scientist. The Professional entry program requires 24 months as a full-time student for completion of the degree requirements.

Biotechnology

The Master of Science degree and certificate options in Biotechnology are designed to prepare a diverse student body for careers in various fields involving biotechnology and its related sciences. This program is designed to provide students with broad training and education in scientific principles and knowledge

underlying biotechnology, scientific principles and knowledge underlying emerging diagnostic technologies associated with biotechnology, basic laboratory techniques in biotechnology, instrumentation and automation principles used in the biotechnology industry, and legal, regulatory and marketing issues in biotechnology.

The Biotechnology Program consists of a Master of Science option and a Graduate Certificate option that requiring 3 semesters for completion as full-time students. The Master of Science option requires 34 credit hours and is designed for individuals who hold a Bachelor of Science degree in a related discipline including biology, chemistry, biochemistry, physics, engineering, mathematics, psychology and sociology.

The Graduate Certificate option requires 20 credit hours and is designed for individuals who wish to obtain only a certificate in biotechnology (not an M.S. in CLS) in order to either find a position in the Biotech/Pharma Industry or to advance in their current position in the Biotech/Pharma or related industries.

Cytology

Graduates of the Cytology program receive a M.S. in Clinical Laboratory Sciences (MCCLS) with a certificate in Cytotechnology. Cytotechnologists work closely with pathologists to diagnose and manage infectious, pre-malignant, and malignant diseases by microscopically evaluating cells obtained from all body sites. Automated screening systems and new technologies are emerging and expanding the scope of practice for cytotechnologists. Our graduate program prepares students to provide the service expected of an entry level cytotechnologist by providing excellent didactic instruction and clinical experiences at numerous hospitals and private clinical laboratories. In addition, the program provides advanced clinical practice and didactic instruction in the performance and interpretation of ancillary diagnostic tests, new technologies used in clinical and research labs, applied research, and laboratory management. Graduates will be prepared to assume leadership positions in private and hospital laboratories, government and industrial facilities, and in academia. The program prepares graduates for a career that greatly benefits the practice of pathology and the patients it serves.

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 if applying for the Professional Entry Program,
- 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,
- have scores of at least 500 in each of the verbal and quantitative sections of the GRE General Test,
- provide a written statement of career goals

If foreign-educated, have a score of at least 550 for paper version (or 100 for Internet version; or 213 for computer version) on the TOEFL, submit a transcript evaluation from World Education Services (WES) at 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.

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 Requirements

Fundamental tasks, behaviors, and abilities necessary to successfully complete the requirements of the Program are available upon request from the CLS program office. If you have a disability but have not contacted Disability Support Services (DSS), please call 934-4205 or visit DSS at 516 Hill University Center or <http://students.uab.edu/dss>.

Additional Information:

Entry Term:	Fall semester
Deadline for All Application Materials to be in the Graduate School Office:	Six weeks before term begins
Number of Evaluation Forms Required:	None
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	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, Clinical Laboratory Sciences Programs, UAB School of Health Professions, SHPB 430, 1705 University Blvd., Birmingham, Alabama 35294-1212.

Telephone 205-934-3209.

E-mail AskCDS@uab.edu

Course Descriptions

Clinical Laboratory Sciences (CLS)

Biotechnology Courses

* Upon approval

** Required courses for certificate

*** Upon Approval

****CLS 500. Health and Safety Management. – Online Course.** Review of infection control principles focused on bloodborne, airborne, drug-resistant and opportunistic pathogens, and general health and safety guidelines and standards. Prerequisites: Open to all graduate students. 1 hour.

****CLS 506. Laboratory Techniques.** Overview of issues and skills surrounding working in the modern laboratory environment; includes safety, collection of specimens, equipment, mathematics, measurements, microscopy, dilutions, quality assurance, basic spectrophotometry, phlebotomy, automation of laboratory testing and lab computers. 2 hours.

****CLS 526. Instrumentation and Automation.** This course includes the study of the theory and principles of automation and instrumentation used in laboratories. An 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. 3 hours.

****CLS 527. Instrumentation and Automation Lab.** This course includes the practical application of automation and instrumentation used in laboratories. An 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. 1 hour.

****CLS 542. Molecular Diagnostics.** Overview of nucleic acid structure, gene expression and genetic disease. Principle and performance of DNA and RNA isolation, amplification, hybridization, and analysis. Applications in microbiology, prenatal diagnosis, cancer management, transplantation, paternity testing, thrombosis risk testing and forensic medicine. 4 hours.

****/**CLS 545. Protein Chemistry.** This course focuses on applications of protein chemistry and examines the structure of proteins, their function, their binding to other molecules and the methodologies for the purification and characterization of proteins. 2 hours.

****/**CLS 555. Immunology.** Overview of the function of the innate defense mechanism, antigens, antibodies, development of the immune system, lymphocytes, immunoglobulins, lymphokines and inflammation. Includes discussion of advanced concepts of B-and T-lymphocyte ontogeny, generation and antibody diversity and genetics of the major histocompatibility complex, cytokine network and immunogenetics. 2 hours.

****CLS 637. Emerging Diagnostic Technologies.** This course covers emerging diagnostic technologies for use in clinical laboratories, including methods for molecular microbiology, oncology, hematology, genetics, and identity testing; flow cytometry, automation, and robotics. Review of rapid tests and new in vitro methodologies; economic factors; regulations and licensing issues; accreditation criteria; and social, ethical, and legal issues associated with emerging in vitro diagnostic technologies. Prerequisite: Permission of Instructor. 2 hours

CLS 640. Biotechnology Regulations and Quality Systems. This course provides an overview of regulatory and quality systems requirements for drugs, biologics, medical devices or combination products; includes guidance and compliance requirements with GXP (Good Laboratory/Clinical/Manufacturing Practices), Quality Systems Regulations, responsible conduct in human/animal research, inspection processes (FDA, ISO, CLIA), intellectual property and related ethical and legal issues such as dual use biodefense countermeasures development and distribution. 3 hours

****/**CLS 655. Recombinant DNA.** This course will cover the following general topics: DNA as the primary genetic material, information flow from DNA to protein, control of gene expression, basic tools for recombinant DNA, fundamental features of Eukaryotic genes, mobile DNA sequences in the genome, regulation of gene action by RNA interference, genome analysis, finding human disease genes, understanding the genetic basis for cancer, and DNA fingerprinting and forensics. 3 hours.

CLS 693. Scientific Publications Analysis. Review and scientific critique of current literature related to laboratory medicine, overview of research design and interpretation of statistics,

sources of publication journals and government documents, content and style of scientific papers, writing of grant proposal and scientific poster presentation.
3 hours

CLS 698. Master's Level Thesis/Non-Thesis Research. Completion of research paper that is based on an original research project. 4 hours

Professional Entry Courses

- * Courses may be repeated for credit with defined stipulations
- ** Courses not open to non-degree graduate students
- *** Upon Approval

CLS 500. Health and Safety Management. – Online Course. Review of infection control principles focused on bloodborne, airborne, drug-resistant and opportunistic pathogens, and general health and safety guidelines and standards. Prerequisites: Open to all graduate students. 1 hour.

CLS 503. Body Fluids. 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. 1 hour.

CLS 504. Body Fluids Laboratory. Diagnosis and monitoring 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. 1 hour.

CLS 505. Laboratory Management. 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. 3 hours.

CLS 506. Laboratory Techniques. Overview of issues and skills surrounding working in the modern laboratory environment; includes safety, collection of specimens, equipment, mathematics, measurements, microscopy, dilutions, quality assurance, basic spectrophotometry, phlebotomy, automation of laboratory testing and lab computers. 2 hours.

CLS 518. Immunology. --Physiology of immune responses to infectious agents, tumors, transplants; abnormal responses: hypersensitivity, autoimmunity, immunoproliferative disorders, and immunodeficiencies; antigen-antibody reactions; complement; applications of immunology tests. 4 hours.

CLS 519. Immunology Lab. Specimen requirements, principle, procedure, clinical significance, and sources of error of common clinical immunology tests; performance and interpretation of tests; application of results to clinical situations. 1 hour.

CLS 523. Clinical Microbiology. 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 3 hours.

CLS 524. Clinical Microbiology Lab. Performance of techniques and tests used in the isolation and identification of bacteria, fungi, and parasites commonly seen in a clinical microbiology laboratory. 1 hour.

CLS 526. Instrumentation and Automation. This course includes the study of the theory and principles of automation and instrumentation used in laboratories. An 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. 3 hours.

CLS 527. Instrumentation and Automation Lab. This course includes the practical application of automation and instrumentation used in laboratories. An 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. 1 hour.

CLS 528. Hematology I.--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, quality assurance. 4 hours.

*****CLS 530. Immunohematology.** This course covers blood group antigen-antibody reactions; donor blood collection and testing; serological characteristics and immunogenetics of the major blood group systems; pretransfusion testing, basic and advanced techniques of antibody identification and problem-solving; transfusion therapy; laboratory evaluation of hemolytic disease of the newborn; and the investigation of immune coating of red cells in vivo, including autoimmune hemolytic anemia. Application of theory and problem-solving skills is emphasized. Prerequisites: CLS 500 (or concurrent enrollment). 4 hours.

*****CLS 531. Immunohematology Lab.** This course includes the study of red cell phenotyping, antibody detection and identification, pretransfusion testing, and laboratory investigation of hemolytic anemias. 1 hour.

*****CLS 532. Hematology II.** 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 leukemia, myeloproliferative disorders, and myelodysplastic syndromes. Application of cell morphology, cell population scatter plots and histograms, cytochemistry, immunophenotyping, molecular methods, and cytogenetics. Hematology laboratory problem solving. 4 hours.

*****CLS 537. Infectious Diseases.** 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. 3 hours.

*****CLS 538. Infectious Diseases Lab.** 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. 1 hour.

CLS 542. Molecular Diagnostics. Overview of nucleic acid structure, gene expression and genetic disease. Principle and performance of DNA and RNA isolation, amplification, hybridization, and analysis. Applications in microbiology, prenatal diagnosis, cancer

management, transplantation, paternity testing, thrombosis risk testing and forensic medicine. 4 hours.

*****CLS 551. Clinical Chemistry I.** --Principles and methods of analysis of biochemical metabolites used in medical laboratories; problem solving; quality control and quality assurance. Metabolism of carbohydrates, proteins, heme, lipids and enzymes, and correlation of laboratory data. Case studies of common diseases and specimen problems. 3 hours.

*****CLS 552, Clinical Chemistry Lab.** Performance of techniques and tests used in a clinical chemistry lab to diagnose, treat and monitor human diseases. Application of quality control to commonly measured analytes. 1 hour.

****/***CLS 560. Clinical Correlations.** 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 518, 523, 528, 530, 537, 542 , 551 or concurrent enrollment. 3 hours.

****CLS 570. Certification Review. Online.** 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. 1 hour.

****CLS 595. Clinical Practice.** Directed clinical practice in immunohematology, Immunology, Hematology, Microbiology, and Chemistry; laboratory procedures and methods, problem-solving, quality assurance, preventive maintenance, and safety. Prerequisite: Admission to the CLS program. 1-12 hours.

CLS 610. Advanced Technology Assessment.--Analysis of technology assessment information for test methods and instruments utilized in diagnostic laboratory medicine services; experience with determining and evaluating performance characteristics and clinical utility information for specific diagnostic test procedures; application of quality management practices to establish the diagnostic accuracy of products sold and to establish process quality for services delivered; application of critical thinking skills to evaluate methodological and substantive validity of correlation and evaluation studies relevant to laboratory medicine practices. Prerequisites: Biostatistics, CLS 693 or concurrent enrollment.

***CLS 686. Special Topics in Clinical Laboratory Sciences.**--Selected advanced topics of current scientific, clinical, and professional importance; specific topics designed to meet student need and interest. Prerequisite: Permission of Instructor. 1-4 hours.

CLS 693. Scientific Publications Analysis.--Review and scientific critique of current literature related to laboratory medicine, overview of research design and interpretation of statistics, sources of publication journals and government documents, content and style of scientific papers. Prerequisites: BST 600.

***/**CLS 698. Master's Level Non-Thesis Research.**—Project completion. Prerequisite: Permission of Instructor. 1-6 hours.

***/**CLS 699. Master's Level Thesis Research.**--Implementation of research. Prerequisite: Permission of Instructor. 1-6 hours.

Genetic Counseling (M.S.)

Degree Offered: M.S.

Director: Lynn Holt, M.S., C.G.C.

Phone: (205) 975-2922

E-mail: LynnHolt@uab.edu

Web site: www.uab.edu/msgc

Faculty

R. Lynn Holt, Assistant Professor

Maria Descartes, Associate Professor

M.S. Program in Genetic Counseling

Accreditation:

The Genetic Counseling Program is provisionally accredited by The American Board of Genetic Counseling, Inc. (ABGC) as a new program. The program is eligible for full accreditation in 2013.

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
- A personal statement (no more than 500 words) highlighting your motivation to become a genetic counselor, and emphasize 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, with individuals with genetic conditions or disabilities, technical work in genetics laboratories or teaching experience in biology or genetics are recommended and encouraged in preparation for entering the genetic counseling field.
- Interview with faculty

- Satisfactory screening on health data questionnaire by the UAB Medical Center Student Health Service.
- The following course prerequisites:
 - 3-4 semester hours of biology I (with lab)
 - 3-4 semester hours of biology II (with lab)
 - 3-4 semester hours of biochemistry
 - 3-4 semester hours of genetics
 - 3-4 semester hours of statistics (upper level, population, and/or health-related with lab preferred)
 - 3-4 semester hours of psychology (general, developmental, abnormal)

Degree Requirements

The graduate program in genetic counseling will follow the Plan 2 (non-thesis) option.

Program Curriculum

(All courses are currently pending approval of the School of Health Professions Academic Affairs Committee)

Fall Semester

GC 500 Principles of Genetics (3)
GC 501 Genetics in Medicine (2)
GC 502 Introduction to Genetic Counseling (3)
GC 503 Genetic Counseling Journal Club (1)

Spring Semester

GC 504 Prenatal Genetics, Embryology, and Teratology (3)
GC 506 Theory and Practice of Genetic Counseling (3)
GC 505 Principles of Cancer and Adult Genetics and Counseling (3)
GC 503 Genetic Counseling Journal Club (1)

Summer Semester

GC 600 Clinical Risk Assessment in Genetics (2)
GC 651 Clinical Rotation I (4)

Fall Semester, 2

GC 601 Research and Laboratory Based Genetic Counseling (3)
GC 602 Advanced Topics in Genetic Counseling
GC 652 Clinical Rotation II (2)
GC 653 Clinical Rotation III (2)
GC 503 Genetic Counseling Journal Club (1)
GC 698 Non-thesis Research (2)

Spring Semester, 2

GC 654 Clinical Rotation IV (2)
GC 655 Clinical Rotation V (2)
GC 503 Genetic Counseling Journal Club (1)
GC 698 Non-thesis Research (2)
GC 603 Ethical Issues in Clinical Genetics (2)
MGE 751 Biochemical Genetics (2)

Additional Information

Deadline for Entry Term(s):	January 15
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.)

For detailed information, contact Program Director, Graduate Program in Genetic Counseling, UAB School of Health Professions, 1650 University Boulevard, SHPB 440, Birmingham, AL 35294-1212.

Telephone 205-934-4863

E-mail MSGC@uab.edu

Web <http://main.uab.edu/Shrp/Default.aspx?durki=119702>

Course Descriptions

Genetic Counseling (GC)

500. Principles of Genetics (3 hrs)

Advanced knowledge about genetic principles as applied to medical genetics and genetic counseling.

501. Genetics in Medicine (2 hrs)

An overview of the clinical evaluation and assessment of an individual with a congenital anomaly, mental retardation and/or genetic condition. This will include the introduction to the etiology of common genetic conditions, and testing and treatment options for genetic disorders.

502. Introduction to Genetic Counseling (3 hrs)

Introduction to the field of genetic counseling and the basic principles of the profession.

506. Theory and Practice of Genetic Counseling (3 hrs)

Advanced genetic counseling skills as preparation to enter clinical settings.

504. Prenatal Genetics, Embryology, and Teratology (3 hrs)

Overview of embryology, teratology and physiology as related to human development and genetic disease and their applications in prenatal genetic counseling.

505. Principles of Cancer and Adult Genetics and Counseling (3 hrs)

Genetic mechanisms of genetic cancer syndromes, cancer predisposition, and adult onset disorders as well as the psychosocial issues related to these conditions that influence the genetic counseling process.

503. Genetic Counseling Journal Club (1 hr)

Review, presentation and discussion of relevant literature in medical genetics and genetic counseling.

698. Non-thesis Research. (2 hrs)

Graduate level research project under the supervision of clinical faculty.

600. Clinical Risk Assessment in Genetics (2 hrs)

Overview of clinical biostatistical methods and the application of genetic risk assessment principles to clinical risk calculation in medical genetics.

601. Research and Laboratory Based Genetic Counseling (3 hrs)

Clinical and research laboratory methods and protocols, genetic research testing, research study design, coordination, and other topics to prepare for careers in these areas.

602. Advanced Topics in Genetic Counseling (2 hrs)

Exploration of advanced topics in the field of genetic counseling that related to clinical practice and non-clinical professional duties as a genetic counselor.

603. Ethical Issues in Clinical Genetics (3 hrs)

Presentation and topics related to ethical issues in clinical genetics and genetic counseling.

MGE 751. Biochemical Genetics (2hrs)

General concepts associated with metabolic disorders and biochemical genetics, including disorder classification, pathophysiological mechanisms, diagnostic approaches, laboratory methods, and patient care.

Rotation Coursework

651. Clinical Rotation I (4 hrs)

Initial clinical rotation for students to establish basic skill set in genetic counseling applications. Students will interact with an array of genetic specialists in a clinical setting. Supervised and direct patient contact in prenatal, pediatric, adult, cancer and specialty clinics will allow students to acquire cases for ABGC certification.

652. Clinical Rotation II (2 hrs)

Students utilized intermediate clinical skills in assigned clinical setting. Students will interact with an array of genetic specialists in a clinical setting. Supervised and direct patient contact in prenatal, pediatric, adult, cancer and specialty clinics will allow students to acquire cases for ABGC certification.

653. Clinical Rotation III (2 hrs)

Students will apply progressive genetic counseling skills in clinical setting. Students will interact with an array of genetic specialists in a clinical setting. Supervised and direct patient contact in prenatal, pediatric, adult, cancer and specialty clinics will allow students to acquire cases for ABGC certification.

654. Clinical Rotation IV (2 hrs)

Students will demonstrate advanced clinical genetic counseling skills. Students will interact with an array of genetic specialists in a clinical setting. Supervised and direct patient contact in prenatal, pediatric, adult, cancer and specialty clinics will allow students to acquire cases for ABGC certification.

655. Clinical Rotation V (2 hrs)

Advanced clinical rotation to allow student additional exposure in area of interest. Students will interact with an array of genetic specialists in a clinical setting. Supervised and direct patient contact in prenatal, pediatric, adult, cancer and specialty clinics will allow students to acquire cases for ABGC certification.

Health Administration (M.S.H.A.)

Residential and Executive M.S.H.A.

Directors:

Dr. Jeffrey Burkhardt (Residential)
Dr. Stephen O'Connor (Executive)

Phone: (205) 934-1670
E-mail: jburkhar@uab.edu (Burkhardt)
sjo@uab.edu (O'Connor)
Web site: www.uab.edu/hsa - www.uab.edu/msha and
www.uab.edu/emsha

Primary Faculty

Darrell Burke, Associate Professor (Health Services Administration); Operations Management, Health Informatics; Quality Improvement; Quantitative Methods; IT Management

Eta Berner, Professor (Health Services Administration); Health Informatics

Jeffrey Burkhardt, Professor (Health Services Administration); Health Care Finance

Gerald Glandon, Professor and Chair (Health Services Administration); Economics and Cost Effectiveness

Randa S. Hall, Instructor (Health Services Administration); Medical Practice Management

Denise Hamilton, Instructor (Health Services Administration): Health Care Finance

S. Robert Hernandez, Professor (Health Services Administration); Health Services Administration, Organization Theory, Organizational Assessment, Health Planning

Tee H. Hiett, Professor Emeritus (Health Services Administration); Quantitative Methods, Information Systems, Teaching Methods

Howard W. Houser, Professor Emeritus (Health Services Administration); Health Services Administration, International Health, Public Policy

Amy Y. Landry, Assistant Professor (Health Services Administration); Leadership, Strategic Management of Healthcare Organizations, Management Training and Development

Stephen J. O'Connor, Professor (Health Services Administration); Governing Boards, Medical Staff Relations, Organization Behavior, Human Resources Management

M. Paige Powell, Assistant Professor (Health Services Administration); Health Policy, Health Care Ethics

Jose B. Quintana, Assistant Professor (Health Services Administration); Outcomes in Production of Health and Process Improvement

Midge N. Ray, Associate Professor (Health Services Administration); Health information management

Richard M. Shewchuk, Professor (Health Services Administration); Health Issues in Aging, Quantitative Methods

Jerry (Mickey) Trimm, Associate Professor (Health Services Administration); Operations Management, Quality Improvement, Rural Health

Robert Weech-Maldonado, Professor and L. R. Jordan Endowed Chair (Health Services Administration); Health Disparities, Health Services Research, Long-term Care, Patient Satisfaction

Norman W. Weissman, Professor Emeritus (Health Services Administration); Technology Assessment, Health Services Research

Secondary Faculty

Becker, Demoss, Ferniany, Fos, Ginter, Kennedy, McGwin, Menachemi, Morrisey, Patterson, Phillips, Powers, Ransburg-Brown, Sen, Smith, Van Matre, Wheeler.

Program Information

The Master of Science in Health Administration (M.S.H.A.) Program, accredited by the Commission on Accreditation of Healthcare Management Education, trains executives for health services organizations. The program has graduated more than 1,200 persons since 1965.

Students must complete 22 graduate courses while on campus and a 12-month administrative residency in a health care organization. A capstone core course is completed during the last on-campus semester. Twenty-two core courses and two elective courses are required as well as a summer internship or international experience for single 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 March 1. Since admission to the M.S.H.A. program is very competitive, early application is encouraged.

M.S.H.A.-M.B.A., M.S.H.A.-M.S.H.I.

Coordinated Degrees

Students wishing to pursue simultaneously the Master of Science in Health Administration (M.S.H.A.) and the Master of Business Administration (M.B.A.) degrees must complete 29 graduate courses, including 4 electives. Students seeking to complete the Master of Science in Health Administration (M.S.H.A.) and the Master of Science in Health Informatics (M.S.H.I.) must complete 29 graduate courses. A 12-month administrative residency in a health services organization is required for completion of the M.S.H.A. program. 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 M.S.H.A., M.S.H.A.-M.B.A. or M.S.H.A.-M.S.H.I. 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. Prior to matriculation, students must have completed 6 semester hours of undergraduate accounting with a grade of B or better. In addition, M.S.H.A.-M.B.A. students must have successfully completed three semester credit hours in calculus.

Application for the M.S.H.A. program should be made using the UAB Graduate School Apply Yourself Application Network Service available at (<http://app.applyyourself.com/?id=uab-grad>).

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:	March 1 for Residential Program June 1 for Executive Program
Number of Evaluation Forms Required:	Three

Entrance Tests	GRE or GMAT is required. Standardized test scores are not required of applicants holding a doctoral degree (e.g., M.D., D.D.S., J.D., Ph.D., etc.) from an accredited U.S. university or applicants for the Executive M.S.H.A Program. TOEFL and TWE also required for international applicants whose native language is not English.
Comments	Additional application for admission is required by program
Graduate Catalog Description	http://main.uab.edu/Sites/gradschool/programs/72009/

For detailed information, contact Admissions Coordinator, Department of Health Services Administration, UAB School of Health Professions, Webb 506, 1530 3rd Avenue South, Birmingham, AL 35294-3361.

Telephone 205-934-1583

E-mail parmstrong@uab.edu

Web www.uab.edu/msha

or the UAB Graduate School of Management (MBA Program), BEC 203, 1530 3rd Avenue South, Birmingham, Alabama 35294-4460.

Telephone 205-934-8815

E-mail cmanning@uab.edu

Web www.business.uab.edu

Executive M.S.H.A. Program

Qualified students can earn the Master of Science in Health Administration (M.S.H.A.) by completing the executive program. This program is open to those with at least 5 years of experience in health care organizations, either as managers or as clinical professionals. Participants in the Executive M.S.H.A. program complete both on-campus and distance-learning activities, and a brief field experience, within 2 years of study.

Additional Information

For detailed information, contact Admissions Coordinator, Department of Health Services Administration, UAB School of Health Professions, Webb 605, 1530 3rd Avenue South, Birmingham, Alabama 35294-3361.

Telephone 205-934-1672

E-mail sarap@uab.edu

Web www.uab.edu/emsha

Course Descriptions

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.

Health Administration (HA)

602. Introduction to Health Care Systems. 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 (4-credit hours).

605. Health Policy and Politics in the United States. Policy-making process in the U.S. Review of forces influencing policy-making, legislative process, and evolution of U.S. health policy.

607. Operations Management in Health Services Administration. Overview of operational management processes from the administrative perspective.

611. Managed Care. Examination of factors that will influence direction of managed care in future. Changing relationships among major stakeholders. Broad areas of discussion including market dynamics, product characteristics, reimbursement methodologies, contracting issues, management information systems, government initiatives, legal and ethical issues, and future trends.

612. Essentials of Health and Human Disease. Essentials of health and human disease related to normal and abnormal physiology.

613. Health Law. 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.

614. Process Improvement. Customer-driven process involving team and process thinking and application of statistical tools to way in which work is accomplished. Provides knowledge, skills, and tools necessary to implement, facilitate, and coordinate continuous quality improvement activities in health care environments.

616. Medical Aspects of Emergency and Disaster Management. This course explores the health and medical issues that are inherent to crisis and emergency management, examines the roles and responsibilities of the medical delivery system of the U.S. relative to emergencies and all-hazards disasters, reviews related research, and discuss plans that adequately address the issues.

618. Seminar in Health Services Administration. The purpose of this seminar is to meet MSHA students' needs for exposure to issues and processes beyond the traditional didactic component of the curriculum by providing additional exposure to executives and other leaders in health care. It provides an opportunity to reinforce skills, knowledge, and abilities that will be required if students are to effectively transition into their administrative residency and professional health management practice (1-credit hour).

620. Health Care Financial Management I. 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.

621. Health Care Financial Management II. Analytical and synthetic aspects of financial management tools. Project method and case studies used to supplement theory.

623. Application of Health Care Finance Concepts. Designed to be a "hands-on" project with an area health care oriented Chief Financial Officer that would be a "real world" application of financial tools and techniques for students.

624. Revenue Cycle Management. This course allows students to understand the impact and process related to the revenue cycle and how it is integrated into the operations of a health care organization.

625. Strategic Planning and Management. Methods for strategic planning and management of health services organizations. Techniques for determining strategies for unique services; integration of strategy, structure, and administrative systems.

628. Leadership Development. Provides tools for the students' professional development and leadership; directs students' search for an administrative residency.

631. Organization Theory and Behavior. Introduction to organization theory and behavior with applications to health services organizations. Topics include organization structure, organizational/environmental relationships, organizational performance, power and leadership, attitudes, motivation, communication, and group dynamics.

632. Quantitative Methods in Health Services Administration. Selected mathematical, statistical, and computer applications and statistical techniques applied to decision making in hospitals and health services organizations.

635. Human Resources Management in Health Services Administration. 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.

638. Microcomputers in Health Services Administration. Applications of one or more of the major microcomputer software programs. Focus on programs not covered in other courses which are important to health care managers. Optional as independent study course devoted to a particular program of interest. 1-3 hours.

640. Information Systems and Management Science in Health Services Administration. Effective use of information and quantitative analysis in clinical care and management decision making in health services organizations. Provides students with sufficient background to communicate effectively with technical personnel and provide general management oversight of information systems within organizations.

643. Long-term Care Administration. Seminar analysis of effect of chronic conditions and aging on delivery of health services, nursing homes and alternatives, mental health facilities and agencies, rehabilitation facilities and services. Field trips and individual research projects.

644. Seminar: Issues in Ambulatory Care and Medical Group Management. Overview to the field of ambulatory care and physician practice management. Emphasis on outpatient care.

645. Health Economics. Economic analysis applied to health services sector; concepts 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.

655. Seminar: Synthesis of Health Services Administration. Integration of concepts and methods previously covered in the Executive MSHA curriculum through participation in an intensive field visit to a health-related organization, agency, center, or other related opportunity in the United States or overseas.

661. Seminar: Social Issues in Health Services Administration. Social issues confronting and influencing health care delivery systems, maximum student participation in research and conduct of seminar, optional individual research project.

671. Health Care Marketing. 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. (Also MBA 671).

672. Health Care Entrepreneurship. Overview of the principle components of health care entrepreneurship, including business planning, raising funds, and the entrepreneurial process. Special attention will be given to developing entrepreneurial activity and promoting innovation in existing health care organizations (intrapreneurial ventures).

675. Health Administration Internship. Provides an experience for MSHA students to become more familiar with a health care organization or the delivery of health care in a different country.

680. Health Administration Capstone. Integrate concepts and methods covered within the MSHA curriculum, application of concepts, principles, and theories that will generate solutions and recommendations for the case study.

690. Administrative Residency. Students enroll in this course during their administrative residency.

Health Informatics (M.S.H.I.)

Degree Offered: M.S.H.I.

Acting Director: Dr. Gerald L. Glandon

Phone: (205) 934-3509

E-mail: mshi@uab.edu

Web site: www.uab.edu/hi

Core Faculty

Eta S. Berner, Ed.D. Professor (Health Services Administration)

Darrell Burke, Ph.D, Professor (Health Services Administration)

Amanda D. Dorsey, M.S.H.I., Instructor & Assistant Program Director (Health Services Administration)

Glenn G. Hammack, O.D., M.S.H.I., Assistant Professor (Health Services Administration)

Other Participating Faculty

Jeffrey H. Burkhardt, Ph.D., Associate Professor (Health Services Administration)

Dongquan Chen, Ph.D., Research Assistant Professor (Health Services Administration)

Kay Clements, M.A., Associate Professor (Health Services Administration)

Beverly Golightly, M.S.H.A., Credit Course Instructor (Health Services Administration)

Gary J. Grimes, Ph.D., Professor (Electrical and Computer Engineering)

Sara S. Grostick, M.A., Associate Professor (Health Services Administration)

Randa Smith Hall, M.S.H.A., Assistant Professor (Health Services Administration)

J. Michael Hardin, Ph.D., Credit Course Instructor (Health Services Administration)

S. Robert Hernandez, Ph.D., Professor (Health Services Administration)

Joan C. Hicks, M.S.H.I., Assistant Professor (Health Services Administration)

Tee H. Hiett, Ph.D., Professor Emeritus (Health Services Administration)

Howard W. Houser, Ph.D., Professor (Health Services Administration)

Shannon Houser, Ph.D., Assistant Professor (Health Services Administration)

Thomas K. Houston, II, M.D., Assistant Professor (Medicine, General/Internal)

Stephen A. Moser, Ph.D., Associate Professor (Pathology/Microbiology)

Stephen J. O'Connor, Ph.D., Professor (Health Services Administration)

Pamela E. Paustian, M.S.M., Assistant Professor (Health Services Administration)

Craig C. Pearson, M.S.H.I., Credit Course Instructor (Health Services Administration)

M. Paige Powell, Ph.D., Assistant Professor (Health Services Administration)

T. Scott Plutchak, M.A., Associate Professor (Lister Hill Library of the Health Sciences)

Midge N. Ray, M.Ed., Associate Professor (Health Services Administration)

Tommy J. Sanders, Ph.D, Credit Course Instructor (Health Services Administration)

Richard M. Shewchuk, Ph.D., Professor (Health Services Administration)

Donna J. Slovensky, Ph.D., Professor (Health Services Administration)

Thomas E. Terndrup, M.D., Professor (Emergency Medicine)

Michael R. Waldrum, M.D., Professor (Internal Medicine/Pulmonary & Critical Care Medicine)

Norman W. Weissman, Ph.D., Professor (Health Services Administration)

Adjunct Faculty

David M. Bowen, Adjunct Professor (Health Services Administration)

Randy Carpenter, M.S.H.I., Adjunct Professor (Health Services Administration)

Steve Flammuni, Credit Course Instructor (Health Services Administration)

R. David Friday, M.S.H.I., Adjunct Instructor (Health Services Administration)

Terrell W. Herzig, M.S.H.I., Credit Course Instructor (Health Services Administration)

Jacqueline W. Kennedy, Adjunct Professor (Health Services Administration)

Michael E. McDevitt, Adjunct Professor (Health Services Administration)

Tim Stettheimer, Adjunct Professor (Health Services Administration)

Pele Yu, M.D., Adjunct Instructor

Program Information

Program Admission

Admission to the program is in the fall semester. Application to the program may be made September through April 30, preceding the expected date of enrollment for the next fall term. Applications received after April 30 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 20 to 25 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 your potential 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 hours of undergraduate course work in event-driven programming (e.g., Visual Basic, C++, Java, XML, .Net). The program has two additional co-requisites: a graduate level healthcare financial management course and a graduate level quantitative methods course. These do not have to be completed prior to entering, but must be completed by the time a student graduates.

Admission to the HI program is determined by an interview process and the consensus of the Admissions Committee. The decision is based on previous academic record, standardized admission test scores, professional recommendations and evidence of ability to perform graduate-level work. The program director reserves the prerogative for final recommendation on admission status to the Graduate School.

Additional Information

Deadline for Entry Term(s):	Fall
Deadline for All Application Materials to be in the Graduate School Office:	April 30
Number of Evaluation Forms Required:	Three
Entrance Tests	(TOEFL and TWE also required for international applicants whose native language is not English.)
Comments	None

For detailed information, contact Master of Science in Health Informatics Program, UAB School of Health Professions, Webb 532; physical address: 1675 University Blvd.; mailing address: 1530 3rd Avenue South, Birmingham, AL 35294-3361

Telephone 205-934-3509

Fax 205-975-6608

E-mail mshi@uab.edu

Course Descriptions

Note: The curriculum consists of ten (10) Core Courses and either an eight (8) hour Administrative Internship or a six (6) hour Non-thesis Project for a total program of 48 semester credit hours. Two (2) credit hours of HI 698 (Master's Level Non-Thesis Research Project/Credit Course) will be required for all students who plan to complete a project instead of an internship.

Health Informatics (HI)

600. Analysis and Design of Health Information Systems. Requirements, concepts, methods, and tools in analyzing, modeling, and designing health information systems with emphasis on clinical systems. Prerequisites: Current computer programming language course. 4 hours.

601. Databases and Data Modeling. Concepts of data modeling, data architectures and data administration. Study of various models with application to current healthcare IT initiatives. Course will include weekly on-line labs to provide hands-on use of databases, modeling tools to illustrate the impact of design principles on integrated data healthcare systems. Prerequisite: HI 600 or permission of instructor. 4 hours.

602. Clinical and Administrative Systems. Foundations of clinical information use with an emphasis on the Electronic Health Record and information collection, processing (e.g., decision making), recording and dissemination in inpatient and outpatient facilities. Special emphasis on the clinician's workflow to support enterprise-wide health care delivery. Prerequisites: 640 or permission of instructor. 4 hours.

605. Communications and Networks. Local & wide area networking and communication technologies as it applies to health information systems. Telecommunication technologies supporting the Internet and campus networks are emphasized. Technologies such as Ethernet, Asynchronous Transfer Mode (ATM), Integrated Services Digital Network (ISDN), Digital Subscriber Lines (xDSLs), and new global mobile (wireless) technologies. Emphasis is placed on the practical use, implications for the architecture of the next generation of health information systems, and in strategic planning of the technical aspects of integrated health information networks. Prerequisites: HI 640 or permission of instructor. 4 hours.

610. Project Management for Health Services Executives. Concepts and techniques in health care organizations for maintaining and effective management of organizational information through system implementation case studies. Special emphasis on communications plans, resource allocation, risk management, various quality management methods, and the integration of scope, time and cost management. Prerequisites: HI 640 or permission of instructor. 4 hours.

612. Organizational Behavior and Leadership. Systematic examination of human behavior in healthcare-specific settings. Emphasis on study of individuals and small groups; personality, perception, attitudes, motivation, communication, and leadership. Case discussions and textbook readings. Prerequisite: 4 hours.

615. Decision Support Systems. Examination of the role of information systems in supporting administrative and clinical decision-making in health care enterprises. Case studies of the design and use of computer-based decision support and modeling systems. Prerequisites: HI 640 and or permission of instructor. 3 hours.

620. Security and Privacy in Health Care. Security and privacy issues, legislation, regulations, and accreditation standards unique to health care domain. Technical security of networks, databases, audit

mechanisms and control. Privacy implications for the Electronic Health Record and organizational planning. Prerequisites: HI 602, 605, and 640, or permission of instructor. 3 hours.

630. Strategic Planning and Contracting for Health Information Systems. Theory, practice, and processes needed for strategic planning of integrated health information systems. Assessing benefits of enterprise-wide information integration and tactics needed to attain benefits realization. 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. Prerequisites: HI 600, 601, 602, 605, and 640, or permission of instructor. 4 hours.

640 Introduction to Health Informatics and Health Care Delivery. 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. Prerequisite: Permission of instructor. 3-4 hours. The 3-credit hour option is used for MSHI/MSHA dual degree students.

Non-Thesis Project, or Administrative Internship: Each student must complete an administrative internship or a non-thesis research project. Each student, in consultation with Program Faculty, chooses the most appropriate option. Prior to enrolling for the thesis or project, students will enroll in two 1-hour planning courses under the direction of the Projects and Internship Coordinator, in the fall and spring semesters prior to completing their Non-Thesis Research Project in the final semester. **The UAB Graduate School requires that you be enrolled during the semester in which you plan to graduate**

690. Administrative Internship. 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 skills learned in the MSHI program. Foundation for professional development and assists in refining skills and behaviors necessary for successful practice in a complex professional, social, political, and technological environment. Prerequisite: Permission of Internship Coordinator. 4-8 hours.

698. Master's Level Non-thesis Research Project. Rigorous project that provides opportunity for focused investigation of informatics problem in real-world setting and for application of problems solving methodologies for development and execution of solutions. Investigation and application of theory through practical implementation project. Conducted during Administrative Internship; may be repeated for credit (minimum of 8 credit hours required for graduation). Prerequisite: Permission of instructor. 4-8 hours.

Prerequisites and Co-Requisites

Financial Management: The HI curriculum requires a minimum of one graduate-level course in financial management as a co-requisite. A graduate level financial management course can be completed either before enrolling in the HI Program or before graduating with the M.S.H.I. degree.

Quantitative Methods: The HI curriculum requires a minimum of one graduate-level course in quantitative methods as a co-requisite; a graduate-level finance course can be completed either before enrolling in the HI Program or before graduating with the M.S.H.I. degree.

Nutrition Sciences (Ph.D., M.S.)

Degree Offered: Ph.D.

Director: Dr. Jose Fernandez
Phone: (205) 934-2029
E-mail: jose@uab.edu
Web site: www.uab.edu/nutrition

Faculty

For additional courses in epidemiology and other public health areas, see the catalog of the School of Public Health.

Jamy Ard, Assistant Professor (Nutrition Sciences); Culturally appropriate Dietary Interventions, Hypertension

M. Amanda Brown, Assistant Professor (Nutrition Sciences); Dietetics Education, Clinical Nutrition.

Pi-Ling Chang, Associate Professor (Nutrition Sciences); Vitamin D and Cancer, Osteoporosis, Bone-Matrix Proteins, Osteoblast Differentiation

Maria De Luca, Assistant Professor (Nutrition Sciences); Genetics of fat storage and innate immune function, Obesity, Aging.

Wendy Demark-Wahnefried, PhD, RD Professor and Webb Endowed Chair of Nutrition Sciences; diet/hormonal/genetic interactions and their association with cancer; dietary interventions and lifestyle for cancer prevention and survival

Isao Eto, Associate Professor (Nutrition Sciences); Nutritional Biochemistry, Folate Metabolism and Interactions, Cancer Biology and Biochemistry

Jose R. Fernandez, Associate Professor (Nutrition Sciences); Gene Mapping, Genetic Admixture, Racial Differences, Obesity, Diabetes

Yuchang Fu, Assistant Professor (Nutrition Sciences); Gene Expression and Regulation Related to Lipid Metabolism in Atherosclerosis and Diabetes

W. Timothy Garvey, Professor and Chair (Nutrition Sciences); Molecular, Metabolic, and Genetic Pathogenesis of Insulin Resistance, Type 2 Diabetes, and Obesity

Barbara A. Gower, Professor (Nutrition Sciences); Endocrinology, Body Composition, Postmenopausal Hormone Replacement Therapy, Insulin Sensitivity

Jeanette N. Keith,

Elizabeth Kitchin, Assistant Professor; General Nutrition and Health, Community Outreach and Education through Media

Susan Miller, Assistant Professor; Food Service Systems Management

Douglas Moellering, Instructor; mitochondrial physiology, bioenergetics, and free radical-mediated tissue injury and disease pathologies. Currently, research is focused on mitochondrial free-radical production contributing to altered bioenergetics, the development of obesity, insulin resistance and T2DM, increased cardiovascular disease susceptibility, and aging.

Sarah L. Morgan, Professor (Nutrition Sciences and Medicine); Nutrition and Rheumatic Diseases, Folate and Antifolates, Osteoporosis

Tim R. Nagy, Professor (Nutrition Sciences); Regulation of Energy Expenditure; Body Fat/Caloric Restriction/Cancer; Small Animal Phenotyping

Laura Newton, Assistant Professor; Clinical Nutrition, Nutrition and Cancer; Total Parenteral Nutrition

Chandrika Piyathilake, Associate Professor (Nutrition Sciences); Lung Cancer and Biomarkers

Charles W. Prince, Professor (Nutrition Sciences); Bone Metabolism, Vitamin D Function; Osteopontin, Orthopedic Implant Biocompatibility, Cellular Transduction of Mechanical Load

Daniel L. Smith, Jr, Instructor; The interaction of diet and metabolism in relationship to aging and disease; obesity, calorie restriction, brown adipose tissue

Qinglin Yang, Associate Professor; molecular mechanisms underlying the development and progression of heart failure, especially those related to transcriptional regulation of myocardial fatty acid and carbohydrate metabolisms (eg., PPAR signaling pathway) in pathological conditions such as hypertension, obesity and diabetes

Patients with Pediatric Disease

M.S. Program in Clinical Nutrition

Degree Offered: M.S

Director: Dr. M. Amanda Brown

Phone: (205) 934-7005

E-mail: marbrown@uab.edu

Web site: www.uab.edu/nutrition

The program leading to the Master of Science degree in clinical nutrition is designed to provide training and experience in the treatment and prevention of disease through the science and art of optimal nutritional care. Professionals with backgrounds in the science of nutrition or dietetics will have an opportunity to learn the metabolic and biochemical basis for nutritional care while being involved in direct patient management and in either laboratory or clinical research. Opportunities exist for specialization within clinical subspecialty areas such as pediatrics, children with special health care needs, clinical nutrition research, exercise science, health education, health services administration, community nutrition, and public health.

Admission

The Clinical Nutrition 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 ; and
 3. a score of at least 500 on each the verbal and quantitative sections of the GRE General Test.
- Additionally, eligible students should be registered dietitians, registration-eligible dietitians, or have a baccalaureate degree from a Commission on Accreditation for Dietetics Education (CADE) approved

Didactic Program in Dietetics. A nutrition research option is offered to nondietetics students with strong science backgrounds.

Degree Requirements

The graduate program in clinical nutrition offers the option for Plan I (thesis) or Plan 2 (non-thesis). Candidates for the M.S. degree, Plan 1, are expected to complete a minimum of 30 hours of graduate-level course work, and submit and defend thesis research that makes a contribution to the knowledge of clinical nutrition. Candidates for the M.S. degree, Plan 2, must complete a total of 36 hours of graduate-level course work.

Curriculum Core Requirements

Successful completion of the M.S. degree will require completion of a minimum of 20 semester hours in Clinical Nutrition core courses and additional courses to be selected from departmental offerings. The thesis option (Plan 1) requires completion of 6 semester hours of thesis research and presentation of a thesis. Students completing Plan 2 will require a total of 36 semester hours in Clinical Nutrition.

Additional Information

Deadline for Entry Term(s):	Fall
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.)

For detailed information, contact Dr. Amanda Brown, Assistant Professor and Director, Graduate Program in Clinical Nutrition and Dietetic Internship, Department of Nutrition Sciences, UAB School of Health Related Professions, Webb Building, Room 449, 1675 University Boulevard, Birmingham, AL 35294-3360.

Telephone 205-934-3006

E-mail marbrown@uab.edu

Web www.uab.edu/nutrition

Dietetic Internship

The Dietetic Internship Program is accredited by the Commission on Accreditation for Dietetics Education (CADE) and is designed to prepare entry-level dietitians for careers in a variety of health care, wellness, and food service facilities. Internship appointments are awarded on a competitive basis through a national computer matching process. Dietetic interns must also be admitted to the Graduate School (admission standards are listed under the M.S. in Clinical Nutrition above) and are required to enroll in a full graduate course load each term during the internship.

An onsite internship is offered in Birmingham, and an offsite internship is offered in each of the following cities in Alabama: Huntsville, Mobile, Montgomery, and Birmingham. Upon completion of the internship, the student will be eligible to take the national examination to become a registered dietitian. Interns earn 12 hours of graduate credit, which may be applied toward the requirements for the M.S. in Clinical Nutrition. Students may elect to continue in the M.S. program in Clinical Nutrition to complete requirements for the M.S. degree on a full or part-time basis.

Additional Information

For detailed information, contact Dr. Amanda Brown, Assistant Professor and Director, Graduate Program in Clinical Nutrition and Dietetic Internship, Department of Nutrition Sciences, UAB School of Health Related Professions, Webb Building, Room 449 1675 University Boulevard, Birmingham, AL 35294-3360.

Telephone 205-934-3006

E-mail dintr@uab.edu

Web www.uab.edu/nutrition

Ph.D. Program in Nutrition Sciences

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

To meet Graduate School and departmental standards, a student must have a combined GRE score of 1100, 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. Fall-term entry is recommended.

Coursework and Other Requirements

Successful completion of the Ph.D. will require completion of a minimum of 33 semester hours in core courses (encompassing the disciplines of cellular and molecular biology, biochemistry, physiology, nutritional biochemistry, clinical nutrition, and statistics and experimental design) and at least 24 additional graduate semester hours of elective coursework; 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, a student must author at least three papers that are publishable in peer-reviewed journals.

Core Classes must include :NTR 701(Adv. Med NTR)(3), 718(Nutritional Biochem)(6), 725(Human NTR through the Life Cycle)(3), 726(Consumer Issues in NTR)(3), 733(Lab Rotation)(2), 736(Scientific Methods)(3), 747(Molecular Biology & NTR SCI)(3), 788(Seminar)(4), BST 621(3), 622(3)

Elective classes: 722 (Cancer) (3), 750(Body Comp) (3), 769(Obesity)(3), 779(Race)(3), 604(Nutrition Support)(3)

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 Related Professions, Susan Mott Webb Nutrition Sciences Building, Room 449, 1675 University Boulevard, Birmingham, AL 35294-3360.

Telephone 205-975-2029

E-mail phdntr@uab.edu

Web www.uab.edu/nutrition

Course Descriptions

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.

Nutrition Sciences (NTR)

579/779. **Obesity in the 21st Century** Overview of the facts and research findings underlying the understanding of obesity, its co morbidities, and its consequences in the population. Spring, Odd years.

589. **Internship Practicum**. Clinical experience in food service management and clinical nutrition. Fall, spring, summer.

601/701. **Advanced Medical Nutrition**. Nutrition in relationship to health; prevention of disease and correction of disorders resulting from nutritional imbalance throughout the life cycle. Prerequisite: Permission of instructor for non nutrition sciences majors. Spring 604. **Principles and Practice of Nutrition Support**. Nutrition support for critically ill patients; theory integrated with clinical practice. Prerequisite: Permission of instructor for non nutrition sciences majors. Fall

611. **Advanced Food Service Systems Management**. Management systems, application to hospital food service. Prerequisite: Permission of instructor Prerequisite: Permission of instructor for non nutrition sciences majors. Spring

612. **Research and Technology Applications in Dietetics**. Utilization of internet technology and research design in dietetics practice. Prerequisite: Permission of instructor for non nutrition sciences majors. Fall

618/718. **Nutritional Biochemistry**. Metabolism and functions of nutrients; biosynthesis of vitamins and cofactors; human requirements for energy, amino acids, minerals, and vitamins; food fortification; current human nutritional problemsFall . 6 hours.

622/722. **Recent Advances in Nutrition Cancer Research**. Critical evaluation of the effects of genetics and environmental factors, especially nutrients, on the development and prevention of obesity, atherosclerosis, and cancer. Prerequisite: Permission of instructor.

625/725. **Human Nutrition Through the Life Cycle**. Examination of 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.Fall Odd years

626/726. **Consumer Issues in Nutrition**. Examination of contemporary nutritional issues that affect consumers. Focus on the translation of science to public policy, consumer communications, and food choices. Spring Odd years

630. **Maternal Child Health in Pediatric Nutrition** This course provides a public health approach to pediatric and MCH nutrition. The focus will be on the translation of evidence based approaches to pediatric nutrition including prevention and intervention. The course will emphasize the interdisciplinary aspects of care in pediatrics by utilizing guest speakers from a variety of disciplines. The course will cover topics and current issues in pediatric nutrition (e.g., obesity, media influences, diversity, food & nutrition policy, and chronic disease prevention and intervention). The development of written and verbal communication skills will also be stressed.

633/733. **Laboratory Instruments and Methods in Nutrition Research**. Operation, capabilities, and limitations of laboratory instruments. Prerequisite: Permission of instructor. 1-3 hours.

636/736. **Scientific Methods.** Investigations in nutrition using animal models and laboratory procedures, design of experiments, data collection, analysis, interpretation, and communication of experimental results. Prerequisite: Permission of instructor. Spring

650/750. **Body Composition and Energy Metabolism.** Methods of measurement and relationship to human health and disease. Prerequisite: Permission of instructor. Summer Even years

680. **Journal Club in Clinical Nutrition.** Review and critique of current literature in clinical nutrition. 1 hour.

685. **Pediatric Pulmonary Care: An Interdisciplinary Approach.** Health care delivery to pediatric clients at risk for or compromised by pulmonary disease. Prerequisite: Permission of instructor.

690. **Seminar.** Review of current literature and research in nutrition. Prerequisite: Permission of instructor. 1 hour. Fall , Spring

691. **Clinical Practicum: Nutritional Aspects of Mental Retardation and Developmental Disabilities.** Clinical experiences in evaluation of nutritional status, feeding behavior and food habits of mentally retarded and developmentally disabled children. Prerequisite: Permission of instructor. 1-6 hours.

692. **Clinical Practicum: Community Nutrition.** Clinical experiences in health care delivery systems with nutrition components. Prerequisite: Permission of instructor. 6 hours.

693. **Clinical Practicum: Pediatric Nutrition.** Clinical experiences in normal growth patterns in children; nutritional needs in health and disease. Prerequisite: Permission of instructor. 6 hours.

694. **Clinical Practicum: General Clinical Research.** Clinical experiences in a multidisciplinary research facility involving human subjects. Prerequisite: permission of instructor. 1-6 hours.

695. **Special Problems.** To meet individual student needs; clinical rotation, review of current literature, completion of defined objectives. Prerequisite: Permission of instructor. 1-3 hours.

696. **Clinical Practicum: Nutritional Support of Pediatric Clients with Pulmonary Problems.** Observation of and participation in interdisciplinary team delivery of health care to pediatric patients with pulmonary disease. Prerequisite: Permission of instructor. 1-6 hours.

697. **Clinical Practicum: Nutrition Support Service.** Interdisciplinary team delivery of nutrition support to critically ill hospitalized patients and ambulatory patients. 3-6 hours.

698. **Master's Nonthesis Research.** Prerequisite: Permission of instructor. 1-6 hours.

699. **Master's Thesis Research.** Prerequisites: Admission to candidacy and permission of instructor. 1-9 hours.

747. **Molecular Biology and Nutrition Sciences.** 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 a nutritional component. Prerequisite: Permission of instructor. Fall. Even years

769. **Race and Ethnic Disparities as a Health Concern** Introduction to the identification, measurement and exploration of etiological factors that underlie racial/ethnic disparities in health outcomes.

778. **Special Topics in Nutrition Sciences.** Fall, spring, summer. 1-5 hours.

788. **Advanced Nutrition Seminar.** Fall, spring, summer. 1 hour.

798. Doctoral Nondissertation Research. 1-15 hours.

799. Doctoral Dissertation Research. Prerequisite: Admission to candidacy. 1-15 hours.

Occupational Therapy (M.S.) *

Degree M.S.
Offered:

Director: Dr. Jan Rowe

Phone: (205) 934-5982

E-mail: jrowe@uab.edu

Web site: www.uab.edu/ot

Faculty

Elizabeth A. Barstow, Assistant Professor (Occupational Therapy); Low-Vision Rehabilitation, Neurodevelopmental Intervention, Functional Capacity Evaluations, Driver's Assessment

Stephanie C. DeLuca, Assistant Professor (Occupational Therapy); Research and Development of New and Efficacious Treatment Techniques for Children with Neuromotor Disorders.

Christopher Eidson, Assistant Professor (Occupational Therapy), Academic Coordinator of Fieldwork Education

Kathleen Foley, Assistant Professor (Occupational Therapy); Physical Dysfunction, Gerontology, Pathophysiology

Linda Goodwin, Instructor (Occupational Therapy); Low Vision Rehabilitation and Mental Health and Tourette syndrome clinic

Gavin Jenkins, Assistant Professor (Occupational Therapy); Assistive Technology and the Built Environment

Jan A. Rowe, Interim Program Director and Associate Professor (Occupational Therapy); Pediatrics, Community Practice, Tourette syndrome clinic

Laura K. Vogtle, Professor (Occupational Therapy); Pediatrics, Research Methods, Program Evaluation, Outcomes Research

Mary Warren, Associate Professor (Occupational Therapy); Low-Vision Rehabilitation, Neurology, Physical Dysfunction

Hon Yeun, Professor and Director of Research

Program Information

MSOT Occupational Therapy

The Department of Occupational Therapy at the University of Alabama at Birmingham offers two master's degree programs and a graduate certificate in low vision. The professional program is an entry-level program in occupational therapy for individuals who hold a baccalaureate degree in a field other than occupational therapy. The postprofessional program provides advanced learning for the individual who already holds a degree in occupational therapy. In addition to the master's degrees, the department offers a graduate certificate in low vision rehabilitation for those who are already an occupational therapist.

Professional Degree Program

The MSOT entry-level 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, PO Box 31220, Bethesda, MD 20824-1220; telephone: (301)652-AOTA.

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). 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.

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

Applications can be accepted at anytime. Early submission of application for admission is recommended. Prerequisites and/or degrees do not have to be completed before the application process is initiated. Prerequisites and degrees must be completed before enrollment. Rolling admission begins September 1st and concludes July 1st before the expected date of fall semester enrollment. Applications received after July 1st will be reviewed and admission will occur on a space-available basis. If space is not available, the application at the student's request will remain on file for consideration for the next year.

Application Procedure

Received by UAB Graduate School

511 HUC; 1400 University Boulevard
1530 3rd Avenue South
Birmingham, Alabama 35294-1150

- Complete and submit online Graduate School application
- Submit application fee payment - Domestic: \$45.00
- 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 request references to submit them online via the Apply Yourself system. 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.

Received by UAB Department of Occupational Therapy

Department of Occupational Therapy (Entry Level)

1705 University Boulevard; SHPB 351

1530 3rd Avenue South

Birmingham, Alabama 35294-1212

- Complete and submit the Department of Occupational Therapy application.
- Request one (1) official transcript to be mailed by the issuing institution to the Occupational Therapy-Entry Level program.
- See instructions (Graduate School requirements) regarding letters of recommendation.

Contact the Department of Occupational Therapy to request an application package. The departmental application cannot be submitted electronically.

International Students

- Complete and submit UAB Graduate School International application;
- Submit Application fee payment - International: \$60.00;
- Complete and submit the Department of Occupational Therapy application (obtained directly from the department);
- Request one (1) official transcript to be mailed by the issuing institution to the Occupational Therapy-Entry Level Program;
- Request one (1) official transcript to be mailed by the issuing institution to the UAB Graduate School;
- A transcript evaluation by an external agency prior to the submission of the application materials. It is the student's responsibility to have the transcript evaluated. Please contact the UAB Graduate School (205) 934-8227 for information regarding agencies that will complete a transcript review;
- Students from countries where English is not the official and primary language must take and receive an acceptable score on the TOEFL
- Submit official TOEFL test score: Institution code: 1856
- Mail Financial affidavit of Support; and
- Three (3) letters of recommendation are required. Please ask the individuals from whom you request references to submit them online via the Apply yourself system. 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.

Requirements for Admission

Selection into the program will be based on the student's academic performance record and aptitude for a career as an occupational therapist. The candidate must satisfy the following requirements:

- hold a baccalaureate degree in a discipline other than occupational therapy from an accredited college or university; or receive a baccalaureate degree in a discipline other than occupational therapy by the time of enrollment.

- have a minimum overall undergraduate GPA of 3.0 (A = 4.0)
- have a minimum undergraduate GPA of 3.0 (A = 4.0) in the prerequisite coursework;
- participate in a personal interview with members of the faculty of the Department of Occupational Therapy. The interview is scheduled once the application is received; and the steps outlined under Application Procedures completed.

Variations in these requirements are considered. In cases where applicants do not meet the principle requirements for admission, they may be admitted on probation with approval of the Dean of the Graduate School.

Procedures Following Acceptance

Once admitted, students will be allowed to enroll into the program in the desired entry year only if the following has been received by the dates designated in the Enrollment Information Packet.

Received by UAB Student Health

- completed UAB Medical History Questionnaire and physical examination, including proof of required immunizations with satisfactory screening by the UAB Medical Center Student Health Service
- proof of health insurance coverage,

Received by the Department of Occupational Therapy

- updated transcripts indicating successful completion of prerequisites and proof of degree completion,
- signed Letter of Intent
- \$300 nonrefundable tuition deposit to reserve a seat in the program (deposit will be applied to tuition)

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 visits 516 Hill University Center, 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.

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 outside of class hours.
- Students must gather decision-making pieces of information during client assessment activities in class or in the fieldwork setting without the use of an intermediary, such as a classmate, an occupational therapy assistant, or an aide.

- Students must perform intervention activities in class or in the fieldwork setting by direct performance or by instruction and supervision of intermediaries.
- Students must apply critical thinking processes to their work in the classroom and in the fieldwork setting, exercise sound judgment in class and in fieldwork, and follow safety procedures established for each class and fieldwork setting.
- Students must have interpersonal skills as needed for productive classroom discussion, respectful interaction with classmates and faculty, and development of appropriate therapist-client relationships.
- Students must maintain personal appearance and hygiene conducive to classroom and fieldwork settings.
- Students must pass a cardiopulmonary resuscitation course at the health professional level (American Heart Association, Course C) every two years under Alabama guidelines for CPR certification.
- Students must demonstrate appropriate health status prior to enrollment, with annual updates on some items: no active tuberculosis, rubella (German measles) and rubeola (measles) immunity, tetanus-diphtheria booster within 10 years of anticipated graduation, and hepatitis B vaccine series or written declination.
- Students must annually complete OSHA-regulated Bloodborne Pathogen Exposure Training.
- Students must follow standards and policies specified in the School of Occupational Therapy Student Manual, the Letter of Understanding (contract between university and fieldwork sites), and the University of Alabama Student Handbook. (See Section IX Fieldwork Experience for ADA issues related to fieldwork)

Program Prerequisites - UAB Equivalents*

(Course requirements are listed in semester credit hours)

The applicant must have completed successfully (minimum grade of C, courses taken pass/fail are not accepted) prerequisite coursework in addition to, or in conjunction with the baccalaureate degree. The professional occupational therapy program is a progressive and challenging curriculum. These prerequisites are designed to prepare the applicant for success once admitted into the program. To that end, applicants should pursue the highest level of preparation possible.

Written & Verbal Communications to include any combination of (6 Hours)

English Composition - EH 101, 102	3
Literature – EH 216, 217 or 218	3

Natural Sciences and Mathematics (20 - 23 hours) to include

Human Anatomy * - BY 115	4
Human Physiology * - BY 116	4
Statistics - MA 180, or PY 214,	3-4
Physics * - PH 201 + L (prerequisite-- Math 106 with grade C or better) or Kinesiology	3-4
Computer Science * - CS 101+ L	3
Electives (e.g., Chemistry ** - CH 105 or 115+L, or Biology ** - BY 123+L)	3-4

Social and Behavioral Sciences (9 hours) to include

Abnormal Psychology * - PY 218	3
Developmental Psychology * - PY 212 (Human Development/Lifespan)	3
Electives ** (e.g., sociology or anthropology)	3

*Course must be completed within the last seven years; basic science coursework taken more than seven years ago must be repeated.

**Course must be completed within the last 10 years.

Typical Program

(Course requirements are listed in semester credit hours)

Fall Semester I	
OT 607 Analysis of Occupational Performance	(3)
OT 620 + Lab Foundations of Occupation: A&P	(4)
OT 667 Research Methods	(4)
OT 675 History and Theory of Occupation	(3)
OT 677 Foundations of Low Vision Rehabilitation	(3)
OT 688 Occupation and Health: Groups &Communities	(1)
OT 698 Master's Level Non-Thesis Research	(1)
Spring Semester II	
OT 605 Therapeutic Skills	(3)
OT 606 Occupation Based Practice Models	(3)
OT 610 Mental Health Diagnoses Across the Lifespan	(4)
OT 623 + Lab Foundations of Occupation: Neuroscience	(3)
OT 631 Foundations of Occupation: Biomechanics	(4)
OT 688 Occupation and Health: Groups & Communities	(1)
OT 698 Master's Level Non-Thesis Research	(1)

Summer (12 week session) Semester III	
OT 609 Barriers to Occupational Performance	(3)
OT 624 Occupations of Infants, Children, & Adolescents	(4)
OT 632 Fieldwork Seminar I	(1)
OT 662 + Lab Enhancing Occupational Performance: Orthotics, Prosthetics, and other Modalities	(3)
OT 673 Engagement in Occupations Through Technology 1	(3)
OT 688 Occupation and Health: Groups & Communities	(2)
OT 698 Master's Level Non-Thesis Research	(1)
Fall Semester IV	
OT 625 Occupations of Adults and Older Adults I	(4)
OT 633 Fieldwork Seminar II	(1)
OT 661 Wellbeing and Health Through Occupations	(3)
OT 668 Mental Health Practice in Adulthood	(4)
OT 674 Engagement in Occupations Through Technology II	(3)
OT 688 Occupation and Health: Groups & Communities	(1)
OT 698 Master's Level Non-Thesis Research	(1)
Spring Semester V	
OT 634 Seminar in Professional Readiness	(2)
OT 653 Using the Lit: Evidence Based Practice	(3)
OT 663 Promoting Occupation in Communities	(2)

OT 664 Promoting Occupation in Organizations	(2)
OT 665 Occupations of Adults and Older Adults II	(4)
OT 688 Occupation and Health: Groups & Communities	(1)
OT 698 Master's Level Non-Thesis Research	(2)
Summer Semester VI	
OT 685 Advanced Field Experience I	(10)
Fall Semester VII	
OT 686 Advanced Field Experience II	(10)

A minimum total of six credit hours Master's Level Non-Thesis Research must be completed to meet graduation requirements.

For further information contact: Program Director
 Master of Science in Occupational Therapy
 School of Health Professions
 SHPB 353
 1530 3rd Avenue South
 University of Alabama at Birmingham
 Birmingham, AL 35294-1212
 Telephone 205-934-5982
 E-mail msot@uab.edu
 Web www.uab.edu/OT

Postprofessional Degree

Deadline for entry term(s):	Summer semester for pediatric students; low vision students enter when low vision coursework starts
Deadline for all application materials to be in the graduate school office:	One semester preceding the expected semester of enrollment.
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

Postprofessional Occupational Therapy Program

The program offers postprofessional education to occupational therapists who wish to learn advanced theoretical, practice, and research skills. Currently two online specialization options exist for the postprofessional – low vision and pediatrics. Students interested in low vision must be accepted into the low vision certificate program prior to applying for the postprofessional master's degree. The 33- semester hour program guides the student through coursework for the areas indicated including theory, specialty practice application, research methodology, and a final project or thesis. Graduates of the program may use this degree to enter specialized areas of practice, as part of the requirements for specialty certifications, to assume leadership positions within the profession, or to prepare for doctoral level study.

Credentials Conferred

The Master of Science degree is awarded by the University of Alabama at Birmingham.

Length of Study

Minimum of nine semesters for part-time students. Both the pediatric and low vision options were designed specifically for part-time online students.

Program Entrance Date

Summer semester for pediatric students. Low vision students accepted as post-professional students enter at the inception of low vision coursework.

Application Deadline

One semester preceding the expected semester of enrollment.

Application Procedure**Received by UAB Graduate School**

511 HUC; 1400 University Boulevard
1530 3rd Avenue South
Birmingham, Alabama 35294-1150

- Complete and submit online Graduate School application
- Submit application fee payment - Domestic: \$35.00
- Request one (1) official transcript from each institution attended to be mailed by the issuing institution to the UAB Graduate School:
- Submit official GRE test score - GRE Institutional code: 1856

Received by UAB Department of Occupational Therapy

Department of Occupational Therapy (Postprofessional program)
1705 University Boulevard; SHPB 353
1530 3rd Avenue South
Birmingham, Alabama 35294-1212

- Three (3) letters of recommendation are required. Please ask the individuals from whom you request references to submit them online via the Apply Yourself system. 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.

NOTE: Materials used in the low vision rehabilitation application process can be used for postprofessional master's application; however, three (3) letters of recommendation and GRE scores are also required.

International Students

- UAB Graduate School international application
- Non-refundable Graduate School application processing fee; International: \$60
- Official transcripts (2) from each college or university attended; request one transcript be mailed directly from the issuing institution to the UAB Graduate School and one to the Department of Occupational Therapy;
- Submit official GRE test score
GRE Institutional Code: 1856
- A transcript evaluation by an external agency prior to the submission of application materials. It is the student's responsibility to have the transcripts evaluated. Please contact the UAB Graduate School (205-934-8227) for information regarding agencies that will complete a transcript review.
- Students from countries where English is not the official and primary language must also take and receive an acceptable score on the TOEFL. Institution code: 1856

For the postprofessional master's degree, the occupational therapy school attended **must** be approved by the World Federation of Occupational Therapy.

Requirements for Admission

For unconditional acceptance, the student must satisfy the following requirements:

- a baccalaureate degree in occupational therapy from an accredited educational program with a minimum cumulative GPA of 3.0 (A = 4.0) computed over the last 60 hours of course work,
- eligibility for licensure as an occupational therapist in the United States
- a score of at least 500 on each section (verbal and quantitative) of the GRE general test,
- completed application for admission to the UAB Graduate School,
- three letters of reference,
- if accepted, complete the UAB medical history questionnaire and physical, provide proof of required immunizations.

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 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 emails Dr. Angela Stowe at amstowe@uab.edu, 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://students.uab.edu/services/show.asp?durki=40136>).

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.

- Students must complete readings, assignments, and other activities outside of class hours.
- Students must apply critical thinking processes to their work in the classroom and exercise sound judgment in class during online discussions.,.
- Students must have interpersonal skills as needed for productive classroom discussion, and respectful interaction with classmates and faculty.
- Students must demonstrate appropriate health status prior to enrollment, with annual updates on some items: no active tuberculosis, rubella (German measles) and rubeola (measles) immunity, tetanus-diphtheria booster within 10 years of anticipated graduation, and hepatitis B vaccine series or written declination.
- 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 will be displayed in the Resource section of each online course.

Post professional curriculum

(Course requirements are listed in semester credit hours)

Students must specify a specialty area prior to entering the program. Your stated area of interest will dictate the coursework required for completion of the post professional master's degree. Required coursework for the Low Vision Rehab Graduate Certificate (15 hours) can be viewed at
www.main.uab.edu/Shrp/default.aspx?pid=76987.

OT 615 Infant-Toddler Mental Health OT Intervention (3)

OT 616 Early Intervention and School Setting Practice (3)

OT 641 Pediatric Theory Development and Practice (3)

*OT 642 Research Design in OT (1-3)

*OT 643 Data Analysis in OT Research (1-3)

*OT 644 Project Dissemination-Professional Writing and Presentation (1-3)

OT 645 Social Impact of Pediatric Disability (3)

OT 653 Using the Lit: Evidence-Based Practice (3)

OT 655 Qualitative Research Methods for Health Professionals (2)

OT 658 Foundations of Professional Education (4)

OT 646 Legal and Policy Issues in Pediatric Occupational Therapy (3)

OT 667 Research Methods (3)

OT 671 The Advanced Theory of the Assessment Process in Occupational Therapy (3)

OT 680 Clinical Education and Supervision (3)

OT 681 Practicum in Consultation (1-2)

OT 682 Advanced Clinical Practicum (1-3)

OT 683 Practicum in Teaching (1-4)

OT 692 Directed Readings (1-3)

* Non thesis research courses

For further information contact:

Laura K. Vogtle, PhD, OTR/L, FAOTA

Program Director

Occupational Therapy Postprofessional Program

UAB School of Health Professions

SHPB-338

1530 3rd Avenue South

Birmingham, AL 35294-1212

Telephone 205-934-3568

E-mail lvogtle@uab.edu

Low Vision Rehabilitation, Graduate Certificate

The Graduate Certificate in Low Vision Rehabilitation prepares occupational therapists with bachelors, masters, or doctoral degrees to work in one of the top 10 emerging practice areas identified by the American Occupational Therapy Association. Occupational therapists obtaining the certificate acquire the skills to provide comprehensive, competent intervention to persons with visual impairment from various conditions including brain injury.

Credentials Conferred

The Graduate Certificate in Low Vision Rehabilitation awarded by the University of Alabama at Birmingham.

Length of Study

The certificate requires 5 semesters to complete.

Program Entrance Date

Spring Semester (begins in January) or Fall semester (begins in August)

Application Deadline

Applications can be accepted anytime and early submission is recommended. Rolling admission begins February 1st and concludes June 1 for students applying for the fall semester cohort and September 1st for students applying for the spring cohort. Applications received after these due dates will be reviewed for the next admission period.

Requirements for Admission

Students are selected based on a combination of factors including practice experience, desire, ability to successfully complete the coursework in the timeframe allotted, commitment to completion of the certificate and potential for employment in the low vision rehabilitation field.

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 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 emails Dr. Angela Stowe at amstowe@uab.edu, 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://students.uab.edu/services/show.asp?durki=40136>).

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 reading and assignments.
- Students must gather decision-making pieces of information during client assessment activities.
- Students must perform evaluation and intervention activities in class by direct performance.
- Students must apply critical thinking processes to their work in the classroom.

- Students must have interpersonal skills as needed for productive classroom discussion, respectful interaction with classmates and faculty.
- Students must demonstrate appropriate health status prior to enrollment.
- 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 will be displayed in the Resource section of each online course.

Application Procedure

Received by UAB Graduate School
 511 HUC; 1400 University Boulevard
 1530 3rd Avenue South
 Birmingham, Alabama 35294-1150

The following documents must be submitted by EVERYONE applying to the program:

- Complete and submit online Graduate School application (degree seeking) OT-LVR
- Submit application fee payment
- **OFFICIAL** transcripts from **ALL** colleges attended. Two transcripts are required. One transcript should be mailed directly to the Department of OT, Low Vision Program and one to: the UAB Graduate School:
 511 HUC; 1400 University Boulevard
 1530 3rd Avenue South
 Birmingham, Alabama 35294-1212
- Letters of recommendation and GRE scores are not required for the Low Vision Rehabilitation Certificate program.

Received by UAB Department of Occupational Therapy

Department of Occupational Therapy (Low Vision)
 1705 University Boulevard; SHPB 364
 1530 3rd Avenue South
 Birmingham, Alabama 35294-1212

- Complete and submit the Department of OT Low Vision Rehabilitation application (request application from department)
- **OFFICIAL** transcripts from **ALL** colleges attended. Two transcripts are required. One transcript should be mailed directly to the UAB Graduate School and one to:

UAB School of Health Professions
 OT Graduate Certificate in Low Vision Rehabilitation
 SHPB 352 364, 1530 3rd Avenue South
 Birmingham, Alabama 35294-1212

- Documentation of state licensure or foreign equivalent
- Typewritten paper answering questions 1-5 describing your qualifications (in the departmental application package)
- Current resume; or curriculum vitae
- Immunizations as required by Student Health Services

International Students:

- Online UAB Graduate School international application (degree seeking) OT, LVR
- Submit international application fee payment
- Low Vision Rehabilitation Graduate Certificate application (obtained from and submitted to the Department of OT);

- Typewritten paper answering questions 1-5 describing your qualifications (obtained from and submitted to the Department of OT);
- Documentation of state licensure or foreign equivalent (submitted to Department);
- Current resume; or curriculum vitae (submitted to the Department);
- **OFFICIAL** transcripts from **ALL** colleges attended. Two official transcripts are required. One transcript should be mailed directly to the Low Vision Program and one transcript should be mailed to the UAB Graduate School;
- Immunizations as required to Student Health Services;
- A transcript evaluation by an external agency prior to the submission of application materials. It is the student's responsibility to have the transcripts evaluated.
- Students from countries where English is not the official and primary language must also take and receive an acceptable score on the TOEFL, Institution Code 1856.

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 of the information taught. 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. Direct access to a medical library is not required for the core courses and most electives; but the student must have consistent access to the internet. A high-speed connection (DSL, cable, satellite) is strongly recommended.

Two Tracks Are Available:

Students who are already an occupational therapist can enroll in the certificate program only or combine completion of the certificate program with a postprofessional master's degree in occupational therapy.

Certificate Only

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 January or August and one course per semester is completed. Because one course builds on another, students must take the courses in sequence. Following completion of the courses, the student will complete an advanced intervention application course. All courses must be satisfactorily completed before the intervention application course is scheduled. The final course requires that the student come to the UAB campus for one weekend seminar and performance skill checkout. 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 Certificate/Postprofessional Master's Degree Program

Students may choose to make the low vision curriculum the major emphasis of the coursework for the postprofessional master's degree offered by the Department of Occupational Therapy. Students completing the certificate program will only need to complete an additional 12 credits of coursework and 6 credits of research to receive the postprofessional master's degree. Coursework for the postprofessional degree is also online.

LOW VISION REHABILITATION CURRICULUM

The courses must be completed sequentially in the order listed below.

The list shows the course sequence for both student cohorts—one entering the program in the spring and the other entering in the fall.

Typical OT Curriculum Course Sequence

Fall Cohort

1st Fall Semester	OT 677 Foundations I	3 credits
1st Spring Semester	OT 679 Foundations II	3 credits
1st Summer Semester	OT 690 Foundations III	3 credits
2nd Fall Semester	OT 689 Foundations in Brain Injury	3 credits
2nd Spring Semester	OPEN students may take the OT 696 elective or a course in the post professional master's program	
2nd Summer Semester credits	OT 691 Foundations IV	3

Spring Cohort

1st Spring Semester	OT 677 Foundations I	3 credits
1st Summer Semester	OT 679 Foundations II	3 credits
1st Fall Semester	OT 690 Foundations III	3 credits
2nd Spring Semester credits	OT 689 Foundations in Brain Injury	3

2nd Summer Semester credits	Students may also take the OT 696 elective OT 691 Foundations IV	3
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Total Credits 15 credits

For further information contact:

Program Coordinator

Occupational Therapy Low Vision Rehabilitation Certificate Program

UAB School of Health Professions

SHPB 353

1530 3rd Avenue South

Birmingham, AL 35294-1212

Telephone 205-934-3568

E-mail lvrcert@uab.edu

Web www.uab.edu/OT

Course Descriptions

Occupational Therapy (OT)

605. Therapeutic Skills. Group theory and group dynamics are presented. Basic group and individual client-therapist interaction skills are introduced including: selecting a theory base, designing groups, writing group protocols, analyzing group activities, implementing specific group techniques, and evaluating progress of group members. Methods of establishing rapport, giving feedback, and employing therapeutic use of self are emphasized. 3 hours. PREREQUISITE: Admission to OT Program.

606. Occupation Based Practice Models. Introduction to fundamental concepts of occupational therapy frameworks, theory, philosophy, conceptual models and models of practice. 3 hours. PREREQUISITE: Admission to OT Program.

607. Analysis of Occupational Performance. 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. 3 hours. PREREQUISITE: Admission to OT Program.

609. **Barriers to Occupational Performance.** Exposure to content specific to human disease processes, injuries, and developmental or inherited abnormalities within body systems that affect an individual's occupational performance. 3 hours. PREREQUISITE: Admission to OT Program.

610. **Mental Health Diagnoses Across the Lifespan.** 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. 4 hours. PREREQUISITE: Admission to OT Program.

620. **Foundations of Occupation: A & P.** 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. 4 hours. PREREQUISITE: Admission to OT Program.

623. **Foundations of Occupation: Neuroscience.** Advanced study of structure and function of central nervous system augmented with client examples. 3 hours. PREREQUISITE: Admission to the OT Program.

624. **Occupations of Infants, Children, and Adolescents.** This course addresses aspects of evaluation, intervention planning, implementation, and specific intervention strategies across diagnostic categories for children, birth through adolescents. Occupational therapy addresses client needs using a holistic approach that incorporates all aspects of an individual's lifestyle. This course will focus on components of occupational performance, and occupational performance issues related to adaptation and life satisfaction. 4 hours. PREREQUISITE: Admission to OT Program.

625. **Occupations of Adults and Older Adults I.** 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. 4 hours. PREREQUISITE: Admission to OT Program.

631. **Foundations of Occupation: Biomechanics.** 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 clients' joint range of motion and muscle strength. 4 hours. PREREQUISITE: Admission to OT Program.

632, 633. **Fieldwork Seminar I, II.** Forum for exchange of ideas and experiences; detailed case study/in-service on modality and intervention chosen from client census during previous term's Level I Fieldwork experience. 1 hour each. PREREQUISITE: Admission to OT Program.

634. **Seminar in Professional Readiness.** Forum for exchange of ideas and experiences; student, faculty, and alumni presentations on variety of topics. 2 hours. PREREQUISITE: Admission to OT Program.

653. **Using the Literature for Evidence Based Practice.** History of and rationale for evidence-based practice, introduction to typologies of evidence, search of databases, developing questions for occupational therapy practice, critiquing evidence, analyzing bodies of evidence developed from research questions, and integrating evidence into practice. 3 hours. PREREQUISITE: Admission to OT Program.

661. **Wellbeing and Health Through Occupation.** Course will evaluate and critique the evidence which supports the relationship between occupation, health promotion, lifestyle choices, and prevention of injury and disease, using occupational therapy models and approaches to practice while considering contexts. 3 hours.

662. Enhancing Occupational Performance: Modalities. 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. 3 hours. PREREQUISITE: Admission to OT Program.

663. Promoting Occupations in Communities. Course provides opportunities to evaluate and critique evidence for current and emerging areas of OT practice within communities. Students will evaluate current OT practice and identify potential service gaps. Students will critically discuss strategies for development of OT services emphasizing the business related aspects of working with communities. This course will provide information on business plans, grant and foundation monies and opportunities for students to plan monetarily for a project. 2 hours. PREREQUISITE: Admission to OT Program.

664. Promoting Occupation in Organizations. Introduction to basic principles of organization and administration of occupational therapy programs related to practice in variety of settings. 2 hours. PREREQUISITE: Admission to OT Program.

665. Occupations of Adults and Older Adults II. Intervention for the elderly from the perspective of the functional impact of age-related changes, evaluation and remediation of functional limitations and personal and environmental adaptations to promote continuing autonomy. 4 hours. PREREQUISITE: Admission to OT Program.

667. Research Methods. Research ethics, descriptive, exploratory and experimental design, basic statistical concepts, and discussion of various types of research to enable student to critically analyze and use scientific literature to improve practice. Emphasis will be placed on understanding components of the research report and concepts associated with judging of internal and external validity. 3-4 hours. PREREQUISITE: Admission to OT Program

668. Mental Health Practice in Adulthood. Examines mental health 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. 4 hours. PREREQUISITE: Admission to OT Program.

673. Engagement in Occupations Through Technology I. Acquaints students with the following: theories relative to assistive technology, client centered practice, OT process relative to assistive technology, and certification and laws affecting assistive technology. Students will consider technology applications relative to the areas of occupation as referenced in the Framework for OT Practice, as well as elements of safety, education of clients and families, and the roles of OTs and OTAs in assistive technology practice. 3 hours.

674. Engagement in Occupation Through Technology II. This course is 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. The roles of OTs and OTAs in assistive technology practice will also be addressed. 3 hours. PREREQUISITE: Admission to OT Program.

675. History and Theory of Occupation. A historical survey of occupation, occupational meaning, and purposeful activity as used by occupational therapists in the study of the occupational nature of human beings across the life span. Students will gain an understanding of how leaders of the profession articulate occupational and therapeutic applications across time. 3 hours. PREREQUISITE: Admission to OT Program.

677. Foundations in Low Vision Rehabilitation I. Introduces the student to the field of low vision rehabilitation and addresses core knowledge needed for subsequent courses. Topics include settings and

reimbursement for occupational therapy services, anatomy and physiology of the eye and visual system, medical conditions causing low vision, administration and interpretation of low vision exams, principles of optics, design and application of optical devices. 4 hours. PREREQUISITE: permission.

685. Advanced Fieldwork Experience I. Full-time supervised practice experience designed to develop entry-level professional skills consisting of a 3-month experience. 10 hours. PREREQUISITE: Admission to OT Program.

686. Advanced Fieldwork Experience II. Full-time supervised practice experience designed to develop entry-level professional skills consist of a 3-month experience. 10 hours. PREREQUISITE: Admission to OT Program.

688. Occupation & Health: Groups & Communities. This course will 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. 1-4 hours. PREREQUISITE: Admission to OT Program.

698. Master's Level Non-Thesis Research. Non-thesis research hours. (6 hours total). PREREQUISITE: Admission to OT Program.

699. Master's Level Thesis Research. Elements of proposal and development of thesis/project; thesis and institutional review board procedures; student presentation, group discussion, recommendation, and critique. Prerequisite: admission to candidacy. (1-6 hours)

LOW VISION / POSTPROFESSIONAL COURSES

613. Sensory Integration Theory Applied in OT. Sensory processing is the ability to take in, organize and process a variety of sensory information on a daily basis. This class will illustrate how children with a variety of disorders, but in particular those with autism, have difficulties with the processing of sensory information. 2 hours (online). PREREQUISITE: permission.

615. Infant/Toddler Mental Health: OT Intervention. Infant and toddler mental health is central to the work of an occupational therapist, both individually and with the treatment team. The field of mental health for infants and toddlers has expanded greatly over the past ten years. OT clinicians are exposed to neglected, abused, and even abandoned babies/children but the depth of mental health problems is more extensive. This course will provide an overview and in-depth look at these problems and designated evaluation and intervention. 3 hours (online). PREREQUISITE: permission.

616. OT's Role in Early Intervention & School Setting. Babies, toddlers, and school age children with developmental disabilities may qualify for services (state and federal) which include occupational therapy. It is important to thoroughly understand state and federal legislation which applies to children with special needs for those wanting to practice in pediatrics. 3 hours (online). PREREQUISITE: permission.

641. Pediatric Theory Dev/Practice. Students will explore various models which support pediatric practice. The models will include developmental, behavioral and occupational therapy domains. Through course text and readings from referred literature, students will engage in online discussions to better their understanding of theory development conceptual order, theoretical assumptions, and applicability to practice. 3 hours (online). PREREQUISITE: permission.

642. Research Design in OT. First of three courses in which post professional master's students will design, implement, and document their final project. This course will review research methodologies appropriate for use by clinicians in practice; discuss sampling; data management; and IRB training and approval. 1-3 hours. (online). PREREQUISITE: permission.

643. Data Analysis in OT Research. Second of three courses in which post professional master's students will design, implement, analyze, and document their final project. This course addresses data management and data analysis using SPSS. 1-3 hours (online). PREREQUISITE: permission.

644. Project Dissemination-Prof Writing and Presentation. Third course in which post professional master's students will design, implement, and document their final project. This course will address documentation of project outcomes, writing for publication, and professional presentation. 1-3 hours (online). PREREQUISITE: permission.

645. Social Impact of Pediatric Disability. Course will explore ramifications of disabling conditions of birth or childhood on the child and family members. The potential roles of the extended family, neighborhood, local community and society at large in the development of the child and evolution of the family will be investigated. The impact of different cultural beliefs on social development will be discussed. 3 hours (online). PREREQUISITE: permission.

646. Legal and Policy Issues in Pediatric Occupational Therapy. The scope of practice for all occupational therapists has expanded greatly in the past 15 years. This is especially true in the area of pediatrics with new advances in medicine, technology and social policy. This course will explore the OT's role with a multitude of pediatric issues starting with planned conception and continuing through the twenty first year of life. 3 hours (online). PREREQUISITE: permission.

658. Foundations of Professional Education. Introduction to occupational therapy postprofessional education. Concepts introduced include the World Health Organization's International Classification of Function, Occupational Therapy Practice Framework, the American Psychological Association writing framework, and the continuing competency aspects of the American Occupational Therapy Association's Professional Development Tool. 4 hours (online). PREREQUISITES: permission.

671. The Advanced Theory of the Assessment Process in Occupational Therapy. This course provides an overview of tests and measurements as related to the practice of occupational therapy. Principles of test design and construction are introduced along with the appropriate statistical concepts. Issues related to standardized and non-standardized testing are discussed in terms of reliability, validity, sensitivity, specificity, and clinical relevance. The major types of instruments, interviews, questionnaires, observations, and outcome and performance measures. Students are given the opportunity to develop skills in selection of appropriate assessment tools for clients in administration and scoring, in test interpretation, and in communicating results. 3 hours. Prerequisite: permission of instructor.

677. Foundations in Low Vision Rehabilitation I. Introduces the student to the field of low vision rehabilitation and addresses core knowledge needed for subsequent courses. Topics include settings and reimbursement for occupational therapy services, anatomy and physiology of the eye and visual system, medical conditions causing low vision, administration and interpretation of low vision exams, principles of optics, design and application of optical devices. 3-4 hours. PREREQUISITE: permission.

679. Foundations in Low Vision Rehabilitation II. Building on the information provided in OT 677, this course addresses specific treatment strategies to enhance occupational performance in persons with visual impairment. Students learn to use information obtained from evaluations to design appropriate treatment interventions. Topics covered: assistive technology and computer modifications, reading, writing, and environmental assessment/modification. 3-4 hours. PREREQUISITE: permission.

680. Clinical Education and Supervision. Departmental management and supervision of employees with secondary focus on occupational therapy fieldwork supervision. 3 hours. PREREQUISITE: permission.

681. Practicum in Consultation. Supervised consultation experience within area of specialized interest. 1-2 hours. PREREQUISITE: permission.

682. Advanced Clinical Practicum. Supervised clinical experience within area of specialized interest. 1-3 hours. PREREQUISITE: permission.

683. Practicum in Teaching. Supervised teaching experience. 1-4 hours. PREREQUISITE: permission.

689. Foundations in Treatment of Visual Impairment from Brain Injury. This course addresses evaluation and intervention for adults experiencing occupational limitations secondary 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 deficits, evaluation and intervention for deficits in oculomotor function, and evaluation and intervention for deficits in visual attention and cognitive processing. 3 hours. PREREQUISITE: permission.

690. Foundations in Low Vision Rehabilitation III. Building on the information provided in OT 679, this course teaches students to apply intervention strategies to enhance occupational performance. Topics include: completing activities of daily living with and without vision, functional mobility, diabetes self management, and driving and transportation. 3 hours. Prerequisite: permission of instruction.

691. Foundations in Low Vision Rehabilitation IV. As the final course in the curriculum sequence, students demonstrate their ability to apply the knowledge gained in the previous foundation courses to selecting and interpreting evaluations and designing interventions for adults with various impairments. Content provided: 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, functional mobility and assistive technology; influence of policy and regulation on practice; occupational justice and advocacy; developing and marketing low vision rehabilitation programs within the health care system; professional development and continuing professional competence. 3 hours

692. Directed Readings. Readings for in depth study of specialized topics. 1-3 hours. PREREQUISITE: permission.

696. Evaluation and Treatment of Children with Visual Impairments. Taught by Linda Nobles, MS, OTR/L, this course addresses issues related to working with children with visual impairment. Topics covered: medical conditions causing vision loss in children including optical and cortical visual impairment; evaluation techniques, optical devices, assistive technology, treatment strategies, and working with parents and school systems. 2 hours (online). PREREQUISITES: permission.

Physical Therapy (DPT; DScPT)

Degrees Offered: D.P.T.; D.Sc.P.T.

Director (D.P.T.): Dr. Sharon Shaw

Phone: (205) 934-3566

E-mail: sshaw@uab.edu

Web site: www.uab.edu/pt

Director (D.Sc.P.T.): Dr. Cecilia Graham

Phone: (205) 934-5949
E-mail: cgraham@uab.edu
Web site: www.uab.edu/pt

Primary Faculty

Cara C. Adams, Associate Professor Emerita (Physical Therapy); Exercise and Postural Deviations

Joan Bergman, Professor Emerita (Physical Therapy); Developmental Disabilities

C. Scott Bickel, Assistant Professor (Physical Therapy); Skeletal Muscle Function, Electrotherapeutics

Jennifer Braswell Christy Assistant Professor (Physical Therapy); Pediatrics; Vestibular Dysfunction

Diane Clark, Assistant Professor (Physical Therapy); Wound Care; Health Promotion

Jo Ann Clelland, Professor Emerita (Physical Therapy); Pain Management

Betty G. Denton, Associate Professor Emerita (Physical Therapy); Curriculum Development

Matthew Ford, Associate Professor (Physical Therapy); Motor Control Dysfunction

Kennon T. Francis, Professor Emeritus (Physical Therapy); Exercise in Health Promotion; Delayed Muscle Soreness

Cecilia Graham, Associate Professor (Physical Therapy); Education, Acute Care

Robert S. Harden, Associate Professor Emeritus (Physical Therapy); Ethical and Legal Dimensions of Physical Therapy

Terry R Hoobler, Associate Professor Emeritus (Physical Therapy); Applied Physiology and Isokinetics, Prosthetics, Thermal Modalities Exercise

Cheryl J. Knowles, Associate Professor Emerita (Physical Therapy); Cardiopulmonary Physical Therapy

Donald Lein, Assistant Professor (Physical Therapy); Clinical Education

John Lowman, Assistant Professor (Physical Therapy); Cardiopulmonary Physical Therapy

John McCarthy, Associate Professor (Physical Therapy); Exercise Physiology

David M. Morris, Associate Professor (Physical Therapy); Aquatic Physical Therapy,

Patrice Murphy, Assistant Professor (Physical Therapy); Developmental Disabilities, Orthotics

William Ogard, Assistant Professor (Physical Therapy); Sensory Function of Anterior Cruciate Ligament, Proprioception of Knee Joint, Anatomy, Function of Lumbar Musculature

Claire Peel, Professor (Physical Therapy); Exercise Physiology, Cardiopulmonary Therapeutics, Geriatric Rehabilitation

Patty Perez, Assistant Professor (Physical Therapy); Orthopedic Rehabilitation

Dorothy Pinkston, Professor Emerita (Physical Therapy); History of Physical Therapy, Curriculum Development

Sharon E. Shaw, Associate Professor (Physical Therapy); Health Outcomes Assessment, Neurological Rehabilitation

Program Information

Two courses of study are available in the Department of Physical Therapy. The Doctor of Physical Therapy (DPT) is the professional program, which is designed for individuals without prior qualifications in physical therapy; and the postprofessional program, the Doctor of Science in Physical Therapy (DScPT) which is designed for those who already hold degrees in physical therapy.

Doctor of Physical Therapy (D.P.T.)

Physical therapists provide services to patient/clients who have 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. Finally physical therapists also function in consultative, educator, 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.

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: Eight 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 December 15, 2010 for the class beginning January, 2012. Applicants should send all application materials except official GRE scores directly to PTCAS. PTCAS will verify the application information and send completed applications to the program. Applicants should make arrangements to send official GRE scores directly to the UAB Graduate School. The GRE code is 1856.

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 by December 15.
- All prerequisites do not have to be completed at the time of application.
- Complete at least 40 hours of documented observation of physical therapy. Various settings are recommended. Documentation should be submitted to PTCAS.
- Complete the GRE and have scores sent to the Graduate School.
- Have a minimum 3.0 (A=4.0) overall, prerequisite and last 60 semester hours grade point average. For prerequisite courses, no grade lower than a C will be accepted.

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.
- Provide documentation of current certification of Basic Life Support for Health Care Providers.
- Complete a criminal background check before the first semester as specified by the Department of Physical Therapy in order to participate in clinical education.

State law regulates the practice of Physical Therapy. Therefore, applicants are encouraged to review the nonacademic eligibility requirements for licensure to practice physical therapy upon completion of the program. These may be obtained from each individual state's Board of Licensure for Physical Therapy.
<http://fsbpt.org/LicensingAuthorities/index.asp>

Variations in these requirements are considered. In instances where applicants do not meet the principle requirements for admission, they may be admitted on probation with the approval of the Graduate School Dean. Such students must establish themselves in good standing by achieving not less than a B average by the time they have completed 1 term of approved work taken at UAB for graduate credit.

Program Prerequisites—UAB Equivalents

(Course requirements are listed in semester credit hours)

Arts and Humanities

English Composition—EH 101, 102 (6)

Social and Behavioral Sciences

Psychology (9)

Natural Sciences and Mathematics

Precalculus with Trigonometry—MA 105 and 106 (3)

Statistics (must be taken in Math, Psychology, or Sociology)—MA 180, PY 214, or SOC 110 (3-4)

Physics*—PH 201/211 lab, 202/212 lab or PH 221/231 lab, 222/232 lab** (8)

General Chemistry for science majors with labs*—CH 115/116 lab, 117/118 lab (8)

Biology including Human or Mammalian Physiology*—BY 116 or 309 (16)

Medical Terminology - AHS 350 (2-3). Online courses are accepted.

**For these prerequisite courses, credit older than ten years from the application deadline must be validated by examination or other appropriate mechanism.*

***The physics course sequence must be designed for science majors and include laboratory sessions. A minimum of 8 semester hours is required. The following topics must be studied: mechanics, heat, electricity and magnetism, wave motion and sound, and light.*

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 in writing with the academic program office.

Typical Program

(Course requirements are listed in semester credit hours)

First Year

Spring

- PT 700 Human Gross Anatomy I (4)
- PT 702 Functional Anatomy (3)
- PT 730 Essentials of Human Physiology (3)
- PT 711 PT Examination I (2)
- PT 713 PT Intervention I (3)
- PT 760 PT Professional Practice I (2)
- PT 790 Scientific Inquiry I (1)

Summer

- PT 701 Human Gross Anatomy II (2)
- PT 706 Neuroscience I (4)
- PT 712 PT Examination II (3)
- PT 720 Pathology & Pharmacology for Movement Disorder I (3)
- PT 731 Human Performance Physiology (3)
- PT 770 Clinical Education I (1)
- PT 791 Scientific Inquiry II (1)

Fall

- PT 707 Neuroscience II (3)
- PT 704 Analysis of Human Movement (3)
- PT 714 PT Intervention II (2)
- PT 715 PT Intervention III (3)
- PT 721 Pathology & Pharmacology for Movement Disorder II (3)
- PT 771 Clinical Education II (2)
- PT 792 Scientific Inquiry III (1)

Second Year

Spring

- PT 705 Human Movement Dysfunction (4)
- PT 740 PT Management of Musculoskeletal Dysfunction I (5)
- PT 743 PT Management of Cardiopulmonary Dysfunction (3)
- PT 761 PT Professional Practice II (3)
- PT 772 Clinical Education III (2)
- PT 798/799 Scholarly Activity Project (1-3)

Fall

- PT 741 PT Management of Musculoskeletal Dysfunction II (5)
- PT 744 PT Management of Neuromuscular Dysfunction I (4)
- PT 762 PT Professional Practice III (3)
- PT 798/799 Scholarly Activity Project (1-3)

Third Year

Spring

- PT 746 PT Management of Neuromuscular Dysfunction II (4)
- PT 763 PT Professional Practice IV (2)

PT 793 Scientific Inquiry IV (1)
PT 798/799 Scholarly Activity Project (1-3)
PT 773 Clinical Education IV (8)

Summer

PT 764 PT Professional Practice V: Capstone Experience (2)
PT 774 Clinical Education V (9)

Fall

PT 775 Clinical Education VI (9)

Total Credit Hours for Program: 119-121

Additional Information

For detailed information, contact Betsy Coleman, Physical Therapy Department, School of Health Professions, SHPB, Room 333, 1705 University Boulevard (mailing address: SHPB 333, 1530 3rd Ave S), Birmingham, Alabama 35294-1212.

Telephone 205-934-4363

E-mail becol@uab.edu

DScPT – Postprofessional Program*

***The D.Sc.P.T. will no longer be offered as of 2012. Therefore, no applications for admissions will be accepted for the D.Sc.P.T. program.**

The post professional Doctor of Science in Physical Therapy (DScPT) program offers a 61 to 66-semester hour advanced curriculum for practicing physical therapists. The curriculum is composed of core courses and a choice of concentration in musculoskeletal, neuroscience or clinical outcomes research. The program may be completed on a part-time or full-time basis. This program provides the graduate with the advanced knowledge and skills to serve as a leader within health care and educational environments through examination and revision of current practice guidelines and through the development and implementation of new programs.

Accreditation : The University of Alabama is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award degrees at the bachelor's, master's, specialist, and doctor's levels.

Credentials Conferred : Diploma – The Doctor of Science in Physical Therapy degree is awarded by the University of Alabama at Birmingham.

Length of Study : 2 ½ to 3 years for full-time students

Program Entrance Date : Primarily in the fall semester; spring admission may be considered

Application Deadline : Rolling admissions

Application Procedure : The following materials must be submitted directly to the Department of Physical Therapy

- Two official transcripts from each college attended
- Official GRE scores
- Three recommendation forms
- Current resume
- Copy of current U.S. physical therapy license

The following must be submitted online, directly to the Graduate School

UAB Graduate School Application

A non-refundable \$35.00 application fee

Requirements for Admission : The applicant must hold a Master's degree in Physical Therapy or a Bachelor's degree in Physical Therapy and a Master's degree in a related field. Minimum admissions requirements include:

- GRE scores: 550 verbal, 550 quantitative, and 4.5 analytical writing
- GPA: 3.00/4.00 in all previous work
- Complete a personal interview with Department of Physical Therapy faculty
- If accepted, provide proof of required immunizations and proof of current certification in BCLS for Healthcare Providers

Typical DScPT Curriculum for a Full-Time Student*

Year 1 Fall

PTDS 702: Advanced Movement Science (3)

PTDS 710: Health Promotion in Physical Therapy (3)

PTDS 720: Introduction to PT Clinical Outcomes (3)

Year 1 Spring

PTDS 703: Issues in Movement Science (3)

PTDS 711: Health Promotion Planning and Administration (3)

PTDS 721: Foundations for PT Outcomes Research I (3)

Year 1 Summer

PTDS 704: Principles of Clinical Decision Making (3)

PTDS 712: Program Evaluation and Health Policy (3)

PTDS 722: Foundations for PT Outcomes Research II (3)

Year 2 Fall

PTDS 700: Essentials in Medical Screening I (3)

PTDS 705: Clinical Decision Making in Physical Therapy (3)

PTDS 713: Field Experience in Health Promotion (1)

PTDS 708: Professional Development Seminar I (1)**

Year 2 Spring

PTDS 701: Essentials in Medical Screening II (3)

PTDS 798: Dissertation Proposal (3)

Elective (3)**

Year 2 Summer

Comprehensive Exam***

PTDS 798/799: Proposal/dissertation (1–6)

PTDS 709: Professional Development Seminar II (1)

Year 3 Fall

PTDN/M/C/E 730: Advanced focus course I (3-4)

PTDS 799: Dissertation (1-6)

Year 3 Spring

PTDN/M/C/E 731: Advanced focus course II (3-4)

PTDS 740: Practicum (3-6)

PTDS 799: Dissertation (1-6) (continue as needed)

* Alternative degree plans are available for students wishing to enroll in fewer courses per semester

**Elective courses may be taken any semester

***The comprehensive exam is taken upon completion of the core coursework and research sequence

Course Descriptions

Physical Therapy (PT)

700, 701. **Human Gross Anatomy I, II.** A study of the gross anatomical structure of the human body includes the 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 lecture, dissection of the human body, and demonstrations. PT 700-4 hours; PT 701-2 hours.

702. **Functional Anatomy.** 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. 3 hours.

704. **Analysis of Human Movement.** 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. 3 hours

705. **Human Movement Dysfunction.** 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. 4 hours

706. **Neuroscience I .** A study of structures and functions of the human nervous system with emphasis on sensory/motor function. 4 hours

707 **Neuroscience II Continuation of 706.** 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. 3 hours

711. **Physical Therapy Examination I.** Introduction to the physical therapy examination process which includes history taking, systems review, and tests and measures. Emphasis will be placed on systems review and medical screening for each of the major systems. Overview of the major types of tests and measures employed by physical therapists and the type of data generated with a focus on self-care for patient. 2 hours.

712. **Physical Therapy Examination II.** Continuation of Physical Therapy I with focus on knowledge and skills needed to test and measure strength, range of motion, and posture. 3 hours.

713. **Physical Therapy Intervention I.** 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. 3 hours

714. **Physical Therapy Intervention II.** This course covers procedures and techniques for the design and implementation of fundamental therapeutic exercise. By recognizing impairments and functional

limitations that are amenable to physical therapy, the students will utilize therapeutic exercise interventions for prevention and rehabilitation of movement dysfunction and disability. 2 hours

715. Physical Therapy Intervention III. 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. 3 hours

720, 721. Pathology and Pharmacology for Movement Disorders I, II. Basic principles of pathology and pharmacology. Medical and surgical management of disorders involving the cardiovascular/pulmonary, musculoskeletal, neuromuscular, endocrine, integumentary, genitourinary, and GI systems. For each disease discussed, the diagnosis, medical, surgical, and pharmacological management will be included, as appropriate. PT 720 – 3 hours, PT 721-3 hours.

730. Essential of Human Physiology . Fundamental principles and concepts of human physiology are covered regarding the pulmonary, cardiovascular, and skeletal muscle systems, as well a thermoregulation of the body. Both cellular and systemic issues are addressed with an emphasis on a mechanistic and integrative approach to understanding function. 3 hours.

731. Human Performance Physiology. 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. 3 hours.

740, 741. PT Management of Musculoskeletal Dysfunction I, II. 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. PT 740 – 5 hours, PT 741 – 5 hours

743. PT Management of Cardiovascular/Pulmonary Dysfunction. Physical therapy examination, evaluation, diagnosis, prognosis, and intervention for patients with primary and secondary disorders involving the cardiovascular/pulmonary system. 3 hours.

744, 746. PT Management of Neuromuscular Dysfunction I, II. Application, analysis, and synthesis of principles of neurophysiologic rehabilitation in physical therapy examination, evaluation, diagnosis, and intervention. PT 744 – 4 hours, PT 746 – 4 hours

760. PT Professional Practice I. 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 2 hours.

761. PT Professional Practice II. 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. 3 hours

762. PT Professional Practice III. 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.. 3 hours

763. PT Professional Practice IV. 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. This course is taught in two parts extending over two semesters. Part One relates information and experiential training in strategic planning, marketing, financial planning and other management issues. Part Two provides discussion of these topics as they relate to various practice environments.. 2 hours

764. PT Professional Practice V: Capstone Experience. Integration of all previous coursework applied to reflection of the scope of PT 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 & professional growth and accomplishments, and appropriate plans for future professional development., 2 hours

770. Clinical Education I. Part-time clinical experience. Supervised clinical education in basic patient care skills and an introduction to practice issues. 1 hour

771 Clinical Education II Part-time clinical experience. Continuation of PT 770. 2 hours

772. Clinical Education III. Part-time clinical experience. Continuation of PT 771. 2 hours

773, Clinical Education IV., 10 week, full-time supervised clinical education in a clinical setting to provide student with the opportunity to apply previously acquired knowledge & skill to client care. 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). These students have completed all academic course work except a one-month “mini-term” consisting of a synthesis seminar and presentation of their scholarly activity project. However, this is the first full-term clinical experience for these students. 8 hours

774. Clinical Education V Continuation of PT 773. 12 week full-time clinical education. Integration of all patient care techniques; evaluation of patient progress and appropriate progression of patients in therapeutic programs; includes experiences in supervision, consultation, research, management, and teaching. 9 hours

775 Clinical Education VI. Continuation of PT 774. Final, 12 week, full-time clinical education . Integration of all patient care techniques; evaluation of patient progress and appropriate progression of patients in therapeutic programs; ;includes experiences in supervision, consultation, research, management, and teaching. 9 hours

790. Scientific Inquiry I. This is the first course in the research series for physical therapy students. Students will be introduced to sources of bibliographic information and database searching, annotated bibliographies, critical review of scientific literature, and beginning concepts of the application of research to clinical practice. 1 hour

791. Scientific Inquiry II. 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. 1 hour

792. Scientific Inquiry III. Emphasis will be placed on the assessment of research literature in Physical Therapy and the application of research findings to clinical practice. Additionally, advanced clinical research designs will be discussed. 1 hour

793. Scientific Inquiry IV. This is the final course in the Scientific Inquiry Series. The emphasis will be placed on peer review and professional presentation of scholarly work. 1 hour

798. Scholarly Activity Project. 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. 1-3 hours

799. Scholarly Activity Presentation. Oral presentation of scholarly project activity/results. 1 hour

Physical Therapy (PTGR)

747. Seminar in Interdisciplinary Services for Infants, Children, and Youth with Developmental Disabilities. Synthesis of team-based approaches to intervention for infants, children, and youth with known or suspected disabilities. Focus on legislation and policy, team processes and practices, and family-centered applications. Open to upper level students in disciplines which have roles in service provision for the described population. Prerequisite: acceptance into the traineeship program, or consent of department. 1-2 hours.

Physical Therapy (DScPT)

PTDS 700 – 701 Essentials in Medical Screening I and II. Provides the physical therapist with knowledge and skills for recognizing systemic disease that may appear as/or in addition to movement-related dysfunction to enable the practicing therapist to appropriately determine the need for medical referral. Basic principles underlying pharmacological management of movement related pathologies commonly encountered by the physical therapist. Includes background information on laboratory tests, imaging studies and other common diagnostic procedures.

PTDS 702 Advanced Movement Science. Current theory and principles of movement and movement dysfunction including: study of tissue basis of movement, biomechanics, motor control, energy demands, and analysis of movement 3 hours

PTDS 703 Current Issues in Movement Science Use of technology (motion analysis, biofeedback, energy expenditure) for analyzing problems of movement across a variety of pathologies commonly encountered by the physical therapist. Current areas of research in movement science will be discussed. 3 hours

PTDS 704 Principles of Clinical Decision Making Overview of clinical decision making in other disciplines (particularly medicine/health), the evolution of clinical decision making in physical therapy, models of clinical decision making and their application to elements of patient/client management in physical therapy practice. Students will consider decision analysis, cost-effectiveness, and development of critical/clinical pathways. 3 hours

PTDS 705 Clinical Decision Making In Physical Therapy Provides physical therapists with understanding of principles of clinical decision making applies to the practice of physical therapy. Examination of statistical properties of specific tests and selection of appropriate tests used in the diagnostic process of classifying signs and symptoms to assign diagnoses used by physical therapist that reflect the impact of a condition on the individual's function. Students will apply the diagnostic process, develop prognosis and intervention plans based upon evaluation of findings. Multiple patient problems will be addressed. 3 hours.

PTDS 708 Professional Development Seminar I Provides students with the context of settings and roles in which an advanced doctoral degree in physical therapy may be used. Addresses topics such as professional ethics, leadership skills, and development of effective presentations and publications. 1 hour

PTDS 709 Professional Development Seminar II Provides students with an overview of academia and the roles and responsibilities of academic and clinical faculty members. Addresses job search and negotiation strategies,, portfolio development, and strategies for balancing personal and professional demands. 1 hour

PTDS 710 Health Promotion in Physical Therapy . Concepts of health promotion and the role of physical therapist in health promotion. Theoretical basis for health behaviors and application of theories to physical therapy practice. 3 hours

PTDS 711 Health Program Planning and Administration. Methods/techniques for health program assessments, evaluation, program planning. Communication skills/techniques unique to health program planning and implementation will be emphasized. 3 hours.

PTDS 712 Program Evaluation and Health Policy Study of program evaluation strategies and advocacy; includes utilization of evaluations and strategies to influence health policy as a clinician, consultant, and/or educator 3 hours

PTDS 720 Introduction to Physical Therapy Clinical Outcomes Concepts of biostatistics relative to evidence-based practice and foundation for outcome based clinical rehabilitation approaches. Overview of generic measures, domains of health, condition specific measures, satisfaction, treatment effect measures, severity, comorbidity, demographic and psychosocial factors. 3 hours

PTDS 721 Foundations for Physical Therapy Outcomes Research I Study of measurement theory characteristics, conceptualization, usefulness, sensitivity, specificity, and interpretation. Data management issues: selection, collection, display, information systems and organization of data. 3 hours

PTDS 722 Foundations for Physical Therapy Outcomes Research II In-depth study of strategies and issues specific to outcomes research in clinical physical therapy settings. Case based seminar integrating knowledge from PT 720 and PT 721 3 hours

PTDS 740 Practicum Individually designed, directed experience in focus area appropriate to student's background, needs, and goals under guidance of faculty preceptor 3-6 hours

PTDS 713 Field Experience in Health Promotion Individually planned experience in community based setting. Integration and application of principles and theory of health behavior/health education, policy analysis and advocacy 1 hour

PTDS 798 Clinical Research/Dissertation Proposal Development of clinical research proposal 1-3 hours

PTDS 799 Clinical Research/Dissertation Prerequisite: admission to candidacy 1-6 hours

Focus area courses: Students may elect course work offered within the university and/or larger community which will enhance the individual's long-range career goals. All students will select a focus area. Each focus area will have a required practicum. When students have completed the didactic course work for their focus area, they will then complete a practicum which is individually based upon experience and professional goals.

Focus area courses offered within the program:

PTDM 730 Advanced Musculoskeletal I An in-depth learning experience in the examination and treatment of individuals with musculoskeletal dysfunction involving the lower quarter. Previous coursework in medical screening, movement science, and clinical decision making in specifically applied to the musculoskeletal system. 4 hours

PTDM 731 Advanced Musculoskeletal II A continuation of PTDM 730 with application to the upper quarter and thoracic region. 4 hours

PTDN 730 Advanced Neuromuscular I An in-depth learning experience focused on examination of individuals with neuromuscular dysfunction. Previous coursework in medical screening, movement science, and clinical decision making is specifically applied to the neuromuscular system 3 hours

PTDN 731 Advanced Neuromuscular II A continuation of PTDN 730 with emphasis on intervention strategies for neuromuscular dysfunction 3 hours

PTDC 730 Advanced Clinical Outcomes I In-depth study of strategies and issues specific to outcomes research in clinical physical therapy settings 3 hours

PTDC 731 Advanced Clinical Outcomes II Continuation of PTDS 730 content with integration on content from PT 712. Case based seminar series. 3 hours.

PTDE 730 Advanced Educational Theory and Practice I In-depth study of learning theory, educational methods, and assessment as applied to educational settings in physical therapy and other health professions. 3 hours

PTDE 731 Advanced Educational Theory and Practice II Continuation of PTDE 730, with emphasis on development and assessment of health professions curricula and programs. Includes strategies for incorporation of accreditation criteria and the scholarship of teaching and learning. 3 hours

Rehabilitation Science (Ph.D.)

Degree Offered:	Ph.D.
Directors:	Dr. David Brown
Phone:	(205) 934-3566
E-mail:	dbrownpt@uab.edu
Web site:	http://www.uab.edu/rsphd

Faculty

C. Scott Bickel, Assistant Professor (Physical Therapy); Skeletal Muscle Function, Electrophysiology

Jennifer Braswell Christy Assistant Professor (Physical Therapy); Pediatrics; Vestibular Dysfunction

Diane Clark, Assistant Professor (Physical Therapy); Wound Care; Health Promotion

Stephanie C. DeLuca, Assistant Professor (Occupational Therapy); Research and Development of New and Efficacious Treatment Techniques for Children with Neuromotor Disorders.

Cali Fidopiastis, Assistant Professor, (Physical Therapy); Virtual Rehabilitation, Brain-Computer Interfaces, Tests and Measurements

Kathleen Foley, Assistant Professor (Occupational Therapy); Physical Dysfunction, Gerontology, Pathophysiology

Matthew Ford, Associate Professor (Physical Therapy); Motor Control Dysfunction

Cecilia Graham, Associate Professor (Physical Therapy); Education, Acute Care

Gavin Jenkins, Assistant Professor (Occupational Therapy); Assistive Technology and the Built Environment

Donald Lein, Assistant Professor (Physical Therapy); Clinical Education

John Lowman, Assistant Professor (Physical Therapy); Cardiopulmonary Physical Therapy

John McCarthy, Associate Professor (Physical Therapy); Exercise Physiology

David M. Morris, Associate Professor (Physical Therapy); Aquatic Physical Therapy

Patrice Murphy, Assistant Professor (Physical Therapy); Developmental Disabilities, Orthotics

William Ogard, Assistant Professor (Physical Therapy); Sensory Function of Anterior Cruciate Ligament, Proprioception of Knee Joint, Anatomy, Function of Lumbar Musculature

Claire Peel, Professor (Physical Therapy); Exercise Physiology, Cardiopulmonary Therapeutics, Geriatric Rehabilitation

Patty Perez, Assistant Professor (Physical Therapy); Orthopedic Rehabilitation

Jan A. Rowe, Interim Chair and Associate Professor (Occupational Therapy); , Tourette syndrome clinic: Feeding and Swallowing of Infants and Young Children

Sharon E. Shaw, Associate Professor (Physical Therapy); Health Outcomes Assessment, Neurological Rehabilitation

Laura K. Vogtle, Professor (Occupational Therapy); Pediatrics, Research Methods, Program Evaluation, Outcomes Research

Hon Yeun, Professor and Director of Research

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](#) and [The Department of Physical Therapy](#) 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

511 HUC; 1400 University Boulevard
1530 3rd Avenue South
Birmingham, Alabama 35294-1150

- Complete and submit online Graduate School application
- Submit application fee payment - Domestic: \$45.00
- 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 request references to submit them online via the Apply Yourself system. 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 combined Graduate Record Exam (GRE) score of 1100
- 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 Brown, PT, Ph.D.
Department of Physical Therapy
205-934-3566

dbrownpt@uab.edu This e-mail address is being protected from spambots. You need JavaScript enabled to view it

Course Descriptions

Rehabilitation Science (RHB)

780. Philosophy and theory in Rehabilitation Science. Interdisciplinary discussion of historical, current and emerging theories, principles, concepts, and models of rehabilitation science. 3 hours.

781. Critical Review of Rehabilitation Science Research. Interdisciplinary course preparing students to critically review and analyze research practices in the literature of rehabilitation science. 3 hours.

782. Tests and Measurements in Rehabilitation Science Research. Interdisciplinary in-depth study of current tests and measures used in rehabilitation science. 3 hours.

783. Research Design in Rehabilitation Science Research. A detailed overview of research methodologies used in rehabilitation science. 3 hours.

789. Rehabilitation Science Seminar. Varied discussion of rehabilitation science topics to help students explore research questions in preparation for their dissertation. 2 hours.

798-799. Dissertation Research. 24 hours

Surgical Physician Assistant Studies (M.S.P.A.S.)

Degree Offered: M.S.P.A.S.

Director: Patricia R Jennings DrPH, PA-C

Phone: (205) 934-4605

E-mail: prienn@uab.edu

Web site: www.uab.edu/surgicalpa

Faculty

Kara Caruthers, Assistant Professor, (Surgical Physician Assistant Program), Emergency Medicine

William R. Drace, Assistant Professor (Surgical Physician Assistant Program)

Paul M. Harrelson, Assistant Professor (Surgical Physician Assistant Program); Pain Management.

Edward D. Huechtker, Associate Professor (Surgical Physician Assistant Program)

Patricia R. Jennings Professor (Surgical Physician Assistant Program); Infectious Diseases.

Kristopher Maday, Assistant Professor (Surgical Physician Assistant Program)

Kelley Swatzell, Assistant Professor, (Surgical Physician Assistant Program), Public Health

Kerry Whitaker, Assistant Professor, (Surgical Physician Assistant Program), Interventional Radiology

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 underserved 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. In general, most states authorize PAs to prescribe non-controlled substances and perform any task delegated by a supervising physician.

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 six years. PAs may obtain additional training through postgraduate residency programs in subspecialty areas, but these programs are not required for licensure or practice in subspecialty areas.

The mission of the UAB Surgical Physician Assistant 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 surgical physician assistants function under the direction of the physicians, they are capable of performing selected tasks autonomously.

Accreditation:

The Surgical 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 are required to successfully complete the Physician Assistant National Certifying Examination sponsored by the National Commission on Certification of Physician Assistants.

Essential Requirements for the M.S.P.A.S. Degree

Fundamental tasks, behaviors, and abilities necessary to successfully complete the academic and clinical 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 in writing with the academic program office.

Program Curriculum:

(Course requirements are listed in semester credit hours)

Fall Semester

- PA 602 Medical Physiology (5)
- PA 601 Human Gross Anatomy (4)
- PA 605 Pathology (3)
- PA 610 Clinical Laboratory Medicine (3)
- PA 615 Introduction to the PA Profession (1)

Spring Semester

- PA 606 Clinical Medicine I (4)
- PA 608 Surgical Disease I (3)
- PA 611 History and Physical Examination I (3)
- PA 603 Pharmacology I (3)

PA 613 Surgical Techniques (3)
PA 616 Electrocardiography (1)

Summer Semester

PA 614 Operating Room Techniques (2)
PA 619 Fundamental of Clinical Research (3)
AHS 530 Health Admin. & Management (3)
PA 604 Pharmacology II (3)

Fall Semester, 2

PA 607 Clinical Medicine II (6)
PA 609 Surgical Disease II (3)
PA 612 History and Physical Examination II (3)
PA 617 Applied Behavioral Medicine (2)
PA 618 Risk Management (1)
PA 620 Literature Evaluation (2)

Clinical Year Rotations (12 rotations 4 credits per rotation)

(With CVS, Orthopedics, or General Surgery as an 8 week rotation)

Cardiovascular Surgery (4)
Emergency Medicine (4)
General Surgery (4)
Inpatient Medicine (4)
Obstetrics and Gynecology (4)
Outpatient Medicine (4)
Orthopedics (4)
Pediatrics (4)
Psychiatry / Geriatrics (4)
Elective rotations X 2 (4 credits each)
 Neurosurgery
 Outpatient Surgery
 Plastic Surgery
 Renal Transplantation
 Surgical Oncology
 Thoracic Surgery
 Trauma Surgery
 Other

Other Requirements

PA 698 Master's Project (1)
PA 638 Senior Seminar I (3)
PA 639 Senior Seminar II (3)
PA 640 Senior Seminar III (2)

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

- Technical ability to complete the program (see Essential Requirements and Technical Standards below)
- Interview with faculty
- Satisfactory screening on health data questionnaire by the UAB Medical Center Student Health Service.
- The following prerequisites:

3-4 semester hours of biology I (lab preferred)
 3-4 semester hours of biology II (lab preferred)
 3-4 semester hours of microbiology (lab preferred)
 3-4 semester hours of human anatomy
 3-4 semester hours human physiology (UAB BY 116 or BY 409)
 8-9 semester hours of general chemistry (labs preferred)
 3-4 semester hours of statistics (upper level, population, and/or health-related with lab preferred)
 9 semester hours of psychology (general, developmental, abnormal)

Applicants are evaluated on the following criteria:

Academics - Overall GPA, Science GPA, Prerequisite Grades and GRE Scores.

Clinical Experience - Although not required for admission into the program, experience in health care settings, (providing direct patient care and/or surgical experience) is considered in the application score.

Personal statement - Applicants are evaluated on the quality of their personal statement.

Letters of support - Three (3) letters of support are reviewed and considered.

The PA Program is committed to recruiting and matriculating minority and disadvantaged students for careers as physician assistants.

Listed below are the midrange scores of students who were admitted into the program in 2009. These scores are provided so that applicants can assess their competitiveness for the program.

	Verbal GRE	Quantitative GRE	Analytic GRE	Science GPA	Overall GPA
25th percentile	450	580	3.63	3.22	3.34
50th percentile	510	620	4.50	3.48	3.46
75th percentile	540	700	5.00	3.65	3.75

Application Procedures:

This program participates in the Central Application Service for Physician Assistants (CASPA). Please consult www.caspaonline.org for more information regarding specific CASPA application requirements, procedures and fees. The CASPA application needs to be completed by September 1 of the year prior to admission. Applicants should send all CASPA application materials (except official GRE scores) directly to CASPA. CASPA will verify the application information and send completed applications to the program. Applicants should make arrangements to send official GRE scores directly to the UAB Graduate School. The GRE code is 1856.

After completing the CASPA application the applicant should complete the UAB SPA Supplemental Application. Following the program's receipt of the CASPA application, official GRE scores, and UAB SPA Supplemental Application, the UAB Surgical PA Program will review the packet.

Completed applications are reviewed by members of the admissions committee. Approximately 100 of the best applicants are selected to interview. Interviews are held in December and in January. Admissions decisions are finalized in February. Students who are accepted to the Surgical Physician Assistant program will need to complete the UAB Graduate School application.

Admissions Timeline

- July 31st, 2011 Complete the GRE- no exceptions
- May – September 1: Complete the CASPA application, the GRE
- Sept 5th, 2011 Deadline for mailing the UAB Supplemental Application. It must be postmarked on or prior to Sept 5th, 2011.
- September – December: Application review
- December – January: Interviews
- February: Admissions decisions finalized
- February – March: Complete the UAB Graduate School Application (admitted and waitlisted students only)
- August: Program starts

Additional Information

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 September 1 the year prior to the expected term of enrollment
Number of Evaluations/ Letter of Recommendations Required:	Three
Entrance Tests	GRE (TOEFL is required for international applicants whose native language is not English.)

Financial Support

Scholarships available to students enrolled in the Surgical Physician Assistant Program are:

Albert E. Purser Scholarship: A grant for first or second year students with financial need who are permanent residents of Alabama. Contact Patricia Jennings for an application.

Dean's Merit Scholarship: One one-year scholarship is awarded each year to a senior student in the Surgical Physician Assistant Program. The scholarship is based strictly on academic merit and is disbursed over a three-semester period.

Minority Student Scholarship: One one-year scholarship is awarded each year to a second year student in the Surgical Physician Assistant Program. The scholarship is based on academic merit and financial need, and is disbursed over a three-semester period.

Henry L. Laws Scholarship Loan: A loan for a first or second-year student in good academic standing and a demonstrated financial need. The amount of the loan varies, and it is only awarded once to a student. The loan is established and supported by alumni. Contact Patricia Jennings for an application.

Earl W. Hall Loan: Seniors with an emergency financial need may apply for this low-interest loan. See SHP administrative offices for further details. The loan is administered by the Matthew F. McNulty, Jr. Health Sciences Emergency Loan Fund Committee).

Contact Information

For detailed information, contact:

Stacey Deason Smith
Surgical Physician Assistant Program
University of Alabama at Birmingham, SHPB 434
Birmingham, Alabama 35294-1212

Telephone: (205) 934-4605

E-mail: StaceySmith@uab.edu

Web address: www.uab.edu/surgicalpa

Course Descriptions

PA 601. Human Gross Anatomy. This 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. (4 Credits). Prerequisites: enrollment in the Surgical PA Program or approval of the instructor.

PA 602. Medical Physiology. This 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. (5 Credits). Prerequisites: enrollment in the Surgical PA Program.

PA 603 and PA 604 Pharmacology I. and II. These two courses provide students with the pharmacologic knowledge needed to begin practice as primary care physician assistants. They are delivered via classroom lecture and supplemented with case studies that require students to critically evaluate medical conditions and choose safe and effective medications for treating those conditions. (3 credits each). Prerequisites: enrollment in the Surgical PA Program. Enrollment in PA 604 requires successful completion of PA 603.

PA 605. Pathology. This course is designed to describe the pathologic processes involved in common disorders and diseases, introduce students to the principles of clinical medicine and clinical problem solving, and provide students with the background needed for the clinical courses taught later in the curriculum. (3 credits). Prerequisites: enrollment in the Surgical PA Program.

PA 606. Clinical Medicine I. This is an introductory course in clinical medicine that is designed to introduce PA students to common disorders and disease encountered in primary care medicine. It covers the etiology, evaluation and treatment of diseases of the dermatologic, ophthalmologic, musculoskeletal, cardiovascular, pulmonary and neurological systems. It is taught at the level of a primary care PA, and endeavors to provide students with the background needed for the clinical courses taught later in the curriculum. Guest lecturers are utilized in this course. (4 Credits. Prerequisites: successful completion of PA 602, PA 605, PA 610, and PA 601.

PA 607. Clinical Medicine II. This is the second semester of an introductory course in primary care clinical medicine for PAs. It covers the etiology, evaluation, and treatment of common diseases and disorders encountered in obstetrics and gynecology, pediatrics, nephrology, endocrinology, and preventive medicine. Guest lecturers are utilized in this course. (6 Credits). Prerequisites: successful completion of PA 606.

PA 608. Introduction to Surgical Diseases I. This course introduces students to common surgical disorders, with an early emphasis on physiologic changes and evaluation of patients before, during, and after surgery. It provides basic instruction in the diagnosis, management, and complications associated with common surgical gastrointestinal and musculoskeletal disorders. (3 credits). Prerequisites: enrollment in the Surgical PA Program.

PA 609. Introduction to Surgical Diseases II. This course is the second course in a two-semester series that focuses on the preoperative and postoperative evaluation and management of common disorders of the heart, lungs, urogenital, vascular systems, and organ transplant. This course also provides instruction in the emergency medicine team concept, and the management of trauma patients. (3 credits). Prerequisites: successful completion of PA 608.

PA 610. Clinical Laboratory Medicine. This is an introductory course in laboratory diagnostics that emphasizes pathology, microbiology, hematology, and clinical chemistry. It utilizes a lecture format, as well as specimen handling in a clinical laboratory and cost effective diagnostic algorithms in problem-based case scenarios. (3 Credits). Prerequisites: enrollment in the Surgical PA Program.

PA 611 and PA 612. History and Physical Diagnosis I and II. These courses provide 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. (3 Credits per semester). Prerequisites: enrollment in the Surgical PA Program. Enrollment in PA 612 requires successful completion of PA 611.

PA 613. Surgical Care TechniquesI. PA 614. Operating Room Techniques. These are two courses in a two-semester series that provide instruction in the skills and surgical techniques involved in a variety of invasive surgical procedures. Skills are taught in a surgical laboratory utilizing live pigs in PA 613. In PA 614, students are assigned to operating rooms within Birmingham hospitals to learn the basics of surgical first assisting. (3 credits for Surgical Care Techniques, 2 credits for Operating Room Techniques). Prerequisites: enrollment in the Surgical PA Program. Enrollment in PA 614 requires successful completion of PA 613.

PA 615. Introduction to the Profession. This 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 in various health care settings with varied health care professionals. 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. This course is required by the accrediting body for the Physician Assistant profession and will be presented at the level of a primary care provider and utilize guest lecturers and program faculty. (1 credit). Prerequisites: enrollment in the Surgical PA Program.

PA 616. Electrocardiography. This 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. (1 Credit). Prerequisites: enrollment in the Surgical PA Program.

PA 617. Applied Behavioral Medicine. This course provides the surgical physician student with an introduction to clinical psychiatry and health behavior. Topics covered in psychiatry include psychiatric evaluation, mood disorders, anxiety disorders, schizophrenia and other psychotic disorders, psychiatric emergencies, personality disorders and psychopharmacology. Health behavior topics include the use of health education and communication theoretical models to affect behavioral change. This knowledge will enable students to incorporate health promotion and disease prevention strategies in their daily clinical practice to the benefit of their patients. (2 Credits)

PA 618. Risk Management. This course provides an introduction to the legal, political and professional issues affecting physician assistant practice. (1 credit). Prerequisites: enrollment in the Surgical PA Program.

PA 619. Fundamentals of Clinical Research. This course provides students with the foundation of epidemiologic measures, the reasons 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 medical literature. (3 credits). Prerequisites: enrollment in the Surgical PA Program.

PA 620. **Literature Evaluation.** This course is designed to prepare students to be critical thinkers. Covers methods on how to critically evaluate medical literature and strategies that should be utilized when making medical decisions based on current literature. By the end of the course, the student will identify their master's research topic. (2 credits). Prerequisites: enrollment in the Surgical PA Program.

PA 621-PA 637. **Clinical Services I-XII.** The 12 month clinical phase is composed of 9 required and 3 elective rotations lasting 4 weeks each. Required rotations include Obstetrics and Gynecology, Emergency Medicine, Pediatrics, Inpatient Medicine, Outpatient medicine, Psychiatry/Geriatrics, Orthopedics, General Surgery, and Cardiovascular Thoracic surgery. Students must successfully complete the end-of-rotation exam at the conclusion of all required rotations. Clinical year students return to campus each week to participate in a seminar series and evaluation exercises. (4 credits/rotation). Prerequisites: enrollment in the Surgical PA Program

PA 638, PA 639, PA 640. **Senior Seminar Series.** These courses are taught during the clinical year of the curriculum, and focus on a review of primary care medicine topics covered in the PA National Certification Examination (PANCE). They require students to orally present 30-minute pre-assigned topics and develop an accompanying one-page outline summarizing important points. Student presentations may be supplemented by cases seen on rotations or information gained from professional development seminars. (3 credits each for PA 638 and PA 639; 2 credits for PA 640). Prerequisites: enrollment in the clinical phase of the Surgical PA Program.

PA 698. **Master's Project.** This course runs concurrently with the students' clinical year rotations. Students will have chosen a project of study/research as a component of PA 620 during their last didactic semester. Each student will be assigned to a SPA Program faculty with whom he/she will work closely in designing, researching, writing, and presenting his/her final paper as a culminating academic achievement. Other advisors may be assigned if the student chooses a topic better mentored by a faculty member in another department or school. The purpose of the Master's Project is to have the student demonstrate "satisfactory" ability to analyze and synthesize scientific information and contextual learning in a focused area of medicine. (2 credits). Prerequisites : successful completion of PA 619 and PA 620.

Medicine

Gerontology

Certification Program

Director: Dr. Patricia L. Sawyer

Phone: (205) 934-4399

E-mail: psawyer@uab.edu

Web site: www.aging.uab.edu

Faculty

Allman, Richard M.; Professor (Medicine); Director, Birmingham/Atlanta VA Geriatric, Research, Education, and Clinical Center (GRECC); Mobility Impairment and Its Complications; Geriatric Care Quality Improvement

Ball, Karlene; Professor (Psychology); Clinical Science/Patient-Oriented Research; Health Services Research; Mobility Impairment and Its Complications

Curtis, Angela R.; Geriatric Education Manager (Division of Gerontology and Geriatric Medicine)

Drentea, Patricia; Associate Professor (Sociology); Socioeconomic Aspects of Aging, Health and Disability, and Work and Family, Research Methods

Fordham, Pamela; Assistant Professor with Doctorate; (Nursing) End of life issues for patients and family.

Perkins, Martinique; Assistant Professor (Health Behavior); Caregiving, Quality of Life Indicators.

Ghanta, Vithal K.; Professor (Biology); Tumor Immunology, Aging and Immune System

Peel, Claire; Professor (Physical Therapy); Fall Prevention, Exercise as an Intervention to Enhance Mobility

Sawyer, Patricia L.; Associate Professor (Social and Behavioral Science Section); Gerontology, Medical Sociology, Minority Aging

Shewchuk, Richard M.; Professor (Health Services Administration); Health and Long-Term Care Issues in Aging

Wadley, Virginia; Assistant Professor (Social and Behavioral Science Section); Cognition and Mobility, Dementia Caregiving, Loss of Capacity in Alzheimer's Disease

Program Information

The Gerontology Education 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.

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 Center for 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 Center for 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 nondegree 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), three 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 205-934-4399

Fax 205-934-7354

E-mail psawyer@uab.edu

Course Descriptions

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.

Gerontology (GER)

Required Course

GRD 600. **Core Issues in Aging.** A multidisciplinary approach will be used to consider dimensions of the aging process. This course explores individual and societal meanings of aging and old age through the study of the biological, psychological, and sociological changes accompanying aging as well as current issues and controversies in the study of aging. 3 hours.

Electives

NUR 533. **Living with Loss Across the Life Span.** Involves world religion, spiritually broad journals, presentations, activity with belief systems other than the students', church services, weddings, funerals, etc. Prerequisite: Permission of instructor. 3 hours.

NUR 499/534. Spirituality in Health Care Across the Life Span. The course covers developmental loss, social life style, affects on family, divorce, retirement, etc. Prerequisite: Permission of instructor. 3 hours.

540. Biology of Aging. Current understanding of aging, measuring aging changes, theories of aging, and aging changes in various human systems. Prerequisite: BY 101 or permission of instructor. Additional requirements for graduate credit: discretion of instructor. 3 hours.

590. Seminar in Gerontological Substantive Areas. Individually designed research agendas for students wishing to conduct semi-independent research or guided reading in social gerontology. Prerequisite: Permission of instructor. 1-3 hours.

595. Independent Study in Long-Term Care. Individually designed research agendas for students wishing to conduct semi-independent research or guided reading in long-term care. Prerequisite: Permission of instructor. 1-3 hours.

GRD 601. Research Methods in Gerontology. Basic research designs and choosing appropriate research designs. Current research methodology including data management and analyses used in studies of health and aging are covered through a series of seminars and meetings. 3 hours.

GRD 602. The Health Care of Older Adults. The focus of this course is on medical and health issues related to older adults. Physical and psychological aspects of normal aging will be discussed. Principles of geriatric medicine are covered, including clinical presentation and functional assessment of older adults as well as age-related diseases and geriatric syndromes. 3 hours.

604. Health Literacy and Aging. This course will define the concepts of health literacy and the relationship of health literacy to competent provision of health care. Individual and institutional barriers to health literacy will be discussed in addition to methods to screen and improve health literacy of older adults. 1 hour.

605. Cultural Competency and Aging. This course will provide an interdisciplinary overview of factors that may impact culturally competent care for older adults. The impact of language, literacy, and socioeconomic status (SES) will be discussed in the context of cultural competence. Barriers to providing culturally competent health care will be addressed. 1 hour.

606. Ethics and Aging. This course will provide an overview of ethical dimensions in later life. Issues related to ethical decision making in the health professions will be addressed, including decision making protocols, team functioning, and issues related to end-of-life care. Social and institutional ethics involving older adults will also be discussed. 1 hour.

611. Managed Care. Explores the organization and management of alternative health care delivery systems. Emphasis is placed on understanding the position these new organizational forms have in the U.S. health care system. The focus of the course is on organizations providing managed, ambulatory, and long-term care. 3 hours. 1 hour.

624. Multidisciplinary Research in Aging Colloquium. Discussion of current research in selected aspects of aging-related studies. Speakers are chosen to reflect the variety of scientific disciplines conducting inquiry on the theme. 3 hours.

638 & 738. Geriatrics and Gerontology Interdisciplinary Core Curriculum. The UAB Geriatrics Education Center coordinates the curriculum, consisting of lectures on the multidisciplinary treatment of health and aging issues. 3 hours.

643. Long-Term Care Administration. Seminar analysis of effect of chronic conditions and aging on delivery of health services; nursing homes and alternatives, mental health facilities and agencies; rehabilitation facilities and services. Field trips and individual research projects. 3 hours.

655. Minority Aging. Cross-racial and -ethnic exploration on national level of some special problems of minority aged groups, such as Latinos, Blacks, Chinese, Japanese, Koreans, Pacific Asians, and American Indians. Discussions focus on family, church, health care, housing, adult education, retirement, income, and recreation. 3 hours.

665. Geriatric Rehabilitation for the Health Professional. 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. 3 hours.

HCO 680. Aging Policy. Providing for the physical and economic well-being of the aging population is a continual challenge facing society. This course will discuss factors that shape public policy affecting the elderly in the U. S. and other developed countries. Basic statistics or the equivalent is a prerequisite for this course.

OT 688. The Occupation of Caregiving: Caring for Older Adults. Review social trends, programmatic initiatives, current research and policy implications. Students will gain a broad knowledge of the interplay between disease characteristics and needs for care. Permission of instructor. 2 hours.

691, 791. Seminar in Gerontological Substantive Areas. Individually designed research agendas for students wishing to conduct semi-independent research or guided reading in social gerontology. Prerequisite: Permission of instructor. 1-3 hours.

HCO 720. Health Insurance and Managed Care. Insurance as mechanism for dealing with consequences of an uncertain world. Health insurance and its consequences as significant reasons health care markets differ from others. Workings of insurance markets and current policy issues. Demand for health insurance, underwriting, rate making, moral hazard and adverse selection, HMOs and PPOs, employer health benefits and self insurance, Medicare and Medicaid, long-term care insurance and catastrophic coverage. Prerequisite: HCO 601 or equivalent. 3 hours.

734. International Medical Sociology. Cross-cultural, comparative analysis of health and health care delivery systems in both industrialized and developing countries.

755. Race and Ethnic Relations. Income inequality, school and residential segregation, intermarriage and interracial crime. 3 hours.

759. Social Gerontology. Consideration of some of the structural and behavioral implications of older adulthood in American society. Included will be such topics as the relationship of the aged to political, economic, educational, medical, religious, and other structures in society. 3 hours.

760. Sociology of Death and Dying. Sociological, social psychological and existential perspectives on death and dying; recent trends in definition, distribution, and practices surrounding death and dying. 3 hours.

769. Sociology of the Life Cycle. Consideration of sociological orientations to the life course. 3 hours.

777. Demography of Health and Aging. Demographic processes such as mortality, morbidity, disability, migration, and fertility and how each influences the number and proportion of the elderly, how these processes shape the age-sex structure of our population, and the demographic characteristics of older people.

779. Medical Demography. An examination of clinical, epidemiological, and sociological designs to investigate the effects of morbidity, disability, and mortality processes on human populations. 3 hours.

780. Medical Sociology. Theory and research in medical sociology; systematic overview of relevant literature. 3 hours.

781. Sociology of Health. Subjective experience of illness; predictions of health behavior; social networks and health.

785. Psychology of Aging. Age differences in perception, memory, intelligence, personality, adjustment, and psychopathology. 3 hours.

788. Social Medicine. Socioenvironmental factors in etiology of disease; social movements and health policy; medical ethics and broad ethical issues; place of societal science in medical care. 3 hours.

796. Research Seminar Health and Aging. Organized around a methods theme with lectures focusing on conducting social research, gaining access to research settings and getting started, writing grant applications, presenting papers at professional meetings, and thesis and dissertation proposal writing. Half of each class consists of lectures on developing research agendas. The other half of each class entails student presentation of developing research activities. 3 hours.

Medical Scientist Training Program (M.D., Ph.D.)

Degree: M.D.-Ph.D.

Director: Dr. Robin G. Lorenz

Phone: (205) 934-4092 or 934-0676

E-mail: rlorenz@uab.edu

Web site: <http://www.mstp.uab.edu>

Degree Requirements

UAB's outstanding research and clinical training programs provide an unusual opportunity for students interested in careers in basic biomedical research. Such students may be 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 and structural biology; biomedical engineering; biostatistics; cancer biology; cell, molecular and developmental biology; epidemiology; genetics and genomic sciences; immunology; microbiology, neuroscience; nutrition sciences; pathobiology and molecular medicine; 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 core curriculum of the basic biomedical sciences designed for Ph.D. students simultaneously. The second phase of study will focus on 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 supplementary application to the combined degree program. More information is available at <http://www.mstp.uab.edu/process.html>

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 Director for further information.

Nursing

Nursing (Ph.D., M.S.N., D.N.P.)

Degree Offered:	Ph.D.	Degree Offered:	M.S.N.
Director (Ph.D.):	<i>Pryor</i>	Director (M.S.N.):	<i>Hill</i>
Phone:	(205) 975-7529	Phone:	(205) 934-6587
E-mail:	erpphd@uab.edu	E-mail:	hillq@uab.edu

Degree Offered:	D.N.P.	Degree Offered:	A.M.N.P.
Director (D.N.P.):	<i>Holcombe</i>	Director (A.M.N.P.):	<i>Brooks & Langston</i>
Phone:	(205) 996-9824	Phone:	(205) 996-6679 (205) 934-6517
E-mail:	judyholc@uab.edu	E-mail:	brooks4@uab.edu summer16@uab.edu

Web site: www.uab.edu/son

Graduate Faculty

Anne, Alexandrov W., Professor (Nursing); Adult/Acute Health Chronic Care & Foundations

Appel, Susan J., Associate Professor (Nursing); Adult/Acute Health Chronic Care & Foundations

Brown, Kathleen C., Professor (Nursing); Community Health Outcomes & Systems

Childs, Gwendolyn, Assistant Professor (Nursing); Family/ Child Health & Caregiving

Christian, Becky, Professor (Nursing); Community Health Outcomes & Systems

Dashiff, Carol, Professor (Nursing); Family/ Child Health & Caregiving

Eaves, Yvonne, Assistant Professor (Nursing); Family/ Child Health & Caregiving

Grant, Joan S., Professor (Nursing); Adult/Acute Health Chronic Care & Foundations

Karen L. Heaton, Assistant Professor

Harper, Doreen C., Dean and Professor (Nursing); Community Health Outcomes & Systems

Heaton, Karen, Assistant Professor (Nursing); Community Health Outcomes & Systems

Ivey, Jean, Associate Professor (Nursing); Family/ Child Health & Caregiving

Meneses, Karen M. Professor and Associate Dean for Research (Nursing); Adult/Acute Health Chronic Care & Foundations

Moneyham, Linda, Professor and Endowed Chair (Nursing); Community Health Outcomes & Systems

Moss, Jacqueline, Associate Professor and Assistant Dean for Clinical Simulation and Technology (Nursing); Community Health Outcomes & Systems

Park, Na-Jin, Assistant Professor (Nursing); Community Health Outcomes & Systems

Patrician, Patricia A., Associate Professor (Nursing); Community Health Outcomes & Systems

Pearce, Patricia, F., Assistant Professor (Nursing); Community Health Outcomes & Systems

Pryor, Erica R., Associate Professor (Nursing); Community Health Outcomes & Systems

Rice, Marti, Associate Professor (Nursing); Family/ Child Health & Caregiving

Smith, Glenda L., Assistant Professor (Nursing); Family/ Child Health & Caregiving

Turner-Henson, Anne, Professor (Nursing); Community Health Outcomes & Systems

Vance, David E., Assistant Professor (Nursing); Family/ Child Health & Caregiving

Wilson, Lynda H., Professor (Nursing); Family/ Child Health & Caregiving

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, 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;
- A combined score of at least 1100 on the verbal and quantitative sections of the Graduate Record Examination (GRE), plus an indication of writing skills. The scores must not be over 5 years old. For test information and registration: GRE – www.gre.org;
- 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 vita;
- 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;
- A combined score of at least 1100 on the verbal and quantitative sections of the Graduate Record Examination (GRE); plus an indication of writing skills. The scores must not be over 5 years old; For test information and registration: GRE – www.gre.org;
- 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 vita;
- 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 in the School of Nursing;
- A comprehensive examination administered upon completion of an individualized program of studies; and
- A written dissertation demonstrating competence in research, individual inquiry, critical analysis, and in-depth treatment of a health care problem in the selected content area. The investigation must make a genuine 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, and generally centers on a research effort of mutual interest to the student and faculty mentor.

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 underserved, 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. **Eligible candidates for admissions will provide evidence of:**

- 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;
- Current professional certification as an Advanced Practice Nurse (if applicable);
- A graduate grade point average of at least 3.0 overall (based on a 4.0 scale) or on 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;
- Evidence of a license as a (1) Registered Nurse and (2) Advanced Practice Nurse or eligibility in the state in which the applicant plans to practice. Both documents must be notarized if the applicant is not a licensed nurse in Alabama;
- Confirmation of completed clinical hours in advanced specialty;
- Personal goal statement that is congruent with the program goals (300 words or less);
- Resume or Curriculum Vitae; and
- A personal interview by phone or in person with a School of Nursing faculty member or designee.

D.N.P. Degree 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.

M.S.N. 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**, **Clinical Nurse Specialist**, **Nurse Educator**, **Nursing Informatics**, and **Nurse Administrator**. Students are admitted to master's study during the fall and spring terms. Students may elect a full-time program of study in the fall term or a part-time program of study in the fall and spring terms. All nursing core courses and the majority of the master's specialties are offered in the distance accessible (online) format. Clinical experiences for the MSN student are designed on an individual basis. The student contracts to work with a clinical preceptor who is a certified registered nurse practitioner, a registered nurse, or a physician. The total number of clinical hours required varies depending on the option that 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.

Non-Degree Options at the MSN Level

Post MSN Nurse Practitioner Specialties- 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. This category is called the **Post MSN Nurse Practitioner Option**.

Teaching Certificate for Post BSN Applicants-Additionally, applicants at the post-baccalaureate level may choose to seek certification to prepare for the faculty role.

Clinical Research Management- Certificate option that allows both nursing students and non-nursing applicants to pursue a Clinical Research Management certificate (paper application) or the BSN qualified applicants can pursue a Masters of Science in Nursing (on-line application).

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. (on-line application)

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 1,000 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 at 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.

M.S.N. Degree 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.

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 as a Clinical Nurse Leader (CNL). The AMNP, developed in response to the growing need for well-educated, highly skilled professionals who can manage complexity within clinical environments. The AMNP program is not intended to prepare individuals for a specific job title as a "Clinical Nurse Leader;" graduates will likely obtain various professional positions from different employers. It is also anticipated that new CNL grads will be hired as novice nurses in whatever position they seek.

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.
- Upon receipt of ALL official transcripts, course work will be evaluated for advisement purposes regarding AMNP Foundational Courses.
- GPA- The minimum cumulative AND foundational GPA for all AMNP applicants is 3.0 at the time of application.
- Combined score of 1,000 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.
- 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. 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 this criterion.
- Interviews- Due to the competitive nature, not all candidates that qualify for admission will be invited for interviews. Applicants will be notified within a month of the application submission deadline if they will be invited to participate in the interview round for continued consideration for admission. All interviews will be conducted in February. You will be given ample time to plan for a trip to campus if you are selected to be interviewed. Students will be notified by no later than the end of March of admission decision.

A.M.N.P. Degree Requirements

The Program is divided into two phases: (I) the Pre-licensure phase and (II) the CNL phase. Students in the Phase I must be prepared to dedicate 40 hours or more a week to the coursework and clinical for this program. Students find that it is not feasible for them to work while completing Phase I of this program. This is not a distance accessible program. Students must successfully complete Phase I and Phase II of the program to earn a degree in nursing.

Phase I: The pre-licensure phase: 50 Credits, 1395 contact hours

Phase I consists of 12 months of full time study during which students complete the required courses and clinical experiences equivalent to a BSN degree in preparation to apply for licensure as a registered nurse. While this will be an intense learning experience, students will emerge with the knowledge and skills required to function as a registered nurse. Upon successful completion of Phase I requirements, the University Registrar at UAB will send a certified letter to the Alabama Board of Nursing stating that students have successfully completed requirements equivalent to a BSN degree and are eligible to take the National Certification Licensure Exam for RNs (NCLEX-RN). Students who successfully complete the

NCLEX-RN may subsequently apply for licensure and subsequently apply for employment as a Registered Nurse.

Phase II: The CNL Phase: 22 Credits, 675 contact hours

Phase II consists of four semesters of part time study via distance education through the school of nursing and immersion in clinical work as a registered nurse. The part-time CNL phase focuses on developing an exciting new role in nursing, the Clinical Nurse Leader (CNL). Successful completion of Phase II leads to a Master of Science in Nursing degree (MSN) as a Clinical Nurse Leader with eligibility to take the CNL board certification exam.

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.

Financial Aid

Many opportunities for financial aid are available in the form of living stipends, tuition and fee coverage and support for scholarship. Opportunities include graduate teaching or research assistantships; Graduate School fellowships; scholarships; and federal professional nurse traineeships. For a complete list of available financial aid and scholarships please visit <http://www.uab.edu/nursing/development-a-alumni-relations/scholarships-fin-aid> or contact the Office of Student Affairs in the School of Nursing at (205) 975-7529.

Other Policies of the School of Nursing

All students enrolled in clinical nursing courses (excluding the AMNP Program) must show proof of current nursing licensure from the state in which the student engages in clinical practice for their coursework, current CPR certification, OSHA training session on Bloodborne Pathogens and TB Occupational Health, and have medical clearance from UAB Student Health Services and complete an online orientation program prior to beginning classes.

Additional Information

Deadline for Entry Term(s):	Variable
Deadline for All Application Materials to be in the Graduate School Office:	Variable
Number of Evaluation Forms Required:	Program Specific
Entrance Tests	Variable
Comments	See School of Nursing website for details
Graduate Catalog Description	

For detailed information regarding the Graduate Nursing programs, contact the Student Nurse Recruiter, UAB School of Nursing, NB 201A, 1530 3rd Avenue South, Birmingham, AL 35294-1210.

Telephone 205-975-7529

E-mail: jlavier@uab.edu

Web <http://www.uab.edu/son/>

Course Descriptions

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.

PhD

Course Descriptions

NBB 760. Biobehavioral Foundations in Nursing Research - 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. 3 credit hours. (Online)

NBB 761. Biobehavioral Research: State of the Sciences - 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. 3 credit hours. (Online)

NCH 760. Child Health Theories and Concepts - 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. 3 credit hours. (Online)

NCH 761. Emerging Issues in Child-Health Nursing - 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. 3 credit hours. (Online)

NFH 760. Family Health/Caregiving Across The Lifespan - 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. 3 credit hours. (Online)

NFH 761. Theory Development In Family Health And Caregiving - 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. 3 credit hours. (Online)

NFH 762. Family Research Methods - 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. 3 credit hours. (Online)

NGN 731. Advanced Practice Gerontological Nursing I - 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. 3 credit hours. (Online)

NGN 732. Advanced Practice Gerontological Nursing II – 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. 3 credit hours. (Online)

NPR 760. Conceptual Foundations for Promoting, Protecting, and Restoring Health - 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. 3 credit hours. (Online)

NPR 761. Interventions to Promote, Protect, and Restore Health - 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. 3 credit hours. (Online)

NRM 770. 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. 3 credit hours. (Online)

NRM 771. Methods/Measurement In Nursing Research - 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. 3 credit hours. (Online)

NRM 772. Designs of 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. 3 credit hours. (Online)

NRM 773. Qualitative Research Methods - 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. 4 credit hours. (Online)

NST 772. Data Mining/Stats Learning I - 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. 3 credit hours. (Online)

NST 773. Data Mining/Stats Learning II - 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. 3 credit hours. (Online)

NST 776. 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. 3 credit hours. (Online)

NST 777. Multivariate Statistical 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. 3 credit hours. (Online)

NTC 760. Transitions to Academic Nursing Education – 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. 3 credit hours. (Online)

NUR 706. Theory Building in Nursing - 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. 4 credit hours. (Online)

NUR 730. Current Topics in Nursing - A special topic seminar with variable focus. 1 - 3 credit hours. (Online)

NUR 731. Philosophical, Theoretical, and Conceptual Foundations for Advanced Practice Nursing

- 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. 3 credit hours. (online)

NUR 750. Quantitative Research Methods - 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. 3 credit hours. (Online)

NUR 752. Responsible Conduct of Research: A Cross-Cultural Perspective - 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. 2 credit hours. (Online)

NUR 754. Issues in Leadership and Health Policy - 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. 3 credit hours. (Online)

NUR 756. Applied Statistical Analysis Techniques - 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. 4 credit hours. (Online)

NUR 781. Clinical Research Protocols - Developing and Testing Clinical Research Protocols - Protocols are guidelines for systematic implementation of a procedure or routine. Research protocols are important in that they: permit tracking of study procedures, decrease study treatment variation, minimize bias, facilitate communication among investigative team members and enhance dissemination and replication of study procedures. This online course is designed to provide research coordinators and new investigators with the knowledge and experience of developing, testing and refining clinical research protocols. Samples of protocols from actual clinical studies will be used to illustrate protocol design and testing issues. 2 credit hours. (Online)

NUR 790. Independent Study in Nursing – 1 - 9 credit hours.

NUR 791. Independent Study in Clinical Nursing – 1 - 9 credit hours.

NUR 798. Research Practicum - The practicum is a series of course credits taken throughout the student's doctoral coursework to provide continuous research experience under the supervision of the mentor. 1 - 6 credit hours.

NUR 799. Dissertation Research - Prerequisites: Comprehensive Examination and admission to candidacy. 1 - 9 credit hours.

D.N.P.

Course Descriptions

CORE REQUIREMENTS

NUR 731. Philosophical, Theoretical and Conceptual Foundations - . This required core course for the Doctor of Nursing Practice program provides an understanding of the use of theory and conceptual foundations 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. 3 credit hours. (on-line) (**Essential I**)

NUR 732. Design and Statistical Methods for Advanced Nursing Practice - This required course for the Doctor 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 methodologies, research design, and data analysis. The content provides essential knowledge for the evaluation of research to guide evidence-based nursing practice at the highest level. 3 credit hours (online) (**Essential III**).

NUR 733. Informatics for Advanced Practice Nursing - 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. 3 credit hours (online) (**Essential IV**).

NUR 734L. Advanced Experiential Clinical Course - This course provides the opportunity for DNP students to demonstrate excellence in providing complex care and leadership in healthcare settings. 1 – 6 credit hours (online) (**Essential IV**).

NUR 735. Population Health in Advanced Practice - 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 (online) (**Essentials V and VII**).

NUR 736. Application of Best Practices - This required course in the Doctor of Nursing Practice program prepares the student to evaluate interdisciplinary clinical and health systems for best practices and outcomes in the 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 will be placed upon the synthesis, critique, and application of evidence to support quality clinical and organizational practices. 4 credit hours. (online) (**Essentials II, III, and IV**)

NUR 737. Interdisciplinary Leadership and Role Development for Practice Excellence - This required course in the Doctor of Nursing Practice program prepares students for 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. 3 credit hours. (online) (**Essentials I, II, III, and V**)

NUR 738L. Scholarly Project Development Seminar - This required course is designed to assist the student in selecting an area of interest within a practice specialization, and in demonstrating professional competencies related to an 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 practice plans. 2 credit hours (online) (**Essential 1**)

NUR 739L. Scholarly Practice Project - 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. 1 – 7 credit hours. (online) (**Essentials I, VIII**)

NUR 740. Health Policy and Politics: Implications in Health Care - 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. 3 credit hours. (online) (**Essentials I, II, III and V**).

MSN

Course Descriptions

CRM 670. Clinical Research Ethics, Methods and Clinical Trials – 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. 3 credit hours. (online)

CRM 671. Clinical Research Study Operations and Site – 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. 3 credit hours. (online)

CRM 672. An Overview of Teaching Principles for Clinical Research Coordinators and Healthcare Professionals – 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. 3 credit hours. (online)

CRM 673. Current Issues in Clinical Research Management – 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. Prerequisite: CRM 670, CRM 671 and CRM 672. 3 credit hours. (online)

CRM 674L. Practicum Experiences in Clinical Research Management – 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. Prerequisite: CRM 670, CRM 671 and CRM 672. 3 credit hours. (online)

NAH 621. Advanced Adult Nursing I - This course provides a theoretical and practical base for students to diagnose and manage health problems of adults. Content includes management strategies from the domains of nursing, medical, and pharmacological therapeutics, and emphasizes direct care to clients. The course utilizes a lecture/discussion and case study format to assist the student in clinical assessment and decision-making to provide direct patient care to adult clients within the scope of practice of adult nurse practitioners. The student is expected to apply the concepts and theories discussed in class to the care of adult clients during the clinical course taken in conjunction with this course. The following elements are integrated into this course: critical thinking, health promotion and disease prevention, research, ethics, cultural diversity, and social issues. Prerequisite: NUR 614L. 4 credit hours. (online)

NAH 622. Advanced Adult Nursing II - 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 adults with commonly occurring chronic and complex health problems. 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 adult 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. Prerequisite: NAH 621 and NAH 685L. 4 credit hours. (online)

NAH 685L. Practicum I: Adult Nurse Practitioner - This course allows the student to develop the Adult Nurse Practitioner role by providing health care services to clients (i.e., individuals, families, groups) and emphasizing the promotion of health and the prevention of disease throughout the course of clinical experiences. 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 the clinical experience progresses, allowing him/her to become more proficient and to contribute to the management of more complex adult 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, and includes role components such as interdisciplinary collaborator, coach, educator, and consultant. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NUR 614L. Pre-or co-requisite: NAH 621. 1 - 3 credit hours. (online)

NAH 686L. Practicum II: Adult Nurse Practitioner - This course allows the student to develop the Adult Nurse Practitioner role by providing health care services to clients (i.e., individuals, families, groups) and emphasizing the promotion of health and the prevention of disease throughout the course of clinical experiences. 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 the clinical experience progresses, allowing him/her to contribute more toward the management of 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, and includes role components such as interdisciplinary collaborator, coach, educator, and consultant. 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: NAH 685L. 1- 3 credit hours. (online)

NAH 692L. Residency: Adult Nurse Practitioner - This course prepares the student in the Adult Nurse Practitioner role to be a beginning expert in the diagnosis and management of adult patient problems. In the residency, the student is expected to continue growth toward becoming an independent practitioner, specializing in the care of adults. The student further develops the adult NP role with patients/clients by providing ambulatory 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 responses to disease. 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: NAH 622 and NAH 686L. 2- 6 credit hours. (online)

NCA 616. Diagnostic and Therapeutic Procedures I for Advanced Nursing Practice - 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 patients. Corequisite: NCA 621. 1 credit hour. (online. Must be on campus 1 day.)

NCA 617. Diagnostic and Therapeutic Procedures II for Advanced Nursing Practice - 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. Corequisite: NCA 622. 1 credit hour. (online. Must be on campus 1 day.)

NCA 621. Advanced Adult Acute Care Nursing I - This course provides a theoretical and practical base for students to diagnose and manage health problems of adults with health problems ranging through primary, acute, and critical care settings. Content includes management strategies from the domains of nursing, medicine, and pharmacological therapeutics, and emphasizes direct care to clients. The course assists the student in the clinical assessment and decision-making to provide direct patient care to adult patients within the scope of practice of acute care nurse practitioners. The student is expected to apply the concepts and theories discussed in class to the care of adult patients during the clinical course taken in conjunction with this course. The following elements are integrated into this course: critical thinking, health promotion and disease prevention, research, ethics, cultural diversity, social issues, and professional role development. Prerequisite: NUR 614L. 4 credit hours. (online)

NCA 622. Advanced Adult Acute Care Nursing II - 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 adults with commonly occurring acute, chronic, and complex health problems. Students will also

have the opportunity to develop strategies to market the acute care nurse practitioner role, to create a specific practice position, and to explore strategies to market their role in acute and critical 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. Prerequisite: NCA 621. 3 credit hours. (online)

NCA 623. Advanced Adult Acute Care Nursing III - This course is designed to provide the adult acute and continuing care student with opportunities to integrate in-depth knowledge of health assessment and management skills to provide care for adults with commonly occurring acute, chronic and complex health problems. Content includes management strategies from the domains of nursing, medicine and pharmacology and emphasizes direct care to patients with health problems in the renal and gastrointestinal systems. Also, emphasized are common acute care problems associated with nutrition, cancer and oncologic emergencies, pain, palliative care, poisonings and toxicities, burns, trauma, sepsis, shock and multisystem organ failure. Prerequisite: NCA 622. 3 credit hours. (online)

NCA 685L. Practicum I: Adult Acute Care Nurse Practitioner - This course allows the student to develop the Adult Acute and Continuing Care Nurse Practitioner role by providing health care services to adult clients (i.e., individuals, families, groups) and emphasizing the promotion of health and the prevention of disease throughout the course of clinical experiences. 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 proficient and to contribute to the management of more complex adult 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, and includes role components such as interdisciplinary collaborator, coach, educator, and consultant. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NUR 614L. 1- 3 credit hours. (online)

NCA 686L. Practicum II: Adult Acute Care Nurse Practitioner - This course allows the student to develop the Adult Acute and Continuing Care Nurse Practitioner role by providing health care services to adult clients (i.e. individuals, families, groups) in acute and critical care settings and 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 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 adult health problems. Prior to enrollment the student, in conjunction with the advisor, must secure an approved clinical preceptor. 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: NCA 685L. 1- 3 credit hours. (online)

NCA 692L. Residency: Adult Acute Care Nurse Practitioner - This course prepares the student in the Acute Care Nurse Practitioner role to be a beginning expert in the diagnosis and management of patients' health problems. In the residency, the student is expected to continue growth toward becoming an independent practitioner, specializing in the care of adults with health problems requiring primary, acute, and critical care management. The student further develops the Acute Care Nurse Practitioner role with patients/clients by providing 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 responses to disease. 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 continues the trajectory of the nurse practitioner experience from novice to beginning expert, and includes role components such as interdisciplinary collaborator, coach, educator, and consultant. 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: NCA 686L. 3 or 6 credit hours. (online)

NCC 613. Acute & Continuing Care Pediatric Pharmacology - This course is a supplementary course for Acute and Continuing Care Pediatric Nurse Practitioner students to provide 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 the pediatric population. 1 credit hour. (online)

NCC 621. Child/Adolescent Advanced Nursing I - This course provides a theoretical and practical base for students to diagnose and manage 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 assists the student in clinical assessment and decision-making to provide direct patient care to children, adolescents, and their families within the scope of practice of acute care child/adolescent nurse practitioners. Prerequisite: NUR 614L. 4 credit hours. (online)

NCC 622. Child/Adolescent Advanced Nursing II Acute and Continuing Care Nurse Practitioner - This course is designed to provide the students with the 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. Prerequisite: NCC 621 and NCC 685L. 4 credit hours. (online)

NCC 623. Child/Adolescent Advanced Nursing III Acute and Continuing Care Nurse Practitioner - 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, 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. Prerequisite: NCC 622 and NCC 686L. 4 credit hours. (online)

NCC 685L. Practicum I: Child/Adolescent Acute and Continuing Care Nurse Practitioner - This course prepares the student in the Child/Adolescent Acute & Continuing Care 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. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NUR 614L. 2 credit hours. (online)

NCC 686L. Practicum II: Child/Adolescent Acute & Continuing Care Nurse Practitioner - This course assists the student in further refining and developing the Child/Adolescent Acute and Continuing Care 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. Prerequisite: NCC 621 and NCC 685L. Pre-or co-requisite: NCC 622. 2 credit hours. (online)

NCC 688L. Child/Adolescent Acute and Continuing Care Nurse Practitioner Practicum III – 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. Pre-or co-requisite: NCC 623. 2 credit hours. (online)

NCC 692L. Residency: Child/Adolescent Acute/Continuing Care Nurse Practitioner - This course prepares the student in the Child/Adolescent Acute and Continuing Care Nurse Practitioner role to be a beginning expert in the diagnosis and management of child/adolescent health problems. In the residency, the student is expected to continue growth toward becoming both an autonomous and collaborative practitioner, specializing in the care of acutely and chronically ill children. The student further develops the Child/Adolescent Acute and Continuing NP role by providing health care services to children, adolescents and their families individually and in acute care and community settings, emphasizing the level of care that is appropriate to their current health statuses. 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: NCC 622 and NCC 686L. 3 - 6 credit hours. (online)

NCL 620. Systems in Population-based Care I - 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. Prerequisite: NUR 600 and NUR 643. 3 credit hours. (online)

NCL 621. Systems in Population-based Care II - 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. 3 credit hours. (online)

NCL 685L. Clinical Nurse Leader Practicum I – 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. 2 credit hours

NCL 686L. Clinical Nurse Leader Practicum II – 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. 2 credit hours

NCL 692L. Clinical Nurse Leader Capstone Practicum – 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. Prerequisite: NCL 621 and NCL 686L. 5 credit hours

NCS 616. Foundations of Clinical Nurse Specialist Practice - 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. 1 credit hour. (online)

NCS 617. Phenomenon of Concern to Advanced Practice Nurses - 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. 1 credit hour. (online)

NCS 685L. Practicum I: Clinical Specialization in Adult Health Nursing - 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. 1 - 2 credit hours. (online)

NCS 686L. Practicum II: Clinical Specialization in Adult Health Nursing - 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. 1 - 2 credit hours. (online)

NCS 687L. Practicum III: Clinical Specialization in Adult Health Nursing - 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. 1 - 2 credit hours. (online)

NCS 692L. Residency in Clinical Specialization - 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. 1 - 6 credit hours.

NCV 630. Advanced Cardiovascular Nursing - 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. 3 credit hours. (online)

NCV 631. Electrocardiography for Advanced Nursing Practice - 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. 3 credit hours. (online)

NFA 620. Surgical Techniques - 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" swine 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. 3 - 4 credit hours. (online)

NFA 621. Advanced Perioperative Nursing I - 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. 3 credit hours. (online)

NFA 622. Advanced Perioperative Nursing I - 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. 1 - 3 credit hours. (online)

NFH 621. Advanced Family Nursing I - This course provides a theoretical and practical base for students to diagnose and manage health problems of clients from across the lifespan. Content includes management strategies from the domains of nursing, medical, and pharmacological therapeutics, and emphasizes direct care to clients. This course assists the student in the clinical assessment and decision-making to provide direct patient care to clients within the scope of practice of family nurse practitioners. The student is expected to apply the concepts and theories discussed in class to the care of clients and families during the clinical course taken in conjunction with this course. The following elements are integrated into this course: critical thinking, health promotion and disease prevention, research, ethics, cultural diversity, social issues, and professional role development. Prerequisite: NUR 614L. 5 credit hours. (online)

NFH 622. Advanced Family Nursing II - 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. 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. Prerequisite: NFH 621. 4 credit hours. (online)

NFH 685L. Practicum I: Family Nurse Practitioner - This course allows the student to develop the Family Nurse Practitioner role by providing health care services to clients across the life span, families, and groups while 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, and includes role components such as interdisciplinary collaborator, coach, educator, and consultant. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NUR 614L. 3 credit hours. (online)

NFH 686L. Practicum II: Family Nurse Practitioner - This course allows the student to develop the Family Nurse Practitioner role by providing health care services to clients across the lifespan, families and groups while 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 responses to disease. It is anticipated that the student will be increasingly independent and skilled, allowing him/her to become more proficient and to contribute to the management of more complex health problems, complex family issues and health care issues. 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: NFH 685L. 3 credit hours. (online)

NFH 692L. Residency: Family Nurse Practitioner - NFH 692L is the culminating experience for the student to practice in the role of a family nurse practitioner. This course emphasizes the application of previously learned theories and knowledge from nursing and other disciplines to the continued development of clinical decision making skills. The student will implement the role of the family nurse practitioner to manage the health care of clients (i.e., individuals, families, groups) in primary or acute care setting. Prior to enrollment the student, in conjunction with the advisor, must secure an approved clinical preceptor. 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: NFH 622. 2 – 8 credit hours. (online)

NGN 631. Gerontology and Geriatrics for Advanced Nursing Practice - 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. 3 credit hours. (online)

NGN 632. Chronic Health Conditions for Advanced Nursing Practice – 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. 3 credit hours. (online)

NGN 685L. Practicum I: Gerontological Nurse Practitioner – 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. Corequisite: NAH 621. 2 credit hours. (online)

NGN 686L. Practicum II: Gerontological Nurse Practitioner - 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 practic 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.

Corequisite: NAH 622. 2 credit hours. (online)

NGN 692L. Residency: Gerontological Nurse Practitioner - 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: NAH 686L. 1 or 4 credit hours. (online)

NHSA 620. Nursing and Health Systems Administration I - 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. Prerequisite: Admission to the Nursing and Health Systems Administration option. 3 credit hours. (online)

NHSA 621. Nursing and Health Systems Administration II - 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. 2 – 4 credit hours. (online)

NHSA 622. Nursing and Health Systems Administration III - 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. 2 credit hours. (online)

NHSA 630. Health Services Marketing Management - 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. 3 credit hours. (online)

NHSA 640. Economics for Nursing - 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. 3 credit hours. (online)

NHSA 685L. Nursing and Health Systems Administration Practicum I - 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. 1 – 2 credit hours. (online)

NHSA 686L. Nursing and Health Systems Administration Practicum II - 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. 4 credit hours. (online)

NMD 621. Advanced Management of Diabetes I - 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, and diabetes among: minorities, and those residing in rural settings. Prerequisite: NUR 600, NUR 614L, NCA 621 and NCA 685L or equivalent or ANCC certification as a nurse practitioner. 3 credit hours. (online)

NMD 622. Advanced Management of Diabetes II - 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, poly cystic 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. 3 credit hours. (online)

NMD 685L. Practicum I: Advanced Management of Diabetes - 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. 3 credit hours. (online)

NMD 686L. Practicum II: Advanced Management of Diabetes - NMD 686L allows the student to continue in the refinement 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. 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. 3 credit hours (online)

NMD 692L. Advanced Management of Diabetes Residency - NMD 692L prepares the student in the Advanced Management Diabetes (AMD) role to be a beginning expert in the diagnosis and management of patients' health problems. In the residency, the student is expected to continue growth toward becoming an independent practitioner, specializing in the care of populations across the lifespan with health problems requiring primary, acute, and/or critical care management. The student further develops

the AMD role with patients/clients by providing 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 responses to disease. 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 continues the trajectory of the nurse practitioner experience from novice to beginning expert, and includes role components such as interdisciplinary collaborator, coach, educator, and consultant. 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: NMD 622 and NMD 686L. 4 credit hours. (online)

NNE 613. Neonatal Pharmacology and Therapeutics - 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. 3 credit hours. (online)

NNE 614L. Assessment and Diagnostic Reasoning Advanced Nursing Practice - 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. Prerequisite/Corequisite: NUR 612. 4 credit hours. (online)

NNE 621. Advanced Neonatal Nursing I - This course provides a theoretical and practical base for students to diagnose and manage health problems of neonates. Content includes management strategies from the domains of nursing, medical, and pharmacological therapeutics, and emphasizes direct care to clients. This course utilizes a lecture/ discussion and case study format to assist the student in the clinical assessment and decision-making to provide direct patient care to neonatal patients within the scope of practice of neonatal nurse practitioners. The student is expected to apply the concepts and theories discussed in class to the care of neonatal patients during the clinical course taken in conjunction with this course. The following elements are integrated into this course: critical thinking, health promotion and disease prevention, research, ethics, cultural diversity, and social issues. Prerequisite: NUR 612. 4 credit hours. (online)

NNE 622. Advanced Neonatal Nursing II - 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. 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 as a neonatal nurse practitioner. 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. Prerequisite: NNE 621. 4 credit hours. (online)

NNE 623. Advanced Neonatal Nursing III - This course provides a theoretical and practical base for students to diagnose and manage health problems common to the neonatal client and the child under two years of age that primarily or secondarily affect multiple organ systems. The student will gain practice prioritizing these problems when planning care. Procedures, techniques and equipment used in the diagnoses and care of patients with these problems will be covered. Prerequisite: NNE 622. 3 – 4 credit hours. (online)

NNE 684L. Practicum I: Neonatal Nurse Practitioner - NNE 684L is the first of three 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 develop the Neonatal Nurse

Practitioner role in a primary care setting. Students and faculty cooperatively arrange clinical sites. Prerequisite: NNE 614. 1 credit hour. (online)

NNE 685L. Practicum II: Neonatal Nurse Practitioner - This course prepares the student in the Neonatal Nurse Practitioner role. The student develops the Neonatal NP role with patients/clients by providing neonatal 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, and includes interdisciplinary collaboration, coach, educator, and may include consultant. Students and faculty cooperatively arrange clinical sites. Prerequisite: NNE 621. 1 – 4 credit hours. (online)

NNE 686L. Practicum III: Neonatal Nurse Practitioner - 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. 1 – 3 credit hours. (online)

NNE 692L. Residency: Neonatal Nurse Practitioner – This course prepares the student in the Neonatal Nurse Practitioner role to be a beginning expert in the diagnosis and management of neonatal patient problems. In the residency, the student is expected to continue growth toward becoming an independent practitioner, specializing in the care of neonates. The student further develops the neonatal nurse practitioner role with patients/clients by providing neonatal health care services to clients (i.e. individuals, families, groups), emphasizing the promotion of health and 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 responses to disease. 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 continues the trajectory of the nurse practitioner experience from novice to beginning expert, and includes role components such as interdisciplinary collaborator, coach, educator, and consultant. 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: NNE 623 and NNE 686L. 1 – 6 credit hours. (online)

NNI 621. Conceptual Basis for Informatics Practice - 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. 3 credit hours. (online)

NNI 622. The Information System Life Cycle - 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. 3 credit hours. (online)

NNI 685L. Nursing Informatics: Practicum I - 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. 3 credit hours. (online)

NNI 686L. Nursing Informatics: Practicum II - 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. 2 credit hours. (online)

NNS 630. Advanced Neuroscience Nursing - This course emphasis is placed on integration of knowledge from the neuroscience and knowledge from general pathophysiology with insights gained through clinical experience. NNS 630 add to student's theoretical base for managing disorders related to episodic and chronic dysfunction of the neurosystem. Emphasis is placed on knowledge of neuroscience underlying the role of the nurse practitioner clinical nurse specialist. This course is also designed to provide students with opportunities to integrate knowledge of ethical issues and future trends into advanced neuroscience nursing practice.

3 credit hours. (online)

NOM 611. Creativity, Resources and Problem Solving Tools for Health Care Quality - This course provides an introduction to concepts, theories/schools of thought, and resources in the areas of outcomes measurement and quality management; addresses systems thinking, creativity, and quality/problem solving tools. Admission to the MSN Program or permission for course instructor. 2 credit hours. (online)

NON 630. Advanced Adult Oncology Nursing – This course provides a theoretical base for students to diagnose and manage acute oncology health problems of adults. Emphasis is placed on integration of knowledge of pathophysiology, clinical assessment, and nursing and medical management. 3 credit hours. Taught only if sufficient students indicate interest. (online)

NPA 626. Palliative Care for Advanced Nursing Practice I - 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. 3 credit hours. (online)

NPA 627. Palliative Care for Advanced Nursing Practice II - 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. 3 credit hours. (online)

NPA 685L. Practicum: Culturally Competent Palliative Care Nurse Practitioner I - 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 the 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. Students arrange their own clinical sites with assistance/approval from clinical faculty. 1 – 3 credit hours. (online)

NPA 686L. Practicum: Culturally Competent Palliative Care Nurse Practitioner II - 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. 1 – 3 credit hours. (online)

NPA 692L. Residency: Culturally Competent Palliative Care Nurse Practitioner - 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. 2 – 6 credit hours. (online)

NPE 613. Primary Care Pediatric Pharmacology - 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. 1 credit hour. (online)

NPE 621. Advanced Pediatric Nursing I - This course provides a theoretical and practical base for students to diagnose and manage health problems of children. Content includes management strategies from the domains of nursing, medicine, and pharmacological therapeutics, and emphasizes direct care to clients. This course utilizes a lecture/discussion and case study format to assist the student in the clinical assessment and decision-making to provide direct patient care to pediatric patients within the scope of practice of pediatric nurse practitioners. The student is expected to apply the concepts and theories discussed in class to the care of pediatric patients during the clinical course taken in conjunction with this course. The following elements are integrated into this course: critical thinking, health promotion and disease prevention, research, ethics, cultural diversity, and social issues. Prerequisite: NUR 614L. 4 credit hours. (online)

NPE 622. Advanced Pediatric Nursing II - 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. 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 as a pediatric nurse practitioner. 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.
Prerequisite: NPE 621 and NPE 685L. 4 credit hours. (online)

NPE 623. Advanced Pediatric Nursing III – This course expands the student's theoretical and practical base in diagnosing and managing health problems of children and adolescents. Content includes management strategies from the domains of nursing, medicine, and pharmacological therapeutics, and emphasizes direct care to clients. This course utilizes study modules, guided readings and a case study format to assist the student in the clinical assessment and decision-making to provide direct patient care to pediatric patients within the scope of practice of pediatric nurse practitioners. The student is expected to apply the concepts and theories discussed in class to the care of pediatric patients during the clinical course taken in conjunction with this course. The following elements are integrated into this course: critical thinking, health promotion and disease prevention, research, ethics, cultural diversity, and social issues. Prerequisite: NPE 622 and NPE 686L. 4 credit hours. (online)

NPE 685L. - Practicum I: Pediatric Nurse Practitioner - This course prepares the student in the Pediatric Nurse Practitioner role. The Student develops the Pediatric Nurse Practitioner 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. An on-campus intensive will include case scenarios in the simulation lab with the SimBaby. Students arrange their own clinical sites with assistance/approval from clinical faculty. Corequisite: NPE 621. 1 - 3 credit hours. (online)

NPE 686L. Practicum II: Pediatric Nurse Practitioner - This course prepares the student in the Pediatric Nurse Practitioner role. The student develops the Pediatric Nurse Practitioner 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. An on-campus intensive will include case scenarios in the simulation lab with the SimBaby. Performance during this intensive will determine if the student can progress into 6 hours of the final residency course. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NPE 685L. 1 – 3 credit hours. (online)

NPE 692L. Residency: Pediatric Nurse Practitioner - 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 growth toward becoming an independent practitioner, specializing in the care of children. The student further develops the pediatric nurse practitioner 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 responses to disease. 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 continues the trajectory of the nurse practitioner experience from novice to beginning expert, and includes role components such as interdisciplinary collaborator, coach, educator, and consultant. An on-campus intensive will include case scenarios in the simulation lab with the SimBaby. 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: NPE 622 and NPE 686L. 1 – 6 credit hours. (online)

NPN 613. Psychopharmacology for Advanced Practice Nursing - 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. 3 credit hours (online)

NPN 621. Advanced Psychiatric Nursing I - This course provides a theoretical base for students to diagnose and manage psychiatric mental health problems of children, adolescents, and young adults. Content includes management strategies from the domains of nursing, medicine, and pharmacological therapeutics. The course uses a lecture/discussion and case study format to assist students in the clinical assessment and decision-making to provide direct patient care to patients within the scope of practice of family psychiatric nurse practitioners. Critical thinking, health promotion, disease prevention, research, coding, Healthy People 2010, and cultural diversity are integrated into the course. Prerequisite: NUR 600 and NUR 614L. 5 credit hours. (online)

NPN 622. Advanced Psychiatric Nursing II - This course provides a theoretical base for psychiatric nurse practitioner students to diagnose and manage psychiatric mental health problems of patients across the lifespan. Content includes management strategies from the domains of nursing, medicine, and pharmacological therapeutics. The course uses a lecture/discussion and problem based behavioral science case studies to assist students in the clinical assessment and decision-making to provide direct patient care to patients within the scope of practice of family psychiatric nurse practitioners. Critical thinking, health promotion, disease prevention, research, coding, Healthy People 2010, and cultural diversity are integrated into the course. Prerequisite: NPN 621 and NPN 685L. 4 credit hours. (online)

NPN 685L. Practicum I: Family Psychiatric Nurse Practitioner - NPN 685L allows the student to develop the family psychiatric nurse practitioner role by providing health care services to patients and emphasizing the health promotion and the disease prevention. Further, the student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include common psychiatric disorders. It is anticipated that the student will become increasingly independent and skilled as the clinical experience progresses. The following elements are integrated into the course: critical thinking, coding, 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 family psychiatric nurse practitioner from novice to beginning expert, and includes role components such as interdisciplinary collaborator, coach, educator, and consultant. Students arrange their own clinical sites with assistance/approval from clinical faculty. Corequisite: NPN 621. 3 credit hours. (online)

NPN 686L. Practicum II: Family Psychiatric Nurse Practitioner - NPN 686L allows the student to develop the family psychiatric nurse practitioner role by providing health care services to patients and emphasizing health promotion and the disease prevention. Further, the student continues to apply knowledge and current research findings to the management of actual and potential health problems, which include common psychiatric disorders. It is anticipated that the student will become increasingly independent and skilled as the clinical experience progresses. The following elements are integrated into the course: critical thinking, coding, 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 family psychiatric nurse practitioner from novice to beginning expert, and includes role components such as interdisciplinary collaborator, coach, educator, and consultant. An Objective Structured Patient Experience held during this course will determine if the student can progress into 6 hours of the final residency course. Students arrange their own clinical sites with assistance/approval from clinical faculty. Prerequisite: NPN 685L. Corequisite: NPN 622. 3 credit hours. (online)

NPN 692L. Residency: Family Psychiatric Nurse Practitioner - NPN 692L is the culminating experience for the student to practice in the role of a family psychiatric nurse practitioner. This course emphasizes the application of previously learned theories and knowledge from nursing and other disciplines to the continued development of clinical decision making skills. The student will implement the role of the family psychiatric nurse practitioner to manage the health care of clients (i.e., individuals, families, groups) in primary or acute care settings. 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: NPN 686L. 6 credit hours. (online)

NPP 685. Interdisciplinary Pediatric Pulmonary Care I – This course provides the trainee with the opportunity to analyze ideas, concepts and theories relative to the delivery of healthcare to pediatric pulmonary patients. Emphasis will be focused on the acquisition of in-depth knowledge of all aspects of the well child. Chronic respiratory disease is presented as the model to demonstrate the effects of chronic illness of the child and family. Trainees are introduced to basic respiratory anatomy and physiology, diagnostic procedures and various treatment modalities. Throughout the term, trainees will be expected to apply the knowledge and skills acquired to selected clinical assignments. 3 credit hours.

NPP 686. Interdisciplinary Pediatric Pulmonary Care II - NPP 686 provides the trainee with the opportunity to analyze ideas, concepts and theories relative to the delivery of healthcare to pediatric pulmonary patients. Emphasis will be focused on the acquisition for in-depth knowledge of all aspects of the well child. Chronic respiratory disease is presented as the model to demonstrate the effects of chronic illness on the child and family. Trainees are introduced to basic respiratory anatomy and physiology, diagnostic procedures and various treatment modalities. Throughout the term, trainees will be expected to apply the knowledge and skills acquired to selected clinical assignments. 3 credit hours.

NTC 650. Instructional Strategies For Teaching in Nursing - 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. 3 credit hours. (online)

NTC 652. Program and Curriculum Development - 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. 3 credit hours. (online)

NTC 654. Evaluation of Instruction in Nursing - 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. Prerequisite: 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. 3 credit hours. (online)

NTC 656. WebCT for Instructors and Designers - 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.

3 credit hours. This course is offered only when sufficient interest by students is generated. (online)

NTC 683L. Teaching Practicum in Nursing - 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.

1- 3 credit hours. (online)

NTC 692L. Residency: Nurse Educator - This course prepares the student in the educator role to be a beginning practitioner in nursing education. Under the supervision of qualified preceptors in the residency, students will have the opportunity to practice behaviors that will assist them to attain beginning expertise in nursing education. Students will apply knowledge learned in their area of specialization, content from support courses in teaching and evaluation and research related to the best practices in nursing education. 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. 3 – 6 credit hours. (online)

NUR 501. Foundations of Professional Nursing - NUR 501 focuses on the practice of professional nursing as an evidence-based, goal-directed activity for assisting patients to achieve optimal health by meeting basic human needs, providing holistic care, and engaging in health promotion. Concepts of communication, interpersonal relationships, and nursing process as clinical decision-making strategies are introduced. Chronic and long-term internal and external environmental variables that affect the health of adults are explored. The professional roles of caregiver and advocate are developed in diverse learning experiences. Admission to the School of Nursing is required. 3 credit hours.

NUR 502L. Foundations of Clinical Practice - In this practicum component of Foundations of Professional Nursing, students are guided in the application of content studied in the theoretical portion of the course. Competencies needed by the nurse generalist in the care of adult patients are introduced and practiced. Critical thinking and clinical decision-making skills utilized by the nurse caregiver are emphasized in diverse health care settings. 3 credit hours.

NUR 503. Nursing Care of Older Adults - NUR 503 focuses on the unique needs of older adult patients who require nursing care in a variety of healthcare settings. The older adult as a heterogeneous, holistic person is emphasized in light of current and future health care needs. Concepts of healthy aging and care in the preventive, restorative, acute, and chronic domains are explored. The professional role of the nurse as advocate is developed in diverse learning activities. Prerequisite: NUR 505, NUR 506L, NUR 507, NUR 508L and NUR 513. 3 credit hours.

NUR 504L. Concepts and Skills for Professional Nursing - NUR 504L provides basic nursing skills that will form the foundation for more complex knowledge and skills in subsequent nursing courses. Current nursing trends, legal, ethical (e.g., confidentiality, documentation), quality, safety, and health

concepts are reinforced throughout the course. The role of caregiver is presented as an integral part of the health care team. Learning experiences occur in the nursing skills laboratory. Although knowledge and skills in this course are focused on the adult population, many of the concepts are transferable to care of patients across the lifespan. Admission to the School of Nursing is required. 2 credit hours.

NUR 505. Nursing Care of Adults - NUR 505 focuses on patients across the adult lifespan who require nursing care in chronic and acute health care settings. Internal and external environmental variables that have implications for interventions that promote risk reduction and health are examined. Emphasis is placed on evidence-based clinical decision-making in promoting health, meeting physiological needs, and providing holistic care during illness and at end of life. The professional roles of the nurse are further developed in increasingly complex learning experiences. Prerequisite: NUR 501, NUR 502L, NUR 504L, NUR 512 and NUR 514L. 4 credit hours.

NUR 506L. Clinical Practice With Adult Patients - In this practicum, students apply content learned in the companion theory course, NUR 505 Nursing Care of Adults. Competencies needed by the nurse generalist in the care of adult patients are developed in increasingly complex learning experiences. Critical thinking, clinical decision-making, and leadership skills utilized by the nurse caregiver in a variety of health care settings are emphasized. Prerequisite: NUR 501, NUR 502L, NUR 504L, NUR 512 and NUR 514L. 4 credit hours.

NUR 507. Promoting Healthy Childbearing and Childrearing Families - NUR 507 focuses on the practice of professional nursing as an evidence-based, goal-directed activity for assisting childbearing and childrearing families to achieve optimal health by meeting basic human needs, providing holistic care, and engaging in health promotion. Concepts of communication, interpersonal relationships, and nursing process as a clinical decision-making strategy are reinforced. Chronic and acute internal and external environmental variables that affect the health of women during pregnancy, neonates, children, and adolescents are explored. The professional roles of caregiver and educator are developed in diverse learning experiences. Prerequisite: NUR 501, NUR 502L, NUR 504L, NUR 512 and NUR 514L. 3 credit hours.

NUR 508L. Clinical Practice with Childbearing and Childrearing Families - : In this practicum, students apply content learned in the companion theory course, NUR 507 Promoting Healthy Childbearing and Childrearing Families. Competencies needed by the nurse generalist in the care of childbearing and childrearing families are developed in increasingly complex learning experiences. Critical thinking, clinical decision-making, and leadership skills utilized by the nurse caregiver in primary and secondary healthcare settings are emphasized. NUR 501, NUR 502L, NUR 504L, NUR 512 and NUR 514L. 3 credit hours.

NUR 509. Nursing in Communities - In this theory course, students will analyze theories, processes, issues, demographic data, and epidemiological trends that affect population aggregates within communities. Emphasis is on increasing knowledge of professional roles to promote nursing care focused on illness and injury prevention, health promotion, health maintenance, health education and coordination of care for aggregate groups in diverse community settings. Prerequisite: NUR 505, NUR 506L, NUR 507, NUR 508L and NUR 513. 2 credit hours.

NUR 510L. Clinical Practice in Communities - In this practicum course, students will apply community and public health concepts in the care of individuals, families, groups, and communities in diverse clinical settings. Emphasis is on increasing knowledge of professional roles to promote nursing care focused on illness and injury prevention, health promotion, health maintenance, health education and coordination of care for aggregation groups in diverse community settings. Prerequisite: NUR 505, NUR 506L, NUR 507, NUR 508L and NUR 513. 2 credit hours.

NUR 511 (Course changed to NUR 515 effective Spring 2010). Psychiatric Mental Health Nursing - Content in NUR 511 will emphasize communication and therapeutic nursing interventions for patients experiencing mental disorders. 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 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. Prerequisite: NUR 612, NUR 505, NUR 506L, NUR 507 and NUR 508L. 2 credit hours.

NUR 512. Pathophysiology for the Advanced Generalist - NUR 512 is designed to provide the student with an opportunity to build upon existing knowledge of basic physiology. Emphasis is placed on the use of critical thinking to apply physiologic principles in explaining adaptations to pathogenic changes in the systems discussed. Admission to the School of Nursing is required. 3 credit hours.

NUR 512L (Course changed to NUR 516L effective Spring 2010). Clinical Practice in Psychiatric Mental Health Nursing - This clinical course focuses on promotion, maintenance, and restoration of mental health of individuals and families. Clinical experiences provide students with opportunities to utilize skills in the therapeutic use of self, critical thinking, and nursing process with patients in psychiatric mental health clinical settings. Prerequisite: NUR 612, NUR 505, NUR 506L, NUR 507 and NUR 508L. 2 credit hours.

NUR 513. Pharmacology and Therapeutics for the Advanced Generalist - This course focuses on the analysis and utilization of principles of pharmacology, pharmacodynamics 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. Prerequisite: NUR 501, NUR 502L, NUR 504L, NUR 512 and NUR 514L. 3 credit hours

NUR 513 (Course changed to NUR 517 effective Spring 2010). Leadership in Professional Nursing - 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. Students assimilate the above information to use as a basis for practicing the leadership role in the companion residency course. Prerequisite: NUR 612, NUR 505, NUR 506L, NUR 507 and NUR 508L. 2 credit hours.

NUR 514L. Health Assessment for the Advanced Generalist - This course is designed to provide the advanced generalist nursing student with the skills and knowledge to support critical thinking and diagnostic reasoning while conducting health assessments and planning nursing care for holistic, adaptive human beings across the lifespan. The following elements are integrated into the course: critical thinking, scientific integrity and ethics, human diversity, and social issues. Admission to the School of Nursing is required. 4 credit hours.

NUR 514L (Course changed to NUR 518L effective Spring 2010). Synthesis Practicum in Nursing - This course focuses on direct and indirect clinical performance in the areas of nursing process and leadership, evidence-based practice, and the demonstration of professional nursing role behavior as the transition is made from student role to practicing nurse professional. Prerequisite: NUR 612, NUR 505, NUR 506L, NUR 507 and NUR 508L. 5 credit hours.

NUR 515. Psychiatric-Mental Health Nursing - Content in NUR 515 will emphasize communication and therapeutic nursing interventions for patients experiencing mental disorders. 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 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. Prerequisite: NUR 505, NUR 506L, NUR 507, NUR 508L and NUR 513. 2 credit hours.

NUR 516L. Clinical Practice in Psychiatric-Mental Health Nursing - This clinical course focuses on promotion, maintenance, and restoration of mental health of individuals and families. Clinical experiences provide students with opportunities to utilize skills in the therapeutic use of self, critical thinking, and

nursing process with patients in psychiatric mental health clinical settings. Prerequisite: NUR 505, NUR 506L, NUR 507, NUR 508L and NUR 513. 2 credit hours.

NUR 517. Leadership in Professional Nursing - 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. Students assimilate the above information to use as a basis for practicing the leadership role in the companion residency course. Prerequisite: NUR 505, NUR 506L, NUR 507, NUR 508L and NUR 513. 2 credit hours.

NUR 518L. Synthesis Practicum in Nursing - This course focuses on direct and indirect clinical performance in the areas of nursing process and leadership, evidence-based practice, and the demonstration of professional nursing role behavior as the transition is made from student role to practicing nurse professional. Prerequisite: NUR 505, NUR 506L, NUR 507, NUR 508L and NUR 513. 5 credit hours.

NUR 533. Spirituality in Health Care - 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. 3 credit hours.

NUR 534. Living With Loss - 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. 3 credit hours.

NUR 600. Research and Statistics for Advanced Practice - 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: Undergraduate statistics. 4 credit hours. (online)

NUR 601. Role Development for Advanced Nursing Practice - 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. 3 credit hours. (online)

NUR 602. Issues Affecting Advanced Nursing Practice - 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. 3 credit hours. (online)

NUR 609. Radiology for Advanced Practice - 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. 3 credit hours. (online)

NUR 611. Management of Diabetes Mellitus (Type 1 and 2) - 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. 3 credit hours. (online)

NUR 612. Advanced Pathophysiology - 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. 3 credit hours. (online)

NUR 613. Pharmacology and Therapeutics - This course focuses on analysis and utilization of principles of pharmacology and pharmacokinetics for the purpose of planning, implementing, and evaluating therapeutics pharmacological interventions. The unique characteristics of special populations related to therapeutic needs, as well as drug absorption, metabolism, and excretion, are defined. 3 credit hours. (online)

NUR 614L. Assessment and Diagnostic Reasoning for Advanced Nursing Practice - 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.

Prerequisite/Corequisite: NUR 612. 4 hours. (online)

NUR 615. Sexuality Issues in Health and Illness: A Lifespan Approach - This course includes the ethical, social, biological, and psychological concepts of human sexuality. 3 credit hours.

NUR 616. Diagnostic and Therapeutic Procedure for Advanced Nursing Practice - This course is designed to provide the student with opportunities to learn advanced clinical skills and diagnostic or therapeutic procedures related to the role of the nurse practitioner such as suturing, x-ray interpretation, urinalysis, interpretation of laboratory values, and microscopic evaluation of selected specimens. 1 credit hour.

NUR 618L. Clinical Diagnostic Reasoning - 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. 3 credit hours. (online)

NUR 619. Health Issues in Culturally Diverse Populations in the United States - This course provides students with an overview of health issues and health disparities confronting African American and Latinos 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. 3 credit hours. (online)

NUR 630. Principles of Epidemiology - 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. 3 credit hours. (online)

NUR 633. Growth and Development - 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. 3 credit hours. (online)

NUR 642. Health Education and Social Welfare in a Global Community - 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. 3 credit hours.

NUR 643. Introduction to Nursing Informatics - 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. 3 credit hours. (online)

NUR 644. Principles of Developmental Care Newborn Infants - 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. 3 credit hours. (online)

NUR 667. Psychosocial Aspects of Evidence-Based Practice in Chronic Illness - 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. 3 credit hours.

NUR 670. Occupational Health Management Principles - This course provides the student with a working knowledge of management topics specific to planning, directing, and evaluating occupational health services. 1 credit hour. (online)

NUR 671. Principles and Practice of Occupational Toxicology and Disease - 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. 3 credit hours. (online)

NUR 674L. Evaluation and Management of Occupational Health and Safety Programs – 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. 3 credit hours. (online)

NUR 686. Honors Seminar III - 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. 3 credit hours.

NUR 690. Independent Study in Nursing - Course allows concentration on a selected topic of interest relevant to the Program of Studies. 1 - 6 credit hours. (online)

NUR 691. Independent Study in Clinical Nursing - 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. 1 - 6 credit hours. (online)

NUR 698. Research Practicum - : 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. 1 - 2 credit hours.

NUR 699. Thesis Research - 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 candidates' 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. 1 – 4 credit hours.

NWH 631 Women's Health for Advanced Nursing Practice I This is a required theory course for students in the combined Primary Adult/Women's Health nurse practitioner specialty and will be applied in the required clinical courses. It also may be taken as an elective by students in other master's specialties with the permission of the instructor. In this course, students acquire knowledge that is relevant to the specific nursing and medical management of the health of women. The course is designed to provide students with the opportunity to integrate knowledge of the diagnosis and management of women's primary care health concerns with 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 the

population of women in required clinical courses. Concepts are covered which are specific to caring for the uncomplicated gynecologic and/or obstetric needs of women from menarche to the end of life. Health promotion and disease prevention, and recognition of deviations from normal are incorporated. Content includes management strategies from the domains of nursing and medicine, pharmacological therapeutics, and direct care within the scope of practice of women's health nursing. 3 hours (online)

NWH 632 Women's Health for Advanced Nursing Practice II This is the second of two required theory courses for students in the Nurse Practitioner Dual Adult/Women's Health primary care specialty. Knowledge acquired in NUR 614L and NWH 631 provides a foundation for the management of the care of women with increasingly complex health problems. NWH 632 is designed to expand the foundation of theoretical knowledge for the nurse practitioner and prepare the student for full scope of practice in a clinical residency. Prerequisite: NWH 631 and NWH 685L. 3 hours (online)

NWH 685L. Practicum I: Women's Health Nurse Practitioner - This course prepares the student in the Women's Health Nurse Practitioner role. The student develops the Women's Health Nurse Practitioner role with patients/ clients by providing 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, and includes interdisciplinary collaboration, coach, educator, and may include consultant. The student and faculty cooperatively determine clinical sites for the practicum. 1 – 3 credit hours. (online)

NWH 686L. Practicum II: Women's Health Nurse Practitioner - NWH 686L prepares the student in the women's health nurse practitioner role. In practicum II, the student continues to develop the WHNP role with patients/clients by providing primary health care services to clients (i.e., individuals, families, and 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. An Objective Structured Patient Experience held during this course will determine if the student can progress into 6 hours of the final residency course. The student and faculty cooperatively determine clinical sites for the practicum. Prerequisite: NWH 685L. 1 – 3 credit hours.

NWH 692L. Residency: Women's Health Nurse Practitioner - This course prepares the student in the Women's Health Nurse Practitioner role to be a beginning expert in the diagnosis and management of women's health problems. In the residency, the student is expected to continue growth toward becoming an independent practitioner, specializing in the care of women. The student further develops the Women's Health NP role with patients/clients by providing 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 responses to disease. 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 continues the trajectory of the nurse practitioner experience from novice to beginning expert, and includes role components such as interdisciplinary collaborator, coach, educator, and consultant. A comprehensive examination is given during this residency course. Failure to pass the comprehensive examination will delay graduation. The student and faculty cooperatively determine clinical sites for the practicum. Prerequisite: NWH 622. 3 - 6 credit hours.

UAB School of Nursing Graduate Programs of Study

Doctor of Philosophy in Nursing (PhD)

Coursework Prior to Dissertation:

In addition to the total of 6 credits of Research Practicum, scheduled in any combination of credits (1-6) during these terms and the substantive area credits (12), the following courses are required. An additional 15 credits of master's level coursework is required for those in the Post-Baccalaureate PhD option.

	Credit Hours
Fall Year - I	
Theory Building in Nursing	4
Applied Statistical Analysis Techniques	4
Quantitative Research Methods	3
Spring Year - I	
Linear Models for Clinical Nursing Research	3
Qualitative Research Methods	4
Summer Year - I	
Responsible Conduct of Research	2
Summer Intensive	1
Fall Year - II	
Designs for Nursing Studies I	3
Issues in Leadership and Health Policy	3
Spring Year - II	
Designs for Nursing Studies II	3

Time Frame:

The PhD in Nursing Science is designed to be completed in three to four years of full-time study. Part-time study may also be arranged within a planned program of study.

Doctor of Nursing Practice (DNP)

	Credit Hours
Course Work	
NUR 731: Philosophical, Theoretical and Conceptual Foundations for Advanced Practice Nursing	3

NUR 732: Design and Statistical Methods for Advanced Practice Nursing	3
NUR 740: Health Policy and Politics: Implications in Health Care	3
NUR 737: Interdisciplinary Leadership and Role Development for Practice Excellence	3
NUR 733: Informatics for Advanced Practice Nursing	3
NUR 735: Population Health in Advanced Practice Nursing	3
NUR 738: Scholarly Developmental Seminar	2
N____: Elective	3
NUR 736: Application of Best Practices	4
NUR 739: Scholarly Project	7

[**The Accelerated Master's Entry to Nursing Pathway \(AMNP\)**](#)

	Credit Hours
Summer – Year I	
NUR 512: Pathophysiology	4
NUR 514: Health Assessment	3
NUR 501: Foundations of Professional Nursing	3
NUR 504L: Concepts and Skills for Professional Nursing	2
NUR 502L: Foundations of Clinical Practice	3
Fall – Year I	
NUR 513: Pharmacology and Therapeutics	4
NUR 505: Nursing Care of Adults	3
NUR 507: Promoting Healthy Childbearing and Childrearing Families	3
NUR 506L: Clinical Practice with Adult Patients	4
NUR 508L: Clinical Practice with Childbearing and Childrearing Families	3
Spring – Year I	
NUR 509: Nursing in Communities	2
NUR 510L: Clinical Practice in Communities	2

NUR 515: Psychiatric Mental Health Nursing	2
NUR 516L: Clinical Practice in Psychiatric Mental Health Nursing	2
NUR 503: Nursing Care of Older Adults	3
NUR 517: Leadership in Professional Nursing	2
NUR 518L: Synthesis Practicum in Nursing	5
Summer – Year II	
NUR 600: Research Design and Inferential Statistics	4
NUR 643: Nursing Informatics	3
Fall – Year II – Begin Advance Specialty	Specialty Dependent

The Master of Science in Nursing (MSN)

NURSE PRACTITIONER ADULT ACUTE AND CONTINUING CARE - Distance Accessible

Course Work	Credit Hours
NUR 600 Research and Statistics for Advanced Practice	4
NUR 601 Role Development for Advanced Nursing Practice	3
NUR 602 Issues Affecting Advanced Nursing Practice	3
NUR 612 Advanced Pathophysiology	3
NUR 613 Pharmacology and Therapeutics	3
NUR 614 Assessment and Diagnostic Reasoning for Advanced Practice Nursing	4
NCA 616 Diagnostic and Therapeutic Procedures I	1
NCA 621 Advanced Adult Acute Care Nursing I	4
NCA 617 Diagnostic and Therapeutic Procedures II	1
NCA 622 Advanced Adult Acute Care Nursing II	3
NCA 685 Practicum I: Adult Acute Care Nurse Practitioner	3
NCA 623 Advanced Adult Acute Care Nursing III	3

NCA 686	Practicum II: Adult Acute Care Nurse Practitioner	3
NCV 631	Electrocardiography for Advanced Practice	3
NCA 692	Residency: Adult Acute Care Nurse Practitioner	6
Total		46

NURSE PRACTITIONER ADULT PRIMARY CARE - Distance Accessible

Course Work	Credit Hours
NUR 600 Research and Statistics for Advanced Practice	4
NUR 601 Role Development for Advanced Nursing Practice	3
NUR 602 Issues Affecting Advanced Nursing Practice	3
NUR 612 Advanced Pathophysiology	3
NUR 613 Pharmacology and Therapeutics	3
NUR 614 Assessment and Diagnostic Reasoning for Advanced Practice Nursing	4
NAH 621 Advanced Adult Nursing I	4
NAH 685 Practicum I: Adult Nurse Practitioner	3
NAH 622 Advanced Adult Nursing II	4
NAH 686 Practicum II: Adult Nursing Practitioner	3
NAH 692 Residency: Adult Nurse Practitioner	6
Total	40

Nurse Practitioner Dual Adult/Women's Health - Distance Accessible

Course Work	Credit Hours
NUR 600 Research and Statistics for Advanced Practice	4
NUR 601 Role Development for Advanced Nursing Practice	3
NUR 612 Advanced Pathophysiology	3
NWH 614 Assessment and Diagnostic Reasoning for Advanced Practice	4
NUR 613 Pharmacology and Therapeutics	3

NWH 621	Advanced Women's Health Nursing I	4
NWH 685	Practicum I: Women's Health Care Nurse Practitioner	3
NWH 622	Advanced Women's Health Care II	4
NWH 686	Practicum II Women's Health Care Nurse Practitioner	3
NWH 631	Women's Health for Advanced Nursing Practice I	4
NUR 602	Issues Affecting Advanced Nursing Practice	3
NWH 692	Residency: Women's Health Care Nurse Practitioner	6
Total		53

NURSE PRACTITIONER ADULT / GERONTOLOGY PRIMARY CARE - Distance Accessible

Course Work	Credit Hours
NUR 600 Research and Statistics for Advanced Practice	4
NUR 601 Role Development for Advanced Nursing Practice	3
NUR 602 Issues Affecting Advanced Nursing Practice	3
NUR 612 Advanced Pathophysiology	3
NUR 613 Pharmacology and Therapeutics	3
NUR 614 Assessment and Diagnostic Reasoning for Advanced Practice Nursing	4
NUR 614 Assessment and Diagnostic Reasoning for Advanced Practice	4
NAH 621 Advanced Adult Nursing I	4
NAH 685 Practicum I: Adult Nurse Practitioner	2
NGN 632 Gerontology for Advanced Nursing Practice	3
NGN 685 Practicum I: Gerontological Nurse Practitioner	2
NAH 622 Advanced Adult Nursing II	4
NAH 686 Practicum II: Adult Nurse Practitioner	2
NGN 686 Practicum II: Gerontological Nurse Practitioner	2

NAH 692	Residency: Adult Nurse Practitioner	6
NGN 692	Residency: Gerontological Nurse Practitioner	1
NGN 631	Gerontology for Advanced Nursing Practice	3
Total		49

NURSE PRACTITIONER FAMILY PRIMARY CARE - Distance Accessible

Course Work		Credit Hours
NUR 600	Research and Statistics for Advanced Practice	4
NUR 601	Role Development for Advanced Nursing Practice	3
NUR 602	Issues Affecting Advanced Nursing Practice	3
NUR 612	Advanced Pathophysiology	3
NUR 613	Pharmacology and Therapeutics	3
NUR 614	Assessment and Diagnostic Reasoning for Advanced Practice Nursing	4
NFH 621	Advanced Family Nursing I	5
NFH 685	Practicum I: Family Nurse Practitioner	3
NFH 622	Advanced Family Nursing II	4
NFH 686	Practicum II: Family Nurse Practitioner	3
NFH 692	Residency: Family Nurse Practitioner	6
Total		41

NURSE PRACTITIONER NEONATAL CARE - Distance Accessible

Course Work		Credit Hours
NUR 600	Research & Statistics for Advanced Practice	4
NUR 601	Role Development for Advanced Nursing Practice	3
NUR 602	Issues Affecting Advanced Nursing Practice	3
NUR 612	Advanced Pathophysiology	3
NNE 614	Assessment & Diagnostic Reasoning for Advanced Practice	4

NNE 613	Neonatal Pharmacology and Therapeutics	3
NNE 621	Advanced Neonatal Nursing I	4
NUR 637	Genetics elective (optional)	3
NNE 684	Practicum I: Neonatal Nurse Practitioner	1
NNE 622	Advanced Neonatal Nursing II	4
NNE 685	Practicum: Neonatal Nurse Practitioner	3
NUR 644	Developmental Care elective (optional)	3
NUR 619	Health Issues of African Americans and Latinos (optional)	3
NNE 623	Advanced Neonatal Nursing III	3
NNE 686	Practicum: Neonatal Nurse Practitioner	3
NNE 692	Residency: Neonatal Nurse Practitioner	6
Thesis (optional)		6
Total Required		44

NURSE PRACTITIONER PEDIATRICS PRIMARY CARE - Distance Accessible

Course Work	Credit Hours
NUR 600 Research and Statistics for Advanced Practice	4
NUR 601 Role Development for Advanced Nursing Practice	3
NUR 602 Issues Affecting Advanced Nursing Practice	3
NUR 612 Advanced Pathophysiology	3
NUR 613 Pharmacology and Therapeutics	3
NUR 614 Assessment and Diagnostic Reason for Advanced Nursing Practice	4
NPE 613 Primary Care Pediatric Pharmacology	1
NPE 621 Advanced Pediatric Nursing I	5
NPE 685 Practicum I: Pediatric Nurse Practitioner	3
NUR 633 Growth and Development	3

NPE 622	Advanced Pediatric Nursing II	5
NPE 686	Practicum II: Pediatric Nurse Practitioner	3
NPE 692	Residency: Pediatric Nurse Practitioner	6
Total		45

NURSE PRACTITIONER PEDIATRIC ACUTE AND CONTINUING CARE - Distance Accessible

Course Work	Credit Hours
NUR 600 Research and Statistics for Advanced Practice	4
NUR 601 Role Development for Advanced Nursing Practice	3
NUR 602 Issues Affecting Advanced Nursing Practice	3
NUR 613 Pharmacology and Therapeutics	3
NUR 613 Pharmacology and Therapeutics	3
NUR 614 Assessment and Diagnostic Reasoning for Advanced Practice Nursing	4
NCC 613 Acute and Continuing Care Pediatric Pharmacology	1
NCC 621 Child/Adolescent Advanced Nursing I: Acute and Continuing Care	5
NCC 685 Child/Adolescent Acute and Continuing Care PNP Practicum I	3
NUR 633 Growth and Development	3
NCC 622 Child/Adolescent Advanced Nursing II: Acute and Continuing Care	5
NCC 686 Child/Adolescent Acute and Continuing Care PNP Practicum II	3
NCC 692 Residency: Child/Adolescent Acute and Continuing Care PNP	6
Total	46

Nurse Practitioner Psychiatric-Mental Health Primary Care - Distance Accessible

Course Work	Credit Hours
NUR 600 Research and Statistics for Advanced Practice	4
NUR 612 Advanced Pathophysiology	3
NUR 614 Assessment and Diagnostic Reasoning for Advanced Practice	4

NPN 621	Advanced Psychiatric Nursing I	5
NPN 685	Practicum: Psychiatric Nurse Practitioner	3
NUR 613	Pharmacology and Therapeutics	3
NPN 622	Advanced Psychiatric Nursing II	4
NPN 686	Practicum II: Psychiatric Nurse Practitioner	3
NUR 601	Role Development in Advanced Nursing Practice	3
NPN 692	Residency: PMH Nurse Practitioner	6
NUR 602	Issues Affecting Advanced Nursing Practice	3
Total		41

NURSE PRACTITIONER DUAL ADULT / REGISTERED NURSE FIRST ASSIST - Distance Accessible

	Course Work	Credit Hours
NUR 600	Research and Statistics for Advanced Practice	4
NUR 612	Advanced Pathophysiology	3
NUR 614	Assessment and Diagnostic Reasoning for Advanced Practice Nursing	4
NFA 620	Surgical Techniques	3 - 4
NUR 601	Role Development for Advanced Nursing Practice	3
NUR 613	Pharmacology and Therapeutics	3
NCA 621	Advanced Adult Acute Care Nursing I	4
NFA 621	Advanced Perioperative Nursing I	3
NCA 622	Advanced Adult Acute Care Nursing II	3
NCA 685	Practicum I: Adult Acute Care Nurse Practitioner	3
NFA 622	Advanced Perioperative Nsg Practicum I	1
NUR 602	Issues Affecting Advanced Nursing Practice	3
NCA 623	Advanced Adult Acute Care Nursing III	3
NCA 686	Practicum II: Adult Acute Care Nurse Practitioner	3

NFA 622	Advanced Perioperative Nsg Practicum I	1
NCA 692	Residency: Adult Acute Care Nurse	6
NFA 622	Advanced Perioperative Nsg Practicum I	1
Total		51 - 52

[**Post MSN RNFA or Post BSN certificate program - Distance Accessible**](#)

Course Work	Credit Hours
NFA 620 Surgical Techniques	3 - 4
NFA 621 Advanced Perioperative Nursing I	3
NFA 622 Advanced Perioperative Nursing 1 Practicum	1 - 3
Total	9 – 10

[**CLINICAL NURSE SPECIALIST NURSE EDUCATOR - Distance Accessible**](#)

Course Work	Credit Hours
NUR 600 Research and Statistics for Advanced Nursing Practice	4
NUR 612 Advanced Physiology and Pathophysiology	3
NTC 650 Instructional Strategies in Teaching Nursing	3
NUR 614 Assessment and Diagnostic Reasoning	4
NUR 613 Pharmacology and Therapeutics	3
NCA 621 Advanced Adult Acute Care Nursing I	4
NCS 685 Adult CNS Practicum I	2
NCS 616 Foundations of Clinical Nurse Specialist Practice	1
NTC 652 Curriculum and Program Development	3
NCA 622 Advanced Adult Acute Care Nursing II	3
NCS 617 Phenomena of Concern to Advanced Practice Nurses	1
NUR 601 Role Development for Advanced Nursing Practice	3
NTC 654 Evaluation of Instruction	3

NUR 602	Issues Affecting Advanced Nursing Practice	3
NCA 623	Advanced Adult Acute Care Nursing III	3
NTC 692	Residency: Nurse Educator	3

[**PALLIATIVE CARE SECONDARY SPECIALIZATION - Distance Accessible**](#)

Course Work	Credit Hours
NUR 612 Advanced Pathophysiology	3
NUR 614 Assessment and Diagnostic Reasoning	4
NUR 600 Research and Statistics for Advanced Practice	4
N__ 621 Advanced ____ Nursing I	4 - 5
N__ 685 Practicum I: _____ Nursing	3
NUR 613 Pharmacology and Therapeutics	3
N__ 622 Advanced ____ Nursing II	3 – 5
N__ 686 Practicum II: _____ Nursing	3
NUR 601 Role Development	3
N__ 692 Residency _____	6
NUR 602 Issues in Advanced Nursing	3
NPA 626 Palliative Care for Advanced Nursing Practice I	3
NPA 685 Practicum I: Palliative Care for Advanced Nursing Practice	3
NPA 627 Palliative Care for Advanced Nursing Practice II	3
NPA 686 Practicum II: Palliative Care for Advanced Nursing Practice	3
NPA 692 Residency: Palliative Care for Advanced Nursing Practice	6
Total	57 - 60

[**CLINICAL NURSE SPECIALIST IN ADULT HEALTH - Distance Accessible**](#)

Course Work	Credit Hours
NUR 600 Research and Statistics for Advanced Practice	4

NUR 601	Role Development for Advanced Nursing Practice	3
NUR 602	Issues Affecting Advanced Nursing Practice	3
NUR 612	Advanced Pathophysiology	3
NUR 614	Assessment and Diagnostic Reasoning for Advanced Nursing Practice	4
NUR 613	Pharmacology and Therapeutics	3
NCA 621	Advanced Adult Acute Care Nursing I	4
NCS 616	Foundations of Clinical Nurse Specialist Practice	1
NCS 685	Practicum I: Clinical Specialization in Adult	2
NCA 622	Advanced Adult Acute Care Nursing II	3
NCS 686	Practicum II: Clinical Specialization in Adult	2
NCS 617	Phenomena of Concern to Advanced Practice Nurses	1
NCA 623	Advanced Adult Acute Care Nursing III	3
NCS 687	Practicum III: Clinical Specialization in Adult Nursing	2
NCS 692	Residency: Clinical Specialization in Adult Health Nursing	4
Total		42

NURSING AND HEALTH SYSTEMS ADMINISTRATION

Course Work		Credit Hours
NUR 600	Research and Statistics for Advanced Practice	4
NUR 601	Role Development for Advanced Nursing Practice	3
MBA 609 or HCO 615	Financial Accounting for Managers	3
NUR 602	Issues Affecting Advanced Nursing Practice	3
NUR 630	Principles of Epidemiology	3
MBA 632 or HA 631	Managerial Processes and Behavior	3
NHSA 620	Nursing and Health Service Administration I	3
NHSA 630	Health Services Marketing Management	3

NUR 643	Introduction to Nursing Informatics	3
NHSA 621	Nursing and Health Service Administration II	2
NHSA 685	Nursing and Health Systems: Practicum I	2
NOM 611	Creativity, Resources and Problem-Solving	2
NHSA 640	Nursing Economics	3
NHSA 622	Nursing and Health Service Administration III	2
NHSA 686	Nursing and Health Systems: Practicum II	4
Total		43

NURSING INFORMATICS

Course Work		Credit Hours
HI 585	Making the Computer Work for You: Introduction to BVA and Visual Basic	3
NUR 600	Research and Statistics for Advanced Practice	4
NUR 601	Role Development for Advanced Nursing Practice	3
NUR 602	Issues Affecting Advanced Nursing Practice	3
HI 600	Analysis and Design of Health Information Systems	4
HI 601	Databases and Data Modeling	4
MBA 618	Technology Based Project Management	3
MBA 610	Financial Reports and Analysis for Management	3
NUR 643	Introduction to Nursing Informatics	3
NNI 621	Conceptual Basis for Informatics Practice	3
NNI 685	Nursing Informatics Practicum I	2
MBA 632	Organizational Process and Behavior	3
NNI 622	The Information System Life-Cycle	3
NNI 686	Nursing Informatics Practicum II	2
Total		43

Nurse Anesthesia (M.N.A)

Degree Offered: M.N.A.
Director: Dr. Charles P. Kendrick
Phone: (205) 934-3209
E-mail: shpnaaa@uab.edu
Web site: www.uab.edu/mna

Faculty

Chad A. Epps, Assistant Professor (Anesthesiology)

Luc Frenette, Professor (Anesthesiology); Medical Director

Michael Humber, Assistant Professor (Nurse Anesthesia)

Charles Phillip Kendrick, Assistant Professor (Nurse Anesthesia)

Ingrid D. Oakley, Assistant Professor (Nurse Anesthesia)

E. Laura Wright, Assistant Professor (Nurse Anesthesia)

Program Information

The Nurse Anesthesia program prepares the registered nurse in all aspects of nurse anesthesia practice at the graduate level. The sequence of student coursework combines the knowledge of basic health sciences, scientific methodology in anesthesia, and advanced preparation to include a state-of-the-art scientific paper. Completion of the prescribed coursework and clinical practice comprise the requirements for the degree. The graduate is eligible to take the National Certification Examination, which, upon passing, allows them to practice as a certified registered nurse anesthetist.

The Nurse Anesthesia Program has received a ten-year accreditation in 2010 by the Council on Accreditation (COA) of Nurse Anesthesia Programs.

Council on Accreditation of Nurse Anesthesia Educational Programs
222. South Prospect Ave.
Park Ridge, IL, 60068
Phone: (847) 692-7050
Website: <http://www.aana.com/Credentialing.aspx>

Admission Requirements

Qualified candidates are graduates from an accredited registered nursing program with a baccalaureate degree in nursing or an appropriate science concentration. It is essential that all coursework towards a BS be completed by December prior to the start of anesthesia school the following August. Students 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. All sections of the GRE must be completed prior to application (Verbal Reasoning, Quantitative Reasoning, and Analytical Writing). Prerequisite courses must be completed by the September 1 deadline and include: Anatomy, physiology, microbiology, and chemistry. Due to the competitive nature, not all candidates that qualify will be invited for interviews. Those accepted will need to complete the UAB medical history questionnaire and physical, provide proof of required immunizations, and receive a satisfactory screening by the UAB

Medical Center Student Health Service. Please visit the website at www.uab.edu/mna for other helpful information.

CURRICULUM

The Master of Nurse Anesthesia Program begins in the fall semester of each year. It comprises 63 semester hours of didactic instruction and (52) 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.

Additional Information

Deadline for Entry Term(s):	Fall
Deadline for All Application Materials to be in the Nurse Anesthesia Office:	September 1
Number of Online Evaluation Forms Required:	Three
Entrance Tests	GRE or (TOEFL and TWE) also required for international applicants whose native language is not English.)
Comments	Additional application for admission is required by the program. September 1 deadline. Application materials must be submitted online to the Graduate School. Application material will be forwarded to the Nurse Anesthesia Program upon applicant's Graduate School acceptance.
Graduate Catalog Description	http://main.uab.edu/show.asp?durki=24916

For detailed information, contact Dr. Charles P. Kendrick, Program Director, Master of Nurse Anesthesia Program, UAB School of Health Professions, SHPB 442, 1530 3rd Avenue South, Birmingham, AL 35294-1212.

Telephone 205-934-3209

E-mail shpnaaa@uab.edu

Course Descriptions

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.

Nurse Anesthesia (NA)

NA 600Q Research Methods and Statistics. This online 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, measurements methods, descriptive statistics, and inferential statistics.
3 hours.

NA 601. Gross Anatomy. Structure and function of human body examined through laboratory dissection, lecture, models, and preceptorials. Laboratory sessions complement lecture presentations through regional dissection of thorax, abdomen, pelvis, perineum, back, and extremities with special emphasis on

head and neck. Emphasis on radiological anatomy and clinical correlations.
4 hours.

NA 605. Advanced Pathophysiology. This online course builds on basic anatomy, physiology and undergraduate study of pathophysiology. Students will integrate signs and symptoms, clinical testing, and pathophysiologic mechanisms with diagnoses.

3 hours

NA 610. Medical Physiology . This course will introduce the student to the fundamental and advanced concepts of medical physiology. Topics will include all major physiology systems with emphasis placed on those that are more pertinent to the practice of anesthesia.

5 hours

NA 620. Anesthesia Pharmacology I This course is designed to provide the nurse anesthesia student with knowledge of various non-anesthetic pharmacological agents and their anesthetic implications. This is accomplished through lectures, presentations, and reading assignments.

3 hours

NA 621. Anesthesia Pharmacology II This course is designed to provide the nurse anesthesia student with a basic pharmacologic foundation of medications used during an anesthetic. Included are the pharmacokinetics, pharmacodynamics, doses, side effects, uses and effects on various patient populations. This is accomplished through lectures, presentations, and reading assignments. 3 hours

NA 630. Biochemistry for Anesthetists. Chemistry and metabolism of biologically important compounds and common pathways of metabolism. Regulation and chemical structure of electrolytes, pH balance, and biochemical nutrition.

3 hours

NA 640. Principles. Principles and theories of anesthesia practice and also the study of basic principles and monitoring techniques as they relate to the delivery of anesthesia. Topics will include mechanisms of anesthesia equipment, methods of patient monitoring, fundamental concepts related to the practice of anesthesia , review of airway and various patient monitoring techniques that the student will need in order to provide anesthesia.

5 hours

NA 645. Professional Aspects. Psychosocial, ethical, and legal aspects, department organization and management and history of anesthesia.

2 hours

NA 646. Legal Issues & Practice Management. This online course review(s) the malpractice and quality assurance concerns in the practice of anesthesia. Emphasis on how to avoid malpractice suits through appropriate departmental quality assurance programs.

1 hour

NA 650. Regional Anesthesia. Commonly used regional techniques including spinals, epidurals, upper extremity blocks to include brachial plexus and bier blocks, and ankle blocks in relation to technique, positioning and pharmacology of local anesthetics

2 hours

NA 660. Obstetrical Anesthesia. Online course is of the basic concepts concerning physiological changes that accompany pregnancy and their implication on anesthesia management of pregnant patients

1 hour

NA 661. Anesthesia for Extremes of Age. This online course focuses on the principles of anesthetic management in the pediatric and geriatric patient.

3 hours

NA 670. Anesthesia Pathophysiology I. Detailed review of disease and major systems with emphasis on pulmonary and cardiovascular systems. Specialized or advanced anesthetic management techniques for physiological and pathological states encountered in surgical patient

3 hours

NA 671. Anesthesia Pathophysiology II. Continuation of NA 670 Major system emphasis on renal, endocrine, neurological, musculoskeletal, and gastrointestinal systems.

3 hours

NA 672, 673, 674, 675 and 676 Clinical Practicum I ,II, III, IV & V - Operating room experience providing for application of theoretical principles of anesthesia management. Clinical course sequence provides anesthesia care for more complex surgical procedures

672 (6 hours), 673 & 674 (12 hours each), 675 (11 hours), and 676 (10 hours)

NA 678. Advanced Electrocardiography. Supplements content from pathophysiology and advanced practice courses relative to cardiovascular electrophysiology and its implication in perioperative period. 2 hours

NA 680. Anesthesia and Surgical Specialties Review of major surgical specialties with emphasis on orthopedic, neurological, ENT, head and neck, gynecological, thoracic, open heart/vascular, urological, transplant and plastic procedures. Advanced anesthetic management technique for specialized surgical procedures.

3 hours

NA 698 Graduate Project. Plan, organize, synthesize and execute a state of the art paper on some relevant topic in anesthesia that meets the qualifications for submission to a peer reviewed journal. 2 hours

NA 695 - 697 Special Topics. Review of specialty concepts as presented in NA 670,671, and 680 (3 hours each).

Optometry

Vision Science (M.S., Ph.D.)

Degree Offered: Ph.D., M.S.

Director: Dr. Kent Keyser

Phone: (205) 975-7225

E-mail: rhart@uab.edu

Web site: www.visionscience.uab.edu

Faculty

Claudio Busettini, Assistant Professor (Vision Science); Eye movements

Champion C.S. Deivanayagam,

Roderick J. Fullard, Associate Professor (Vision Science); Corneal and Tear Biochemistry, Dry Eye

Paul D. R. Gamlin, Professor (Vision Science); Eye Movements, Pupillary Light Reflex

Timothy J. Gawne, Assistant Professor (Vision Science); Central Visual Processing

Alecia Gross, Assistant Professor (Vision Sciences); Rhodopsin mediated retinal degenerations, GPCR trafficking

Kent T. Keyser, Professor (Vision Science); Neurotransmitters and Receptors

Timothy W. Kraft, Assistant Professor (Ophthalmology); Retinal Photoreceptors and Color Vision

Michael Loop, Associate Professor (Vision Sciences)

Lisa F. Moses, Research Assistant Professor (Optometry)

Thomas T. Norton, Professor (Vision Science); Regulation of Ocular Development, Emmetropization, and Myopia

Steven J. Pittler, Professor (Vision Science); Photoreceptor Function in Health and Disease

Om P. Srivastava, Professor (Vision Science); Cataractogenesis

David Whikehart, Professor Emeritus (Vision Sciences)

Program Information

Envision yourself in a lab conducting cutting-edge research that may lead to improved treatments for glaucoma or cataract, gene therapy for blinding retinal diseases, or provide fundamental information on how the brain works so that we can see. Envision yourself using the knowledge and research skills you gain as a student to establish your own research lab, serve as a scientific advisor to governments or the military, or teach at the graduate or undergraduate level. These are just a few of the many possibilities available to graduates of the Vision Science Graduate Program.

Through basic, translational, or clinical research, the Vision Science Graduate Program offers opportunities to investigate all facets of vision, including (but certainly not limited to) visual neuroscience, the genetics of blinding diseases, visual perception, all areas of the eye and the visual regions of the brain using a variety of techniques, including functional brain and eye imaging. Our didactic courses provide fundamental knowledge about the biological bases of vision. Laboratory research provides intensive involvement with a faculty member and other students to prepare students for postdoctoral study or other research environments. We have the most up-to-date advanced equipment to address our research from many avenues of exploration to solve the most difficult problems. We actively foster unique inter- and intra-departmental laboratory collaborative efforts to exploit the full benefits of UAB's resources and explore students' full potential.

Admission and Financial Aid

Applications for admission to the graduate program in vision science are reviewed by the Graduate Admissions Committee. The committee looks at the applicants' scores in the Graduate Record Examination (GRE). A combined score of at least 1000 in the verbal and quantitative sections of the GRE

exam is required for the M.S. degree, and at least 1200 for the Ph.D. degree. Admission also requires undergraduate grades of at least a B average overall, and three letters of recommendation. Applicants should have a strong background in the biological, physical, or health sciences. Students with suitable foreign qualifications are welcome to apply, but must demonstrate a command of written and spoken English, in addition to a score of at least 570 on the TOEFL examination. Over the past fifteen years, 40% of the graduates of the program have been women. We continue to encourage qualified women and underrepresented minorities to apply.

M.S. Degree

Some students may wish to pursue graduate training at the master's level. Two calendar years are needed to complete the M.S. degree in vision science. 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 a research thesis by the conclusion of the final year.

Selected students in the UAB optometry professional program are encouraged to combine the O.D. degree with the M.S. degree in Vision Science. Financial assistance is available for qualified students. Potential candidates should have completed undergraduate degree in a biological, physical, or health science field.

Ph.D. Degree

The Ph.D. degree is based upon completion of graduate course work, a qualifying examination, research, and a dissertation and defense. There is considerable flexibility in the coursework for the Ph.D. in vision science.

Each student is required to take the first-year core curriculum (VIS 743 thru 748). Students then take three additional courses, selected by the student in consultation with the mentor, and a course in statistics. The program is flexible so that, for example, students who have interests in visual neuroscience may take courses in the neuroscience sequence: VIS 729, Introduction to Neurobiology; Cellular and Molecular Neurobiology; Integrative Neuroscience; and Developmental Neuroscience.

Other courses at a similar level can be substituted so that students can take maximum advantage of offerings in other programs. Individuals with clinical backgrounds will have an opportunity for clinical development. Students are also offered an opportunity to gain teaching experience.

Additional Information

Deadline for Entry Term(s):	Fall
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.)
Comments	None
Graduate Catalog Description	http://main.uab.edu/show.asp?durki=24933

For detailed information, contact the graduate program manager, Dr. Ramona Hart, UAB Department of Vision Science, WORB 618, 1530 3rd Ave S., Birmingham, AL 35294-4390 (office location: Worrell Building, Room 601A, 924 18th Street South).

Telephone 205-934-6743

E-mail rhart@uab.edu

Web www.visionscience.uab.edu

Course Descriptions

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.

Vision Science (VIS)

Core Curriculum

743. Optics and Imaging. 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.

744. Ocular Anatomy, Physiology & Biochemistry I. Anatomy of the eye. Biochemistry and physiology of ocular tissues, including tears, cornea, aqueous humor, lens, vitreous and sclera.

745. Ocular Anatomy, Physiology & Biochemistry II. Continued examination of ocular anatomy, biochemistry and physiology of the eye. **746. Retina and Subcortical Systems.** Retinal circuitry and receptive fields, including color coding, adaptation, circadian rhythms, parallel pathways, and development.

747. Central Visual Mechanisms I. Structure and function of geniculostriate parallel pathways, subcortical projections, and the oculomotor system.

748. Central Visual Mechanisms II. Analysis of the visual scene by cortical neurons, including temporal coding, motion detection, shape analysis, leading to visual perception.

Public Health

Public Health (including M.P.H., M.S.P.H., and Dr.P.H.)

[Master of Public Health \(M.P.H.\) Checklist](#)

Concentrations: Biostatistics

- Environmental Health/Toxicology
- Industrial Hygiene
- Accelerated Industrial Hygiene
- Industrial Hygiene/Hazardous Substance
- Occupational Health & Safety
- Epidemiology
- Health Behavior

Health Care Organization
Public Health Preparedness Management
General Theory & Practice
Health Policy
Maternal & Child Health Policy and Leadership
5th Year Fast Track

Master of Science in Public Health (M.S.P.H.) Checklist

Concentrations: [Epidemiology or Environmental Health](#)
[Clinical Research or Outcomes Research](#)

[Doctor of Philosophy \(Ph.D\) Checklist](#)

Concentrations: Biostatistics
Environmental Management & Policy
Environmental Health Research
Industrial Hygiene
Epidemiology
Health Education/Health Promotion

[Doctor of Public Health \(Dr.P.H.\) Checklist](#)

Concentrations: Public Health Management
Outcomes Research
Maternal and Child Health

[View PDF version of the Public Health catalog description](#)

MPH, MSPH, MS, DrPH, PhD

Degree Offered:

Phone: (205) 934-4993

E-mail: soph@uab.edu

Website: www.soph.uab.edu

In addition to the M.S. in Biostatistics, and the Ph.D. programs in Biostatistics, Environmental Health Sciences, Epidemiology, and Health Behavior (Health Education/Health Promotion) that are described in this catalog, several professional degree programs are offered through the School of Public Health. The Master of Public Health (M.P.H.) degree programs are Biostatistics, Environmental Health/Toxicology, Industrial Hygiene, Accelerated Industrial Hygiene, Occupational Health and Safety, Industrial Hygiene/Hazardous Substance, Epidemiology, Health Behavior, Health Care Organization and Policy, General Theory and Practice, Health Policy, Public Health Preparedness Management, Maternal & Child Health Policy and Leadership, and 5th Year MPH Fast Track. In addition, several joint degree programs are available that enable students to pursue two degrees simultaneously. These are the M.P.H.-M.D., M.P.H.-D.V.M. (Auburn), M.P.H.-Ph.D. (Psychology or Sociology at UAB), M.P.H.-M.B.A., M.P.H.-M.P.A., M.P.H.-J.D., M.P.H.-O.D., M.S.P.H.-Ph.D. (Psychology at UAB or the University of Alabama), M.P.H.-M.S.W., M.P.H.-M.S.N. The Master of Science in Public Health (M.S.P.H.) includes degree programs in Clinical Research, Environmental Health Toxicology, Epidemiology, and Outcomes Research. The Doctor of Public Health (Dr.P.H.) degree program options are Public Health Management, Outcomes Research, and Maternal and Child Health.

Additional Information

Deadline for Entry Term (s):	The deadline for submission of an application for admission for the MPH, MSPH, and DrPH degree programs in the School of Public Health is April 1 .
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	<u>PhD and MS degree application deadlines</u>
Terms of admission:	<p>· Master's students (MPH and MSPH) should plan to begin studies only in the fall semester of each year. Some programs allow spring admission.</p> <p>Doctoral students (DrPH) may apply for admission anytime but are strongly encouraged to matriculate in the fall.</p>
Entrance Test:	<u>Master's Degree Programs</u> <u>Doctoral Degree Programs</u>
International Transcripts:	<p>· International transcripts must be submitted to <u>World Education Services (WES)</u> or <u>Educational Credential Evaluators (ECE)</u> for an official course-by-course credential evaluation (document-by-document evaluations will not suffice). All WES or ECE evaluations are to be received by SOPHAS directly from WES <u>http://www.wes.org</u> or ECE <u>http://www.ece.org/</u>.</p>
Number of Evaluation Forms Required:	Three
School of Public Health Catalog:	<u>School Catalog</u>

For detailed information about the M.P.H., M.S.P.H., and Dr.P.H. programs, please consult the School of Public Health web site at <http://www.soph.uab.edu/> or visit the UAB School of Public Health, Ryals Public Health Building, Room 130, 1665 University Boulevard, Birmingham, AL 35294-0022.

Telephone 205-934-4993

E-mail: soph@uab.edu

Website: www.soph.uab.edu

Biostatistics (Ph.D., M.S., M.S.P.H.)

Degree Offered: M.P.H., M.S., M.S.P.H., Ph.D.

Director: *McClure*

Phone: (205) 934-4905

E-mail: bstgrad@uab.edu

Web site: <http://www.soph.uab.edu/bst>

Faculty

Inmaculada (Chichi) Aban, Ph.D. (Bowling Green State), Associate Professor. *Clinical Trials, Model Diagnostics, Survival and Reliability Analysis, Inference for Heavy Tailed Distributions.*

David B. Allison, Ph.D. (Hofstra), Professor and Head of the Section on Statistical Genetics. *Statistical Genetics, Obesity, Meta Analysis, Analysis of Clinical Trials Data, Applied Survival Analysis.*

Alfred A. Bartolucci, Ph.D. (SUNY, Buffalo), Professor. *Clinical Trials, Survival Analysis, Bayesian Statistics, Longitudinal Data Analysis.*

Timothy Mark Beasley, Ph.D. (Southern Illinois - Carbondale), Associate Professor. *Linear Models, Linkage and Association with Quantitative Traits, Nonparametric Methods, Microarray Analysis.*

Stacey S. Cofield, Ph.D. (Virginia Commonwealth), Associate Professor. *Mixed-Effects Models, Clinical Trial Design, Management, and Analysis, Out-of-Hospital Cardiac Arrest and Resuscitation.*

Xiangqin Cui, Ph.D. (Iowa State), Research Assistant Professor. *Microarray Analysis, Quantitative Trait Locus Analysis.*

Gary Cutter, Ph.D. (Texas Health Science Center - Houston), Professor and Head of the Section on Research Methods and Clinical Trials. *Clinical Trials and Community Studies Trial Analyses, Chronic Disease Epidemiology, Large Scale Data Bases, Multiple Sclerosis, Myasthenia Gravis and Neonatal Trials, Behavioral Studies.*

Gustava De Los Campos, Assistant Professor

Christine W. Duarte, Ph.D. (North Carolina State University), Assistant Professor. *Genetic Network Discovery, Systems Biology, Genetic Association Analysis, Bayesian Networks, Bioinformatics.*

Jose R. Fernandez, PhD., Associate Professor

Naomi Fineberg, Ph.D. (Boston University), Research Professor. *Small Medical Studies.*

George Howard, DrPH (North Carolina), Professor and Chair. *Design and Analysis of Multi-center Clinical Trials, Application of Statistical Methods in Epidemiological Studies, Linear Models.*

Suzanne E. Judd, Ph.D. (Emory), Assistant Professor. *Vitamin D, Longitudinal Cohort Studies, Cystic Fibrosis and Bone Health, Data Management.*

Nianjun Liu, Ph.D. (Yale), Associate Professor. *Genetic Linkage and Association Analysis, Disequilibrium Mapping, Population Genetics, Bioinformatics, Machine Learning Methods and Longitudinal Data Analysis and Their Applications in Genetics and Bioinformatics.*

Xiang-Yang Lou, Ph.D. (Zhejiang), Associate Professor. *Linkage and Association Analysis, Disequilibrium Mapping, Population Genetics, Bioinformatics, Machine Learning Methods and Longitudinal Data Analysis and Their Applications in Genetics and Bioinformatics.*

Leslie Ain McClure, Ph.D. (Michigan), Associate Professor and Director of Graduate Studies. *Clinical Trials with Multiple Outcomes, Interim Analysis.*

David T. Redden, Ph.D. (Alabama), Associate Professor. *Regression Diagnostics, Admixture, Association Studies.*

David L. Roth, Ph.D. (Kansas), Professor. *Structural Equations Modeling, Aging and Behavioral Research, Longitudinal Growth Curve Analysis.*

Jeff Szychowski, Ph.D. (Alabama), Assistant Professor. *Clinical Trials, Maternal and Fetal Medicine Studies, Regression Analysis and Smoothing Methods, Categorical Data Analysis, Survival Analysis.*

Hemant K. Tiwari, Ph.D. (Notre Dame), Associate Professor. *Genetic Linkage and Association Analysis, Haplotype Analysis, Disequilibrium Mapping, Population Genetics, Molecular Evolution, Bioinformatics.*

O. Dale Williams, Professor

Nengjun Yi, Ph.D. (Zhejiang), Associate Professor. *Statistical Genetics/Genomics, Bayesian Statistics, MCMC Algorithms.*

Bin Zhang, Ph.D. (Missouri), Assistant Professor. *Survival Analysis, Longitudinal Data Analysis, Optimal Design, Nonparametric Analysis, Missing Data*

Kui Zhang, Ph.D. (Peking), Associate Professor. *Statistical Methods for Molecular Biology and Genetics, Linkage and Disequilibrium Analysis, Functional Genomics.*

Xiao Zhang, Ph.D. (UCLA), Research Assistant Professor. *Bayesian Computation, Clinical Trials.*

Degui Zhi, Ph.D. (UCSD), Assistant Professor. *Protein sequence and structure analysis, Bioinformatics, Next-generation sequencing data analysis.*

General Information

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. George Howard is the Chair of the department, Dr. Leslie McClure is the Director of Graduate Studies, and Della Daniel is the department liaison to the graduate program. The department currently has 24 faculty members, 40 full-time staff, and is organized into two sections: 1) The Section on Statistical Genetics (SSG), led by Dr. David Allison and 2) The Section on Research Methods and Clinical Trials (RMCT), led by Dr. Gary Cutter. 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.

The Department offers programs leading to the Doctor of Philosophy (PhD), Master of Science (MS), Master of Public Health (MPH), Master of Science in Public Health (MSPH), and a Certificate in Statistical Genetics (CSG). The MS and PhD degrees are offered through the Graduate School. The MPH and MSPH degrees are offered through the School of Public Health.

The MPH Program

The MPH degree in biostatistics is intended primarily for those who wish to acquire an MPH degree with an emphasis on statistical methodology. This can include individuals from decision-making positions in health care settings as well as those interested in data management, statistical analyses and interpretation, and presentation of analytical results. This degree can be completed in approximately 2 years. Note that the MPH does not require some of the theoretical courses required for the MS, and as

such, it is not a direct route to prepare a student for a PhD. **Students anticipating that they will wish to continue for a PhD in biostatistics are advised to pursue the MS rather than the MPH.**

Required Courses: MPH in Biostatistics

MPH Core:	ENH 600	Fundamentals of Environmental Health Sciences	3 Credit hours
	EPI 600 OR	Introduction to Epidemiology	3 Credit hours
	EPI 610	Principles of Epidemiology Research	4 Credit hours
	HB 600	Social and Behavioral Sciences Core	3 Credit hours
	HCO 600	Introduction to Public Health Systems And Population-Based Health Programs	3 Credit hours
	PUH 695	Public Health Integrative Experience	1 Credit hours
	GRD 727	Writing and Reviewing Research	3 Credit hours
Biostatistics Core:	BST 619	Data Collection and Management	3 Credit hours
	BST 621	Statistical Methods I	3 Credit hours
	BST 622	Statistical Methods II	3 Credit hours
	BST 626/626L	Data Management/Reporting with SAS	3 Credit hours
	BST 697	Internship in Biostatistics	3 Credit hours

Biostatistics Electives: Minimum 9 credit hours of regular courses of 623 or higher-level.

Outside Electives: A minimum of 3 graduate credit hours of electives must be taken from some field of Biology, Public Health or Medicine. The academic advisor must approve these courses.

The MPH Non Coursework Requirements: The Internship

The MPH is a professional degree that prepares individuals to develop basic public health skills. The Council on Education for Public Health (CEPH), our accrediting agency, requires that each MPH student be able to demonstrate the application of these concepts through an internship that is relevant to his or her area of specialization. This experience must be appropriately planned, supervised, and evaluated. Students should have completed the core classes before registering for an internship (BST 697). Thus, internships are usually performed in the summer of the first year at the earliest. A written summary of these activities must be presented to the faculty advisor, the Graduate Program Director, and the on-site supervisor following the completion of the internship.

The final project will consist of 1) a paper that addresses the objectives, activities and competencies and is at least 5 pages in length and is due the last week of the semester, 2) a poster presentation that will be displayed and presented in the SOPH the semester following your internship.

The project summary should contain a description of the project and the role that the student played. The format will vary from student to student, but should reflect a thoughtful, careful report of the internship activities. A final grade will be awarded by the faculty internship advisor and based upon the internship

supervisor's evaluation and the student's final product. All internships are graded on a Pass/No Pass basis.

Additional details on the internship and waiver policy may be found on the SOPH website at:
<http://www.soph.uab.edu/internships/policy>.

The MSPH Program

There is a growing interest in medical and other health science schools in developing the clinical research skills of faculty members and fellows. This interest has been fueled by increased support from the National Institutes of Health (NIH) to prepare such individuals to meet the demand for clinical investigators in the field. Locally, 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 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 (CRBS), epidemiology (CREP), environmental health (CREH), and health behavior (CRHB). 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. As such, 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.

Required Courses: MSPH in Biostatistics

The MSPH in Clinical Research consists of a minimum of 41 credit hours. Of these, 14 hours are required, including 9 hours of specific Biostatistics courses and 5 hours of specific Epidemiology courses. Students then select at least 9 credit hours from a list of approved Masters Research Electives, complete 9 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.

Coursework		Credit Hours
<u>Required Core Courses</u>		<u>14</u>
BST 621	Statistical Methods I	3
BST 622	Statistical Methods II	3
BST 625	Design and Conduct of Clinical Trials	3
EPI 607	Epidemiology of Clinical Research	3

EPI 680	Topics in Clinical Research (P/NP) [1]	2
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Masters Research Electives [2] **9**

A minimum of 9 credit hours taken from the following courses (selected by faculty advisor and student):

BST 619	Data Collection and Management	3
ENH 650	Essentials of Environmental and Occupational Toxicology and Diseases	5
EPI 625/625L	Quantitative Methods in Epidemiology	5
EPI 626 & 627	Introduction to SAS (2 hours)	
OR		2 or 3
BST 626/626L	Data Management/Reporting with SAS (3 hours)	
EPI 703	Special Topics in the Epidemiology of Chronic Disease (This course focuses on Writing proposals for funding)	3
EPI 709	Theoretical Basis of Epidemiology	3
HB 624	Advanced Theory and Practice in Behavioral Science	3
HCO 677	Patient-Based Outcomes Measurement	3

[1] EPI 680 is a two credit hour class in which students attend and participate in lectures provided through the K30 Clinical Studies program at the School of Medicine. The grading is on a Pass/No Pass basis. To earn a grade of Pass, students must attend a minimum of 80% of the lectures over two semesters and participate in all discussion for which they are present.

[2] Care must be exercised when selecting these courses since some have prerequisites that must be taken earlier in the sequence of classes or taken concurrently.

Biostatistics Electives: Minimum 9 credit hours of regular BST courses of 623 or higher-level. With approval of the advisor, courses included in the research electives that are not taken to meet that requirement may be taken as part of the focus specific electives.

Masters Project Research: Minimum 9 credit hours of supervised research in clinical setting (BST 698).

The MSPH Research Project

The student, with the advice of his/her chosen MSPH project co-directors forms a small committee to guide the research project. The committee co-chairs should consist of a faculty member from Biostatistics and an MD with experience in the area of clinical research.

The MS Program

The MS degree in Biostatistics is intended primarily for those who wish to acquire a master's degree with an emphasis in statistical methodology. Successful completion of this degree requires a GPA of 3.0 or better, passing the comprehensive examination at the MS level, completion of a master's project under the direction of an advisor with committee approval, and oral and written defense of this project.

Required Courses: MS in Biostatistics

Biostatistics Core:	BST 621	Statistical Methods I	3 Credit hours
	BST 622	Statistical Methods II	3 Credit hours
	BST 623	General Linear Models	3 Credit hours
	BST 626	Data Management / SAS	3 Credit hours
	BST 631	Statistical Theory I	3 Credit hours
	BST 632	Statistical Theory II	3 Credit hours
	BST 655	Categorical Data Analysis	3 Credit hours
	BST 690	Biostatistical Consulting & Applied Problems	0-3 Credit hours
	BST 691	Biostatistics Predoctoral Seminar Series	4 Credit hours

Biostatistics Electives: Minimum 6 credit hours of regular courses of 624 or higher-level. For those students planning to go on for the Ph.D., it is a good idea to take more advanced biostatistics courses as electives.

Outside Requirement: EPI 610 Principles of Epidemiological Research (or another comparable course in Epidemiology) 4 Credit Hours

Outside Electives: A minimum of 3 additional graduate credit hours of electives must be taken from a non-quantitative field (i.e. Biology, Public Health or Medicine). The academic advisor must approve these courses.

Upon completion of the first year-and-a-half of course work, the candidate is given a written examination consisting of two parts - Applied Statistics and Theory of Statistics. The exam will test the students on their understanding and comprehension of the foundation of the theory and applications of statistics, and will generally cover materials from BST 621, 622, 623, 626, 631, 632 and 655. This will be a standard departmental exam, administered by the Graduate Program Committee (GPC). The criteria for evaluation are the candidate's understanding and competency in basic principles and foundations of biostatistics, understanding of the appropriate use and interpretation of statistical methods, and ability to succinctly express in writing the results of the problems. This examination is offered during the first half of January. At first attempt, a student must take both parts at the same time. For those years during which at least one student needs to take the exam a second time, the exam may be offered in July at the discretion of

the GPC. Students must be registered for at least 3 semester hours of graduate work during the semester in which the comprehensive examination is given.

The student must pass each part of the exam at the Masters level. If a student fails either part of the exam, one additional chance will be given to retake the part of the exam that was failed. A student who fails the qualifying exam more than once will be dismissed from the MS program. The student has the opportunity to appeal the decision of his/her dismissal. The Graduate School policies on dismissal from the program and appeal of dismissal are described in detail in the UAB Student Handbook.

The MS Project

Immediately after passing the MS Comprehensive examination, the student must form a research project committee consisting of at least 3 members, chaired by the research advisor. Upon successful completion of the project, the student must submit a final write-up of the research and present their work orally in a departmental seminar. It is strongly suggested that the write-up is such that it may lead to an article submitted for publication in the subject matter area. The date and time of the oral presentation will be advertised in the Ryals Building.

The PhD Program

The PhD degree in biostatistics provides a balance between theory and application. In addition to providing students with an in-depth understanding of statistical theory and methodology, the main objectives of the program are to train students to become independent researchers, effective statistical consultants and collaborators in scientific research, and effective teachers.

Required Courses: PhD in Biostatistics

All students entering the PhD program are required to complete the coursework required for the MS degree. It is possible for a student entering the graduate program with an MS degree in statistics or biostatistics from another institution to waive up to 12 credit hours of coursework at the discretion of the GPC. It will be the student's option whether to actually obtain the MS degree, but the department strongly encourages them to do so, since the completion of the MS project is very good research experience and may lead to a publication.

PhD students are required to take the following courses:

Biostatistics Core: hours	BST 621	Statistical Methods I	3 Credit
hours	BST 622	Statistical Methods II	3 Credit
hours	BST 623	General Linear Models	3 Credit
hours	BST 626	Data Management / SAS	3 Credit
hours	BST 631	Statistical Theory I	3 Credit
hours	BST 632	Statistical Theory II	3 Credit
hours	BST 655	Categorical Data Analysis	3 Credit
Hours	BST 690	Biostatistical Consulting & Applied Problems	0-3 Credit
Hours	BST 691	Biostatistics Predoctoral Seminar Series	6 Credit
hours	BST 723	Theory of Linear Models	3 Credit hours
	BST 765	Advanced Computational Methods	3 Credit
	BST 735	Advanced Inference	3 Credit

hours	BST 760	Generalized Linear and Mixed Models	3 Credit
hours			
Biostatistics Electives:	Minimum 18 credit hours of 624 or higher-level regular courses, including at least 9 hours of 700 level courses.		
Outside Requirement:	EPI 610 Principles of Epidemiological Research (or another comparable course in Epidemiology)	4 Credit Hours	
Outside Electives:	A minimum of 3 additional graduate credit hours of electives must be taken from a non-quantitative field (i.e. Biology, Public Health or Medicine). The academic advisor must approve these courses.		
Readings & Research:	Students are strongly recommended to take Research in Statistics (BST 698) under various faculty members every semester after completion of the first-year equivalent of course work, until a research advisor is chosen.		

PhD Qualifying Exam

Upon completion of the first year-and-a-half of course work, the candidate is given a written examination consisting of two parts - Applied Statistics and Theory of Statistics. The exam will test the students on their understanding and comprehension of the foundation of the theory and applications of statistics, and will generally cover materials from BST 621, 622, 623, 626, 631, 632 and 655. This will be a standard departmental exam, administered by the GPC. The criteria for evaluation are the candidate's understanding and competency in basic principles and foundations of biostatistics, potential for conducting independent research in statistical methods, and ability to express in writing the results of the problems. This examination is offered during the first half of January. At first attempt, a student must take both parts at the same time. For those years during which at least one student needs to take the exam a second time, the exam may be offered in July at the discretion of the GPC. Students must be registered for at least 3 semester hours of graduate work during the semester in which the comprehensive examination is given.

The student may pass each part of the exam at the PhD level, fail at the PhD level but pass at the Master's level, or fail at the Masters level. If a student fails to pass either part of the exam at the PhD level, one additional chance will be given to retake the part of the exam that was failed. A student who fails the qualifying examination more than once will be dismissed from the PhD program. The student has the opportunity to appeal the decision of his/her dismissal. Graduate School policies on dismissal from the program and appeal of dismissal are described in detail in the UAB Student Handbook.

PhD Dissertation Research

After forming a graduate committee, the student should present and prepare a written proposal to their committee for suggestions/approval. The whole committee must approve the proposal, not just the advisor. This is to ensure that the work is novel, feasible, and significant. The word "novel" here is important. A dissertation must add to the body of knowledge in biostatistics, meaning that a careful review of the existing literature on the chosen subject is necessary. It would be very unfortunate to get to the last stages of your work and to have someone suddenly point out to you that it had already been done! During the early stages of the research, it may be useful for the student to register for readings courses (BST 798) under the direction of the research advisor. The purpose of such courses is to review the literature for the research area of interest in order to help the student formulate a research problem.

After a literature survey and a clearer definition of the scope of the proposed research under the direction of the advisor, the student must submit a written proposal and **present it orally to the dissertation committee**. The dissertation proposal is closed to the general public and should be attended only by the dissertation committee. The committee may approve unconditionally, approve conditionally, or

disapprove the proposal. The oral presentation also represents the oral doctoral candidacy exam. As such, a student is expected to demonstrate a good understanding of materials relevant to the general field in which the dissertation is written. The format of the questions for the proposal is left to the discretion of the committee. The outline and the organization of the proposal must follow the graduate school requirements described in the UAB Graduate Student Handbook. The Dissertation Committee and the Graduate Program Director will recommend the student to the Graduate School Dean for admission to candidacy. The committee meeting at which candidacy is discussed must be scheduled through the Graduate School to allow the Dean to attend. If the proposal is not approved, the student may be given only one other opportunity to re-present the proposal and it must be done within six months of the first attempt. You must be registered for at least 3 hours in the semester in which you present your project proposal to your committee.

Once the student has (1) passed the qualifying exam at the doctoral level, (2) written a formal dissertation proposal, and (3) had the dissertation proposal approved by the dissertation committee as an acceptable proposal for research, the committee will recommend to the Dean of the Graduate School that the student be admitted to candidacy. This requires that the student file an "Admission to Candidacy" form with the Graduate School. A student must be in good academic standing to be admitted to candidacy.

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 (BST 799).

PhD Final Exam

After the student has completed all formal requirements for the PhD degree, the dissertation committee administers the final oral examination. The final examination should take the form of a presentation and defense of the dissertation, followed by an examination of the candidate's comprehensive knowledge of the field. This examination must be scheduled through the Graduate School to allow attendance of the Dean. The defense must be announced at least 2 weeks in advance. It is the responsibility of the student to schedule the defense at a time convenient to all parties involved. **A preliminary copy of the dissertation must be submitted to the dissertation committee for approval at least two weeks prior to the defense, unless otherwise approved in advance by the dissertation committee. The meeting must be open to all interested parties, publicized on the UAB campus, published in the UAB Reporter, and must take place at least 30 days before the expected date of graduation. Candidates must be registered for at least 3 semester hours of Dissertation Research (BST 799) during the semester in which the final examination is taken.**

The dissertation committee will evaluate the student's performance in the final exam. In order for the student to pass, all of the committee or all but one member of the committee must pass the student in the final exam. Upon approval by the committee and the Graduate Program Director, the result of the final exam should be forwarded to the Graduate School Dean for approval. Final copies of the dissertation after final approval of the committee, including any changes required by the committee, must be submitted to the Dean within two weeks following successful completion of the defense. Please see the Graduate Student Handbook for various deadlines and further details. Upon satisfying all requirements, the dissertation committee and the Graduate Program Director will recommend the student to the Graduate School Dean for the doctoral degree.

Admission

Students in the Graduate program are admitted in the Fall semester of each academic year. Applicants for the MS and PhD programs are expected to have a strong foundation in Mathematics. At the very minimum, they should have had a semester of advanced calculus and a semester of advanced matrix algebra. With few exceptions, applicants to the PhD must have a relevant MS degree. The MPH applicants should also be quantitatively oriented with background in calculus and linear algebra.

Application requirements include completion of the online application form, a non-refundable application fee, official transcripts from all undergraduate coursework and all prior graduate coursework, (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), three letters of recommendation (submitted online), a statement of purpose, and Graduate Record Examination (GRE) scores. International applicants for whom English is not their first language are also required to submit TOEFL scores. Please note that the department has an ongoing admissions process that begins in February. Thus, it is recommended that prospective students submit completed applications as early as possible (specifically if financial support is desired).

Minimum admission requirements include: a bachelor's degree from an accredited college or university, a score of 550 (400 for MPH) or better on the verbal and 550 on the quantitative sections of the GRE test, a score of 3.5 or better on the analytic section of the GRE test, and an undergraduate grade point average of 3.0 or better (on a 4.0 scale). The department also requires a TOEFL score of at least 250 (600 on the old scale) for all international students whose native language is not English.

Financial Support

Unfortunately, the department is not able to guarantee funding for all students. However, there are many on-campus part-time employment opportunities with ongoing research projects across campus that are available to qualified students with experience in statistical analysis. Within reason, the department will work with all students in order to assist them with finding a funding source for their studies.

Fellowships, Traineeships, and/or Assistantships are awarded to well-qualified students. The financial support of a fellowship or traineeship typically consists of (i) an annual stipend of \$20,976 paid over 12 months, and (ii) tuition, fee, and health insurance paid by the department directly to your student account. The financial support of an assistantship typically consists of (i) an annual stipend of \$20,976 paid over 12 months, and (ii) additional funds to assist with tuition and etc. (paid as additional salary to the student in two installments in August and January). The financial support is intended to help full-time students in the graduate program. Accordingly, (i) students must register as a full-time student in approved graduate courses each semester and (ii) students may not engage in any other renumerated activities either on or off campus (exceptions to this rule are rare and require prior approval in writing). In order to continue receiving financial support students must remain in good standing, continue making satisfactory progress towards their degree, and perform their work in a satisfactory manner. Should the faculty responsible for the funding source determine that a student fails to meet any of these criteria, he/she forfeits the award.

A research assistantship requires the student to devote approximately 20 hours per week average effort on research/teaching projects under the supervision of a faculty mentor. Students must be enrolled full-time in order to maintain a research assistantship. This requires the student to take at least 9 credit hours of coursework during the regular semesters and at least 3 credit hours of coursework during the summer. Assistantship appointments are typically for one year at a time.

A student fellowship does not require any work effort, but requires the student to register for a greater number of credit hours each semester. A student on Fellowship is required to take 12 credit hours of coursework during the regular semesters and 6 credit hours during the summer semester.

The department currently has two NIH-funded T32 doctoral training grants and one Merck Quantitative Sciences Research Fellowship. These appointments carry special distinction, are an honor to have, offer certain privileges, and also confer certain obligations. Trainees are required to pursue their research training on a full-time basis, devoting at least 40 hours per week to the program. This *minimum* of 40 hours includes both classroom studies and their research. All new trainees will receive: 1) "On Being a Scientist" published by the National Academy of Sciences, and 2) a selected list of references on ethical conduct of research. Trainees are expected to review these materials. All trainees must complete and maintain IRB training/certification, complete and maintain IACUC training/certification (if they work with animal studies), complete the Principles of Scientific Integrity course (GRD 717), and complete university diversity training. Trainees are expected to attend all departmental seminars, journal clubs, and grant writing clubs, except when those activities interfere with classes. Trainees are also expected to attend and ideally present their work at one conference each year. Funds are available for this. Additional funds are usually available to allow trainees to attend at least one continuing education workshop outside of UAB each year. The department holds all T32 students to a

very high standard. The purpose of the T32 training grants is to train future independent scientists, that is, individuals that can direct their own research programs. Trainees are expected to work actively with a faculty mentor on research projects, with the expectation of co-authoring publications. All trainees must meet with the T32 program directors twice annually (and additionally as requested) in order to review progress.

Additional Information

Deadline for Entry Term(s):	Fall semester
Deadline for All Application Materials to be in the Graduate School Office:	April 1
Number of Evaluation Forms Required:	At least three
Entrance Tests	GRE (TOEFL is required for international applicants whose native language is not English.)

Contact Information

For detailed information, contact:

Dr. Leslie McClure
Director, Graduate Program
1665 University Boulevard, RPHB 327
Birmingham, AL 35294-0022.

Telephone/FAX: (205) 934-4905

E-mail : bstgrad@uab.edu

Web site: www.soph.uab.edu/bst

Course Descriptions

Unless otherwise noted, all courses are of 3 credit hours. Courses in italics are only proposals.

BST 600. Biostatistics for Public Health. To provide non-biostatistics students with the ability to understand and utilize basic biostatistical concepts and tools and to facilitate their capacity to seek and utilize biostatistical expertise as may be required when conducting their own research or reviewing that done by others. This course is required for most MPH degree program students. 4 hours. Fall.

BST 603 – Introductory Biostatistics for Graduate Biomedical Sciences. This course will provide non-biostatistics students seeking a Graduate Biomedical Sciences (GBS) degree with the ability to understand introductory biostatistics concepts. 3 hours. As needed.

BST 611. Intermediate Statistical Analysis I.- 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). 3 hours. Fall.

BST 612. Intermediate Statistical Analysis II.-This course will introduce students to the basic principle 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. Prerequisite: BST 611 or Permission of Instructor. 3 hours. Spring.

BST 613. Intermediate Statistical Analysis III. Continuation of concepts in BST 611/612, intended to introduce students to additional general concepts in biostatistics beyond an introductory level. The course will include a broad overview of three areas: 1) categorical, ordinal, and count methods with proportional odds model and Poisson regression; 2) survival analysis and event outcome data with Kaplan-Meier, proportional hazards, and repeated events; 3) repeated measures, mixed models, hierarchical modeling for longitudinal and missing data. Study design, analysis, interpretation of results, power and sample size estimation, and non-parametric alternatives will be presented for all topic areas. Prerequisite: BST 612. 3 hours. Fall.

BST 619. Data Collection and Management. 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., SAS). Exposure to other software packages as time permits. Prerequisites: BST 600; Previous computer experience or workshop on microcomputers highly recommended. 3 hours. Spring.

BST 620. Applied Matrix Analysis. -Vector and matrix definitions and fundamental concepts; matrix factorization and application. Eigenvalues and eigenvectors, functions of matrices, singular and ill-conditioned problems. Prerequisite: BST 622. 3 hours. As needed.

BST 621. Statistical Methods I. 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 and analysis of variance. Prerequisites: A year of calculus and linear algebra. 3 hours. Fall.

BST 622. Statistical Methods II. Continuation of concepts in BST 621, extended to multiple linear regression; analysis of variance; analysis of covariance; multiple analysis of variance; use of contrasts and multiple comparisons procedures; simple and multiple logistic regression; introduction to survival analysis. Prerequisites: BST 621. 3 hours. Spring.

BST 623. General Linear Models. Simple and multiple regression using matrix approach; weighted and nonlinear 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. Prerequisite: BST 622. 3 hours. Fall.

BST 624. Experimental Design. 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. Prerequisites: Matrix algebra and BST 623. 3 hours. As needed.

BST 625. Design and Conduct of Clinical Trials. Concepts of clinical trials; purpose, design, implementation and evaluation. Examples and controversies presented. Prerequisites: BST 611 and 612 or permission of the instructor. 3 hours. Summer.

BST 626/626L. Data Management/Reporting with SAS. A hands-on exposure to data management and report generation with one of the most popular statistical software packages. Concurrent registration in BST 626 and BST 626L is required. 3 hours. Fall.

BST 631. Statistical Theory I. Fundamentals of probability; conditional probability and independence; distribution, density, and mass functions; random variables; moments and moment generating functions; discrete and continuous distributions; exponential families, joint, marginal, and conditional distributions;

transformation and change of variables; convergence concepts; sampling distributions; order statistics; random number generation. Prerequisites: Advanced calculus. 3 hours. Fall.

BST 632. Statistical Theory II. Point interval estimation; sufficiency and completeness; ancillary statistics; maximum likelihood and moment estimators; best unbiased estimator; hypothesis and significance testing; likelihood ratio tests and uniformly most powerful tests; confidence interval estimation; asymptotic properties of estimators and tests; introduction to Bayesian inference. Prerequisite: BST 631. 3 hours. Spring.

BST 640. Nonparametric Methods. 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. Prerequisite: BST 622, BST 632. 3 hours. As needed.

BST 655. Categorical Data Analysis – 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. Prerequisite: BST 622 or equivalent recommended. 3 hours. Fall.

BST 660. Applied Multivariate Analysis. Analysis and interpretation of multivariate general linear models including multivariate regression, multivariate analysis of variance/covariance, discriminant analysis, repeated measures, canonical correlation, and longitudinal data analysis for general and generalized linear models. Extensive use of SAS, SPSS, and other statistical software. Prerequisite: BST 623. 3 hours. As needed.

BST 661. Structural Equation Modeling. Basic principles of measurements; factor analysis and latent variable models; multivariate predictive models including mediation mechanisms and moderator effects; path analysis; integrative multivariate covariance models, methods of longitudinal analysis. Prerequisite: BST 623. 3 hours. As needed.

BST 665. Survival Analysis. Kaplan-Meier estimation; Parametric survival models; Cox proportional hazards regression models; Sample size calculation for survival models; Competing risks models; multiple events models. Prerequisite: BST 622. 3 hours. Spring (odd years)

BST 670. Sampling Methods. 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. Prerequisite: BST 631. 3 hours. As needed.

BST 671. Meta Analysis. Statistical methods and inference through meta analysis. Prerequisite: BST 623, BST 632. 3 hours. As needed.

BST 675. Introduction to Statistical Genetics. 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. Prerequisite: BST 611 or BST 621. 3 hours. Spring.

BST 676. Statistical Bioinformatics. The purpose of this class will be to teach graduate students statistics methods that underlie the analysis of data generated by high throughput genomic technologies, as well as issues in the experimental design and implementation of these technologies. High throughput technologies that will be covered include microarrays, proteomics, and second generation sequencing. Prerequisites: BST 611 or 621. BST 675 recommended. 3 hours. Spring (odd years).

BST 690. Biostatistical Consulting and Applied Problems. Implementation of statistical theory and application in scientific research. Systematic formulation of problem; data collection procedures; design of study; analysis of data; interpretation and communication of results. Prerequisites: BST 622. 0-3 hours. Summer.

BST 691 – Biostatistics Pre-doctoral Seminar Series. This course provides an opportunity for students to learn about ongoing research in the field of biostatistics, clinical trials, and statistical genetics. Pass/No Pass. 1 hour. Fall/Spring.

BST 695. Special Topics. This course is designed to cover special topics in Biostatistics that are not covered in regular 600 level courses, but suited for Masters students in Biostatistics and doctoral students in other related disciplines. 1-3 hours.

BST 697. Internship in Biostatistics. Pass/No Pass. 1-6 hours.

BST 698. Non-thesis Research. Pass/No Pass. 1-6 hours.

BST 699. Master's Thesis Research. Prerequisite: Admission to candidacy for MS Degree. Pass/No Pass. 1-12 hours.

BST 723. Theory of Linear Models. Multivariate normal distributions and quadratic forms; least square estimation; nested models; weighted least squares; testing contrasts; multiple comparisons; polynomial regression; maximum likelihood theory of log-linear models. Prerequisite: BST 632. 3 hours. Fall (odd years).

BST 725. Advanced Clinical Trials I. This course will provide students with a basic understanding of the fundamental statistical principles involved in the design and conduct of clinical trials. Important topics of discussion will include data management, quality assurance, endpoints, power analysis, interim analysis, adaptive designs, and genetic issues in clinical trials. Prerequisites: BST 611, 612 and 625. 3 hours. Spring (even years).

BST 726. Advanced Clinical Trials II. This course builds on the knowledge gained in BST 725 in order to develop a more thorough understanding of the basic methodology behind power analysis, interim data monitoring, analysis of missing data, and adaptive designs. The class involves discussions of recent publications dealing with current topics of interest in clinical trials. Each student must conduct, summarize, and present a course project based on a more in-depth exploration of one of the topics introduced in the BST 725 course. Prerequisites: BST 621, 622, 625, 631, 632 and 725. 3 hours. Spring (odd years).

BST 735. Advanced Inference.- 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 and 632. 3 hours. Spring (odd years).

BST 740. Bayesian Analysis.- 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. The practical part of the course will be based on Bugs (either WinBugs or OpenBugs), possibly accessed through R with the existing tools for the interface (R packages: R2WinBUGS or BRugs, coda). This will enable participants to take the practical examples all the way to the reporting stage in terms of tabulations and graphics. Prerequisites: BST 632. 3 hours. Fall (even years).

BST 750. Stochastic Modeling. Poisson processes; random walks; simple diffusion and branching processes; recurrent events; Markov chains in discrete and continuous time; birth and death process;

queueing systems; applications to survival and other biomedical models. Prerequisite: BST 632. 3 hours. As needed.

BST 760. Generalized Linear and Mixed Models. Generalized linear models; mixed models; and generalized estimating equations. Prerequisite: BST 723. 3 hours. Spring (even years).

BST 765. Advanced Computational Methods. -Numerical algorithms useful in biostatistics including likelihood maximization using the Newton-Raphson method, EM algorithm, numerical integration using quadratic and Monte-Carlo methods, interpolation using splines, random variate generation methods, data augmentation algorithm, MCMC and Metropolis-Hastings algorithm; randomization tests; resampling plans including bootstrap and jackknife. Prerequisites: BST 632. 3 hours. Fall (even years).

BST 775. Statistical Methods for Genetic Analysis I. - 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 relatives 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. Prerequisites: BST 623, BST 632, and BST 675. 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. Fall (even years).

BST 776. Statistical Methods for Genetic Analysis II.- This course builds on the knowledge gained in BST 775 with rigorous mathematical and statistical treatment of methods for localizing genes and environmental effects involved in the etiology of complex traits using case-control and pedigree data. Prerequisites: BST 775; Knowledge of SAS and programming languages such as C++, and basic knowledge of multivariate methods and Markov chain theory is highly recommended. 3 hours. Fall (odd years).

BST 793 – Biostatistics Post-doctoral Seminar Series. This course provides an opportunity for post-doctoral students to learn about ongoing research in the field of biostatistics, clinical trials, and statistical genetics. Pass/No Pass. 3 hours. Fall/Spring.

BST 795. Advanced Special Topics. This course is designed to cover advanced special topics in Biostatistics not covered in regular 700 level courses, but suited for doctoral students in Biostatistics. Prerequisites: BST 622 & 632. 1-3 hours.

BST 798. Non-dissertation Research. Pass/No Pass. 1-6 hours.

BST 799. Doctoral Dissertation Research. Prerequisite: Admission to candidacy for PhD. Pass/No Pass. 1-12 hours.

Environmental Health Sciences (Ph.D.)

Degree Offered:	Ph.D.
Director:	<i>Dale Dickinson, PhD</i>
Phone:	205-975-7493

E-mail:	dadickin@uab.edu
Web site:	http://www.soph.uab.edu/default.aspx?id=15

Faculty

Shannon M. Bailey, Associate Professor; Molecular Mechanisms of Chronic Alcohol and Obesity Induced Liver Diseases; Mitochondrial Dysfunction in Disease; Molecular Bioenergetics; Functional Proteomics; Free Radical Biology

Steven M. Becker, Associate Professor and Vice Chair, Environmental Management and Policy; Disaster Preparedness and Response; Chemical/Biological/Radiological/Nuclear Incidents; Terrorism and Public Health Preparedness; Psychosocial Aspects of Radiation; Risk Perception; Crisis and Emergency Risk Communication.

Dale A. Dickinson, Assistant Professor, Molecular Mechanisms of the Adaptive Response to Environmental Toxicants and Pollutants; Mechanism of Action of Naturally Occurring Compounds; Functional Genomics and Proteomics of Naturally Occurring Compounds; Induction of Glutathione; Free Radical Biology

Michelle V. Fanucchi, Associate Professor and Program Director - Childhood lung disease and its etiology; Pulmonary cell biology and toxicology of air pollutants, including particulates, ozone, and various polycyclic aromatic hydrocarbons; Cell-to-cell interactions in the developing lung as well as in repair after lung injury and disease in children.

Mark D. Garfinkel, Research Assistant Professor, Environmental Toxicology; Drosophila Developmental Biology, Genetics and Epigenetics; Computational Genomics; Nutrigenomics

Julia M. Gohlke, Ph.D., Assistant Professor. Main focus of research is development of methods to improve assessments of health threats, both nationally and globally, through application of novel bioinformatics and computational modeling approaches. Particular areas of interest include improving methods for incorporation of neurodevelopmental processes that distinguish children as a vulnerable population, health implications of energy policy and climate change, and environmental policy evaluation from a global health perspective

Rui-Ming Liu, Associate Professor, Oxidative Stress/Antioxidants in Lung Fibrotic and Neurodegenerative Diseases; Glutathione Metabolism during Aging and Age-Related Diseases

Claudiu Lungu, Assistant Professor, Evaluation of Adsorption Characteristics of Granular Activated Carbon and Activated Carbon Fibers used in Respiratory Protection and Protective Clothing; Measurement and Evaluation of VOC Exposure in Various Workplaces; VOC Emissions from Building Materials; Exposure to Ionizing Radiation

Elizabeth H. Maples, Assistant Professor, Reduction of Work-Related Injuries and Illnesses Through Effective Training; Expanding the Capacity of Environmental Public Health Practitioners in Working Within Communities to Address Environmental Health Problems; Prevention of Workplace Violence.

R. Kent Oestenstad, Associate Professor; Evaluation of respirator effectiveness, respirator performance modeling; aerosol measurement, aerosol behavior and health effects; noise exposure and hearing loss, and occupational safety.

Edward M. Postlethwait, Professor and Chair, Research and academic interests are founded in pulmonary toxicology and free radical biochemistry, with current efforts primarily focused on delineating the mechanisms by which inhaled oxidants interact with the lung surface to initiate epithelial injury, how environmental oxidants impact lung growth and development, and what factors may govern the extent

and distribution of exposure-related cellular perturbations. To address these issues, research endeavors incorporate aspects of physiology, quantitative morphology and image analysis, oxidant and antioxidant biochemistry, pharmacokinetics, dosimetry, and chemical engineering.

Giuseppe L. Squadrito, Research Associate Professor, Free Radical Chemistry and Biochemistry, Analytical Chemistry, Thermodynamics and Kinetics of Chemical Reactions; Oxidants and Antioxidants; Smoke, Smog, and Combustion Products

Program Information and Objectives

The Department of Environmental Health Sciences focuses on understanding the causes, mechanisms, and consequences of environmental and occupational hazards, as well as the prevention and management of these hazards. Principal research areas include: Environmental Toxicology, Free Radical Biology, Cell Signaling, Exposure Assessment, and Environmental Disasters and Environmental Management.

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 three areas of concentration: (1) Basic Science of Environmental Toxicology, (2) Environmental Management and Policy, and (3) Industrial Hygiene/Occupational Safety.

UAB is a highly innovative major research university with five schools ranked in the top 20 in NIH funding and an overall level of research funding totaling more than \$400 million. The university also hosts over 70 research centers providing rich opportunities for cross-disciplinary collaborations. Students will have the opportunity to interact and conduct dissertation research in university-wide translational research endeavors. Basic science students will participate in the Graduate Biomedical Sciences (GBS) program during their first year of study. The GBS program is an innovative multidisciplinary program that integrates the principles of biochemistry, molecular biology, physiology, pathophysiology, and toxicology in the context of human health and disease. More than 150 UAB faculty members are affiliated with the GBS program, providing students with the opportunity to grow academically and professionally with a diverse network of faculty. More information on the GBS program can be found at: <http://www.uab.edu/gbs/>

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 a specialization in Environmental Toxicology are encouraged to have completed courses in biochemistry and physiology. Individuals interested in the Environmental Management and Policy concentration should have a Masters degree in an appropriate health, environmental or related field; or significant relevant professional experience. Industrial Hygiene applicants are expected to have completed Industrial Hygiene courses in an accredited Industrial Hygiene Masters 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. Applicants are required to have a GPA of at least 3.0 and to take the GRE General Test. A score of at least 550 on each section (verbal and quantitative) is required; consideration will also be given to performance on the analytical section. Deadline for applications to be admitted into the program is April 1, although basic science applicants are encouraged to apply no later than February 1.

Curriculum

PhD students are expected to complete the department course requirements as well as those courses necessary to prepare them to conduct their dissertation research. The department's PhD program offers training in three areas of concentration: (1) Basic Science of Environmental Toxicology; (2) Environmental Management and Policy; and (3) Industrial Hygiene/Occupational Health and the curriculum requirements can be found at <https://www.soph.uab.edu/node/1180>.

Additional Information

Deadline for Entry Term(s):	April 1
Deadline for All Application Materials to be in the Graduate School Office:	February 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	Additional application for financial aid (fellowship or assistantship) is required by program
Graduate Catalog Description	http://main.uab.edu/show.asp?durki=24889

For detailed information, contact Vic Stark, 1665 University Boulevard, University of Alabama at Birmingham, School of Public Health, Room 530, Birmingham, Alabama 35294-0022.

Telephone 205-934-7038

E-mail ehs@crl.soph.uab.edu

Course Descriptions

Environmental Health Sciences (ENH)

700. Scientific Basis of Environmental Health. Environmental problems encountered by public health professionals, including water pollution, water resources, air pollution, industrial hygiene and occupational safety, and toxicology. Case studies used in examining environmental problems.

701. Environmental Chemistry. This advanced course covers physical and chemical processes that determine the dynamic nature of the atmosphere and interrelations with water and soil. It also covers measurement methods and data analysis regarding observed concentrations of many key compounds. The course also covers chemical aspects of current environmental change issues, as well as reviews risk assessment as applied to tropospheric air quality.

702. Advanced Topics in Environmental Management. Course will combine lectures, case study discussions, and special topic presentations by students to apply principles and methods of environmental management. Instruction will feature case studies for assessments under the Toxic Substance Control Act (TSCA), the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), Non-indigenous species and the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). Students will receive instruction on planning processes and structuring of interdisciplinary teams, and will demonstrate their independent and comprehensive understanding of environmental management tools (advisory, economic and regulatory).

705. Special Topics (Readings) in Environmental and Occupational Health. Topics taught on request on individual basis: radiological health, air pollution, systems safety, advanced toxicology, toxicokinetics, environmental science related to risk assessment process.

710. Grant Proposal Writing in the Biomedical Sciences. Introduction to writing grant proposals and fellowship applications. Topics include scientific ethics, funding sources, electronic databases,

organization and format of proposals and applications, submission and review processes, use of secondary sources, and guidelines for effective proposal writing.

711. Risk Assessment of Environmental Hazards. Principles of risk assessment and management as applied to various environmental issues. Examination of theoretical aspects of epidemiology, toxicology, and environmental science related to risk assessment process.

763. Aerosol Technology. Properties and behavior of aerosols from industrial hygiene and environmental perspectives. Fundamental particle descriptions and critical fluid properties affecting particle behavior. Methods of defining particle size and size distribution and theories of particle kinetics and their application to particle deposition and collection. Prerequisite: ENH 661-662.

770. Advanced Topics in Environmental Disasters and Public Health. This course 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. Students engage in an advanced in-class group exercise based on a realistic disaster or emergency scenario. Prerequisite: Successful completion of ENH 610: Environmental Disasters or the equivalent

780. Seminars in Free Radical Biology and Medicine. The purpose of this course is to provide a forum in which students are directly exposed to the most recent findings in free radical biology and medicine from national and international experts in these fields. Students will be expected to become comfortable asking questions in scientific setting.

781. Journal Club: Mechanisms of Redox Cell Signaling and Disease. The purpose of this course is to provide a forum in which students become comfortable critically reviewing recent refereed publications in the fields of redox cell signaling, physiology and pathology. Students will also be expected to become comfortable answering and asking questions in a scientific setting. Prerequisite: Permission of instructor.

782. Free Radical Chemistry and Biochemistry. This course will use chemical and biochemical principles to thoroughly understand how free radical species mechanistically function in vivo. This course is designed for doctoral students admitted to campus-wide PhD programs in the biomedical and basic sciences with research interests in free radical chemistry, biology and medicine. Prerequisite: successful completion of the IBS or CMB first year program; co-registering in ENH 783 is strongly encouraged. Offered January/February.

783. Free Radicals in Health and Disease. The primary focus of this course will be a critical examination of how free radical species mechanistically function to promote human health or contribute to disease, and will build on the material taught in ENH 782. Emphasis will be placed on debunking some common beliefs found in the lay and scientific communities that are not supported by rigorous scientific research. Prerequisite: successful completion of the IBS or CMB first year program and completion of ENH 782. Offered March/April.

790. Seminar: Current Topics in Environmental Health Sciences Research. Interactive forum in which students and faculty discuss topics related to the field of Environmental Health Science research through student presentations of dissertation research and relevant scientific journal articles. This course is designed to develop oral communication and presentation skills needed for presenting scientific material to peers. Presentations by graduate students are followed by discussion and questions. Prerequisite: Permission of Instructor.

791. Advanced Environmental Health and Toxicology Seminar. This seminar course will expose students to diversified subjects and cutting edge research from national and international experts in Environmental Health Sciences. Prerequisite: Permission of Instructor.

796. Environmental Health Sciences Research Rotation. First year PhD candidates in Environmental Health Sciences are required to complete at least three mentored-research rotations approved by the PhD/DrPH Program Director.

798. Doctoral-Level Directed Research. Independent study with guidance of appropriate faculty mentor. Pass/No Pass. Prerequisite: Permission of PhD/DrPH Program Director.

799. Dissertation Research. Prerequisite: Admission to candidacy.

Epidemiology (Ph.D.)

Note: students who plan careers focused on the practice of epidemiology, rather than epidemiologic research, should see the UAB School of Public Health catalog for a description of the Doctorate in Public Health (Dr.P.H.) program in Epidemiology.

Degree Offered: Ph.D.

Director: *Dr. John Waterbor*

Phone: (205) 934-7146 , 934-7128 (Judy Baker), or 975-9749 (Kimberly Hawkins)

E-mail: h2obor@uab.edu, janbaker@uab.edu, hawkins@uab.edu

Web site: www.soph.uab.edu/default.aspx?id=16

Faculty

Olivia Thomas Affuso, Assistant Professor (Epidemiology); Chronic Disease Epidemiology, Physical Activity and Chronic Disease Prevention

Brahim Aissani, Assistant Professor (Epidemiology); Genetic Epidemiology, Infectious Disease Epidemiology

Donna Arnett, Professor and Chair (Epidemiology); Cardiovascular Genetic Epidemiology, Pharmacogenetics

Molly S. Bray, Professor (Epidemiology and Genetics); Obesity and Complex Disease Genetics, Physical Activity Epidemiology

Elizabeth Brown, Associate Professor (Epidemiology); Molecular Epidemiology

April Carson, Assistant Professor (Epidemiology)

Eric Chamot, Assistant Professor (Epidemiology); Infectious Disease Epidemiology, Screening, International Health and Global Studies

Elizabeth Delzell, Professor (Epidemiology); Occupational Epidemiology, Chronic Disease Epidemiology, Cancer Epidemiology, Pharmacoepidemiology

Virginia Howard, Associate Professor (Epidemiology); Cardiovascular Disease Epidemiology, Stroke Epidemiology

Pauline Jolly, Professor (Epidemiology); Infectious Disease Epidemiology, International Health and Global Studies

Edmond Kato Kabagambe, Associate Professor (Epidemiology); Nutritional Epidemiology, Chronic Disease Epidemiology

Richard A. Kaslow, Professor (Epidemiology); Infectious Disease Epidemiology, Immunogenetics

Emily B. Levitan, Assistant Professor (Epidemiology); Comparative Effectiveness Research, Cardiovascular Epidemiology, Epidemiologic Methods

Gerald McGwin, Professor and Vice Chair (Epidemiology); Injury Epidemiology, Ophthalmic Epidemiology; Epidemiologic Methods

Paul Muntner, Professor (Epidemiology and Medicine); Renal Disease Epidemiology, Cardiovascular Epidemiology

Rodney Perry, Assistant Professor (Epidemiology); Molecular Epidemiology, Laboratory Methods

Jeffrey Roseman, Professor Emeritus (Epidemiology); Chronic Disease Epidemiology, Cardiovascular Epidemiology, Diabetes Epidemiology, Injury Epidemiology

Nalini Sathiakumar, Associate Professor (Epidemiology); Environmental Epidemiology, Occupational Epidemiology, Chronic Disease Epidemiology

Sadeep Shrestha, Assistant Professor (Epidemiology); Infectious Disease Epidemiology, Genetic Epidemiology

John W. Waterbor, Associate Professor and Director of the Ph.D. Program (Epidemiology); Cancer Epidemiology and Control, Injury Epidemiology and Control, Epidemiologic Methods

Craig Wilson, Professor (Epidemiology); Infectious Disease Epidemiology; International Health and Global Studies

Program Information

Admission Requirements

Applicants to the Ph.D. program in Epidemiology must have a Master's degree (M.P.H. or M.S.P.H.) in Epidemiology or in a related discipline, with strong master's-level background in epidemiology and statistics. High scores on the GRE are also required, as are three strong letters of reference and a career goals statement that illustrates the applicant's understanding of the field of epidemiology and the intent of the Ph.D. program. Proficiency in written and spoken English is required, as demonstrated by high TOEFL scores for applicants from countries where English is not the primary language. Applicants will not be admitted unless and until an Epidemiology faculty member has agreed to serve as academic and research advisor. In order to identify an appropriate advisor, applicants should contact Epidemiology faculty members (see the UAB School of Public Health website) having research interests similar to their own, or contact the Director of the Ph.D. Program for guidance regarding appropriate advisors.

Entry Term:	Fall semester only
Deadline for All Application Materials to be in the	June 1; February 1 to be considered for financial

Graduate School Office:	aid
Number of Evaluation Forms Required:	Three
Entrance Tests	GRE (TOEFL and TWE also required for international applicants whose native language is not English.)
Comments	Visits to campus are recommended. Telephone interviews may be conducted for applicants who are not able to visit UAB.
Graduate Catalog Description	http://main.uab.edu/show.asp?durki=24890

If you have questions please contact Dr. Waterbor, Ms. Baker, or Ms. Hawkins:

Dr. John Waterbor, Department of Epidemiology, UAB School of Public Health, RPHB 227C, 1530 3rd Avenue South, Birmingham, AL 35294-0022.

Telephone 205-934-7146 (Dr. Waterbor), 205-934-7128 (Judy Baker), 205-975-9749 (Kimberly Hawkins); Fax to Department of Epidemiology, 205-934-8665

E-mail h2obor@uab.edu; janbaker@uab.edu; hawkinsk@uab.edu

Curriculum

Students must complete 60 credit hours including 24 credit hours of doctoral-level or otherwise advanced courses in epidemiology and biostatistics. Applicants who are accepted but whose background is deficient in important areas of epidemiology or statistics may be required to take several master's level epidemiology or biostatistics courses prior to taking doctoral-level courses. A teaching practicum is also required.

For descriptions of master's-level (600-level) courses in Epidemiology please see the School of Public Health catalog, <https://www.soph.uab.edu/catalog>. Doctoral-level (700-level) courses are described below. Where no semester is indicated, the course may be offered on demand in fall, spring, or summer term. Some courses are offered every other year. Where no course master is listed, any available Epidemiology faculty member may teach the course. Course numbers preceded with an asterisk (*) indicate courses that can be repeated for credit. Doctoral students not meeting the stated prerequisites may enroll with the course master's permission. Advanced master's students may enroll in selected 700-level courses with the course master's permission.

Course Descriptions

Epidemiology (EPI)

EPI 701. Advanced Readings in International Health.-Methodologically oriented course highlighting major findings in infectious disease control and prevention, including HIV/STD epidemiology and control in developing countries. Number of credit hours enrolled depends on the magnitude of the research paper or proposal that is developed. 1-3 hours

EPI 702. Doctoral Seminar in International Health.-Seminar for student presentations of critiques of journal articles relevant to public health. Students will also present their dissertation research for peer review. Faculty presentations will focus on methods/topics of interest to students. 1 hour

EPI 703. Grant Proposal Writing.-To provide the student with information about grant proposal writing and practice in preparing a grant proposal for submission. Students must write a proposal for an

epidemiologic research project, with guidance from the course master and associated faculty members. Human subject issues are discussed. 3 hours. (Arnett)

EPI 708. Tropical Infectious Diseases.- Detailed discussion of the epidemiology and control of infectious diseases prevalent in tropical climates. Intended for students planning careers in international health and global studies. 3 hours. Spring (Jolly)

EPI 709. Theoretical Basis of Epidemiology.- Provides doctoral students with the theoretical basis underlying key aspects of the design, analysis and interpretation of epidemiologic studies. The course is intended to provide sufficient depth and sophistication in coverage of statistical material to prepare the student for independence in epidemiologic research. This aim will be achieved through the review and discussion of landmark papers that introduced important conceptual and methodological advances in the discipline of epidemiology. Prerequisites: BST 612 and EPI 625. 3 hours.

EPI 710. The Analysis of Case-Control Studies.-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 with review of relevant methodologic issues; and to apply stratified analysis methods and regression models to the study of diseases of multifactorial etiology. 3 hours. Spring (McGwin)

EPI 712. Nutritional Epidemiology.-Covers core concepts in human nutrition including nutrient classification, sources, deficiencies, and excesses; recommended daily dietary allowances, anthropometry, dietary assessment methods and their validation, bio-markers of dietary intake, study designs, issues in the analysis and presentation of dietary data, diet-disease and gene-diet associations. 3 hours. (Kabagambe)

EPI 713. Cancer Epidemiology and Control.-Cancer statistics are reviewed as are the causes of the major types of cancer. The latest research findings regarding causes of cancer will be presented. Control measures such as smoking cessation, screening and improving access to treatment are discussed. Doctoral students make presentations on cancer issues of their choice. 2 hours. Summer (Waterbor)

EPI 715. Ecology and Epidemiology of Arthropod-Borne Diseases.-This course details the epidemiology and control of arthropod-borne diseases. Prerequisites: basic course (e.g., EPI 605) or background in infectious disease epidemiology; background in biology or microbiology are desirable. Contact course master for guidance if you wish to enroll but are unsure that you are qualified. 3 hours. (Novak)

EPI 720. The Analysis of Follow-up Studies.-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, review relevant methodologic issues, and apply stratified analysis methods and regression models to the study of diseases of multifactorial etiology. 3 hours. Fall (Levitian)

EPI 724. Grant Applications in an International Setting.-Students will be expected to write all the sections of a grant proposal with an international focus (as could be submitted to the National Institute of Health or any other recognized funding agency pre-approved by the instructor). The course will offer both didactic (lectures) and hands-on (group work) learning activities. The lectures will provide basic guidelines for completion of the assignments. The hands-on learning format will focus on reviewing assignments and providing feedback on fellow students' work. 3 hours.

EPI 730. Introduction to Human Population Genetics Theory.-Basic concepts, theory and mathematical principles underlying population genetics, with a focus on the mechanisms affecting distribution of genes in populations are presented. Prerequisites: Background in genetics; ability to do algebra and statistics. 3 hours.

EPI 731. Genetic Epidemiology.-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 studies 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, with 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. Prerequisites: College level genetics course; basic biostatistics (BST 600 or BST 611 or BST 621 or equivalent); and basic epidemiology (EPI 600 or EPI 610 or equivalent). 4 hours. Spring. (Shrestha)

EPI 731L. Genetic Epidemiology-Lab.- Must be taken concurrently with EPI 731. 0 hours. Course offered when EPI 731 is offered. (Shrestha)

EPI 781. Special Topics in Epidemiology.- Discussion of infectious disease research and practice encompassing design, conduct, analysis, and interpretation of research studies. Students participate in supervised research projects. 3 hours

EPI 788. Principles and Methods in Molecular Epidemiology.- 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 epidemiologic 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.**-In depth study and discussion of several areas of epidemiologic methodology not covered in other courses. Students are responsible for selecting and presenting topics. Considerable reading and outside preparation required. Pass/No Pass. 2 hours. Fall and Summer; must be taken 3 times.

***EPI 795. Epidemiology Seminar Series.**-This lectureship series is a forum for scientific dialogue on current topics in epidemiology, biostatistics and public health. The course will promote the development of knowledge of epidemiologic methods, analytic approaches, disease etiology and natural history, and current issues related to the application of these concepts for conducting epidemiologic research and practice. Pass/No Pass. 1 hour. Fall and Spring (Arnett)

***EPI 798. Doctoral Directed Research, Epidemiology.**-Independent study with research advisor or any other Epidemiology faculty member. Course can be taken for development of the dissertation proposal or to undertake a research project other than the dissertation. Students enroll for the number of credit hours (1 – 9) corresponding to the amount of work they agree to do. Pass/No Pass. Fall, Spring, Summer

***EPI 799. Dissertation Research, Epidemiology.**- Dissertation research under direction of research advisor and dissertation committee. Can be taken only after student has passed the written qualifying examination and has been admitted to candidacy. Students enroll for the number of credit hours (1 – 9) corresponding to the amount of work they agree to do. Pass/No Pass. Fall, Spring, Summer

Health Education/Health Promotion (Ph.D.)

*The program leading to the Ph.D. in Health Education/Health Promotion is offered jointly by the UAB School of Education (SOE), UAB School of Public Health (SOPH), and the University of Alabama (Tuscaloosa) College of Human Environmental Sciences, Department of Health Science (UA). Program emphasis varies by school.

Degree Offered: Ph.D.*
Director (School of Public Health,
Department of Health Behavior): *Connie Kohler*
Phone: (205) 934-6020
E-mail: ckohler@uab.edu
Web site: www.soph.uab.edu/hb

Degree Offered: Ph.D.*
Director (School of Education,
Department of Health Education): *David Macrina*
Phone: (205) 934-2446
E-mail: dmacrina@uab.edu
Web site: www.ed.uab.edu/healtheducation

Degree Offered: Ph.D.*
Director (College of Human Environmental
Sciences, Department of Health Science): *Stuart Usdan*
Phone: (205) 348-8373
E-mail: susdan@ches.ua.edu
Web site: <http://www.ches.ua.edu/>

Faculty

Wajih Ahmad, Assistant Professor, SOE, Health Education

David Coombs, Associate Professor Emeritus, SOPH Health Behavior

Susan Davies, Associate Professor, SOPH, Health Behavior

Retta Evans, Associate Professor; SOE, Health Education

Frank A. Franklin, Professor Emeritus, SOPH Health Behavior

Melissa Galvin, Associate Professor, SOPH, Health Behavior

Brian F. Geiger, Professor, SOE, Health Education

Diane M. Grimley, Professor, SOPH, Health Behavior

Peter Hendricks, Assistant Professor, SOPH, Health Behavior

Connie Kohler, Associate Professor, SOPH, Health Behavior

Robin Gaines Lanzi, Associate Professor, SOPH Health Behavior

Terri Lewis, Assistant Professor, SOPH, Health Behavior

David M. Macrina, Professor, SOE, Health Promotion, Community Health, Planning and Administration

Wynne E. Norton, Assistant Professor, SOPH Health Behavior

Dor Pekmezi, Assistant Professor, SOPH, Health Behavior

Martinique Perkins, Assistant Professor, SOPH, Health Behavior

Cynthia J. Petri, Associate Professor, SOE

Kerstin Schroder, Associate Professor, SOPH, Health Behavior

Cathy Simpson, Associate Professor, SOPH Health Behavior

Jalie Tucker, Professor, SOPH, Health Behavior

Lori Turner, Adjunct Professor, UA Health Science

Stuart Usdan, Adjunct Professor; UA, Health Science

Additional Information

Deadline for Entry Term(s):	Fall semester
Deadline for All Application Materials to be in the Graduate School Office:	February 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	Information for students enrolling in the School of Public Health is available from Ms. Julie Brown, M.S (jebrown@uab.edu , phone 205-975-8075, fax 205-934-9325).

For more information, contact:

Health Education/Health Promotion Graduate Program Director (Education): David M. Macrina, Ph.D.,
dmacrina@uab.edu

Health Education/Health Promotion Graduate Program Director (Public Health): Connie Kohler, Dr.P.H.,
ckohler@uab.edu

Health Education/Health Promotion Graduate Program Director (Health Science): Stuart Usdan, PhD.,
susdan@ches.ua.edu

Health Education and Health Promotion (Ph.D.)

The Ph.D. program in Health Education/Health Promotion has been designed to provide students with the academic and practical experience to become leading practitioners and researchers in health education and health promotion. The program combines the resources of academic units from the University of Alabama at Birmingham (School of Education and School of Public Health) and the University of Alabama (Tuscaloosa--College of Human Environmental Sciences).

Admission to Ph.D. program

Student applications are reviewed by a joint admissions committee composed of members of the participating academic units. Applicants should meet the admissions requirements of the graduate school, including submission of scores on the Graduate Record Exam (GRE). Admission to the program is competitive. Evidence of scholarship, a clear statement of career goals and research interest, professional recommendations, and professional experience are among the factors receiving strong consideration. 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.

Program of Study

The Ph.D. degree program through the School of Education will require students to complete a minimum of 72 credit hours: 36 hours of coursework, 12 hours of research internship, and 24 hours of dissertation research. The requirements for the Ph.D. degree through the School of Public Health is a minimum of 67 credit hours: 43 hours of coursework, 12 hours of research internship and 12 hours of dissertation research.

Students entering the program with a master's degree may transfer appropriate coursework to this program, but 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 their advisor.

The specific components of the Ph.D. program in health Education and Health Promotion are outlined below.

Ph.D. through the School of Education

I. Health Education and Promotion Courses

(UA = HHE, UAB-Public Health = HB, UAB-Education = HE)

A. Advanced Theoretical and Scientific Bases of Health Education and Health Promotion (HHE 605, HB 750, HE 705)	3 hrs
B. Health Communications Research (HHE 607, HB 730, HE 701)	3 hrs
C. Planning and Administration of Health Education and Health Promotion (HHE 606, HB 760, HE 710)	3 hrs
D. Doctoral Studies Seminar (HHE 604, HB 770, HE 700)	3 hrs
	12 hrs

II. Advanced Research and Statistical Methods

A. Multivariate/Multiple Regression Analysis	3 hrs
B. Advanced Epidemiological Research Methods	3 hrs
C. Data Management/Computer Technology	3 hrs
D. Evaluation/Research Methods	3 hrs
	12 hrs

III. Coursework in the Social and Behavioral Sciences Minor

12 hrs

IV. Research Internship

12 hrs

V. Dissertation	24 hrs
	Total: 72 hrs

Ph.D. through the School of Public Health

I. Health Education and Promotion Courses

(UA = HHE, UAB-Public Health = HB, UAB-Education = HE)

A. Advanced Theoretical and Scientific Bases of Health Education and Health Promotion (HHE 605, HB 750, HE 705)	3 hrs
B. Health Communications Research (HHE 607, HB 730, HE 701)	3 hrs
C. Planning and Administration of Health Education and Health Promotion (HHE 606, HB 760, HE 710)	3 hrs
D. Doctoral Studies Seminar (HHE 604, HB 770, HE 700)	3 hrs
	12 hrs

II. Advanced Research and Statistical Methods

A. Advanced Epidemiological Research Methods	4 hrs
B. Data Management / Computer Technology	3 hrs
C. Intermediate Statistical Analysis/ Statistical Methods	3 hrs
D. Advanced Health Program Evaluation	3 hrs
E. Intermediate Statistical Analysis II/ Statistical Methods and Research in Education: Intermediate	3 hrs
	16 hrs

III. Program Evaluation/Research Methods/Statistics Electives	6 hrs
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IV. Social and Behavioral Sciences Electives	9 hrs
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V. Research Internship	12 hrs
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VI. Dissertation Research

12 hrs

Total: 67 hrs

Course Descriptions

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.

Health Behavior (HB)

HB 600. Social and Behavioral Science Core.- This course is structured to provide students with a basic "starting point" for developing the required competencies in this area. The course consists of information delivery (e.g., lectures, readings), practice and application exercises, and knowledge integration and synthesis activities. Successful completion of this course will enable you to describe the role of social and community factors in both the onset and solution of public health problems; identify the causes of social and behavioral factors that affect health of individuals and populations; identify basic theories, concepts and models; apply ethical principles to public health program planning, implementation and evaluation; specify multiple targets and levels of intervention; identify individual, organizational and

community concerns, assets, resources and deficits; apply evidence-based approaches in the development and evaluation of interventions; describe the merits of social and behavioral science interventions and policies; describe steps and procedures for the planning, implementation and evaluation of public health programs; and identify critical stakeholders for the planning, implementation and evaluation of public health programs, policies and interventions. Course will be graded by letter. 3 hours

HB 600Q. Social and Behavioral Science Core Online. This course is structured to provide students with a basic "starting point" for developing the required competencies in this area. The course consists of information delivery (e.g., lectures, readings), practice and application exercises, and knowledge integration and synthesis activities. Successful completion of this course will enable you to describe the role of social and community factors in both the onset and solution of public health problems; identify the causes of social and behavioral factors that affect health of individuals and populations; identify basic theories, concepts and models; apply ethical principles to public health program planning, implementation and evaluation; specify multiple targets and levels of intervention; identify individual, organizational and community concerns, assets, resources and deficits; apply evidence-based approaches in the development and evaluation of interventions; describe the merits of social and behavioral science interventions and policies; describe steps and procedures for the planning, implementation and evaluation of public health programs; and identify critical stakeholders for the planning, implementation and evaluation of public health programs, policies and interventions. Course will be graded by letter. Course is offered online.

HB 602. Alcohol and Drug Abuse.-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.

HB 603. Behavioral Interventions for Cardiovascular Risk Reduction.- This course is designed to examine interventions that are used to decrease the risk of developing cardiovascular disease (CVD) by modifying health behaviors. The course will begin with a thorough review of the occurrence, etiology, and consequences of CVD among various subpopulations. This is followed by a systematic review of the literature on existing behavioral interventions to reduce health risks among various subpopulations. Based on this literature review, this course will conclude with the identification of key elements to the design of successful behavioral interventions to reduce the occurrence of CVD. Course will be graded by letter.

HB 604. High Technology Approaches to Health Communications and Behavior Change Interventions.- 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. Course will be graded by letter.

HB 607/707. Nutrition in Maternal and Child Health.- Overview of nutrition throughout the life cycle of mothers and children in both developed and underdeveloped countries. The core topics of nutrition in pregnancy, infancy, under-nutrition and obesity are reviewed at the levels of biology, epidemiology and prevention, programs, practices and policy. Nutritional antecedents of adult chronic diseases (e.g. cardiovascular disease, diabetes, and cancer) will be reviewed. Course will be graded by letter.

HB 608. Women's health and Social Behavior.- 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. Course will be graded by letter.

HB 609. African-American Health Issues.- 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. Course will be graded by letter.

HB 610. Health Promotion/Disease Prevention: Advanced Theory and Practice.- 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 and 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. Course will be graded by letter.

HB 611. Mental Illness as a Public Health Issue.-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. Course will be graded by letter.

HB 624. Advanced Theory and Practice in Behavioral Science.-Advanced review of selected behavioral science concepts and theories useful for developing health promotion programs; social cognitive theory and the transtheoretical model of change are examined in depth. This course may be required for some MPH- students. Course will be graded by letter..

HB 630. Health Communications: Theory and Practice. - 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. Course will be graded by letter. Prerequisite: HB 624.

HB 635. Communities Families and Health. 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.

HB 638Q. Public Health Promotion and Aging Seminar.-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. Course offered on-line.

HB 641. Research Methods in Behavioral Sciences.-Review of research methodology in behavioral sciences. Formulation of research questions, causality, experimental and quasi-experimental designs, reliability and validity, reporting findings. Prerequisite: Permission of instructor. Course will be graded by letter. 3 hours.

HB 642. Research Methods and Evaluation. - Review of research methodology in behavioral sciences. Formulation of research questions, causality, experimental and quasi-experimental designs, reliability and validity, reporting findings. 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. 3 hours.

HB 643. Health Program Evaluation.-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.

HB 680. Health Promotion Through Radio Outreach.- 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 educate people about risk factors for cardiovascular disease.

Pass/No Pass

HB 692. Principles and Practices of Community Organization. - 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. Course will be graded by letter. Prerequisite: Permission of Instructor.

HB 695. Seminar on Selected Health Behavior Topics.-Seminar covering a variety of health behavior topics. Prerequisite: Permission of instructor. Pass/No Pass.

HB 697. Internship.-Field experience under joint direction of appropriate faculty member and qualified health education specialist. Written report specifying activities, products, and outcomes of experience submitted upon completion of internship. Pass/No Pass. 3,6,9 hours.

HB 698. Master's Directed Research.-Independent study with guidance of appropriate faculty. Includes activities such as literature review and evaluation. Pass/No Pass. 1 - 9 hours.

HB 699. Master's Project Research.-Research for project under direction of research project committee. Pass/No Pass. 1 - 9 hours.

HB 714. Survey Research Methods.-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. Course will be graded by letter. Prerequisites: Doctoral standing or Permission of Instructor.

HB 720. Neighborhood Influences on Health Behavior.-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 its 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. Course graded by letter.

HB 730. Health Communication Research.- 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. Course will be graded by letter. Prerequisite: HB 750.

HB 740. Advanced Program Evaluation.-Advanced review of evaluation theories, approaches, and methods for assessing the plans, implementation, and effectiveness of health promotion programs. Course graded by letter. Prerequisite: HB 642 or other master's level evaluation course and a graduate level multiple regression or multivariate statistics course. Course will be graded by letter.

HB 750.Advanced Theoretical and Scientific Basis of Health Education and Promotion.-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. Course graded by letter.

HB 760. Planning and Administration of Health Education and Promotion Programs.- 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. Course graded by letter. Prerequisites: HB 750 and HB 730.

HB 770. Doctoral Studies Seminar.- 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. Course will be graded by letter. Prerequisites: HB 750, HB730 and HB 760.

HB 798. Doctoral Directed Research.-Independent study with guidance of senior public health faculty. Pass/No Pass. 1-9 hours.

HB 799. Dissertation Research.-Research for dissertation under direction of dissertation committee. Pass/No Pass. Prerequisite: Students must be admitted to candidacy in order to register for this class.1 - 9 hours.

Health Education (HE)

502. Mental Health and Stress Management. Fundamental concepts of mental health and mental illness, with emphasis on etiology, symptomology, treatment, and prevention of mental illness. Elementary skills, dynamics of stress, and contemporary methods of stress management.

508. Drug Use and Abuse. Emphasis on emotional, intellectual, psychological, and social aspects of drug use. Misconceptions about drugs. Attitudes toward drugs and drug prevention and treatment programs.

521. Health Communication. Skills appropriate for selected health problems; problem solving and referrals.

523. Human Sexuality. Biological, sociological, and cultural aspects of sexuality.

531. Planning and Evaluation. Program planning and curriculum development for school, agency, and health care settings. Need assessment, objective setting, methodology, and evaluation are emphasized.

532. Administration of Health and Fitness Programs. Administrative theory applied to health and fitness settings.

593. Educational Gerontology. Program preparation for generic consumers. Major health concerns facing many senior citizens and ways to communicate educational interventions. Prerequisite: Permission of instructor.

598. Issues in Women's Health. Historical and psychosocial factors that have and may continue to influence the potential health status of the American female. Major causes of morbidity and mortality as well as tips for health care system utilization.

601. Current Readings in Health Education. Review of literature in health education. Development of annotated bibliography pertinent to professional practice. Prerequisite: Permission of advisor.

602. Alcohol and Society Seminar. Effects of alcohol on individual health, family relations, and community life. Prerequisite: Permission of instructor.

606. Issues in Disease Control. Nature and distribution of disease; communicable and nutritional diseases of childhood; possibilities for prevention. Prerequisite: Introduction to epidemiology or permission of instructor.

610. Foundations of Health Education. Issues in health education; school, community, or patient health education. Prerequisite: Permission of instructor.

611. School Health Programs. National, state, and local factors influencing school health programs; influences of official and nonofficial agencies. Historical perspective, present and future directions of profession and school health. Prerequisites: HE610 or an equivalent health education foundations course.

612. Workshop in Health. Concepts and methods to increase proficiency. Comprehensive health education K-6 or 7-12; health education in school, community, or both. 3 to 6 hours.

640. Content Issues I. Drugs, death, human sexuality, nutrition, international health, legislation, and physical and spiritual dimensions of health. Decision making and problem solving. Implication of research, computer applications. Prerequisite: Permission of Instructor.

641. Content Issues II. Selected health issues. Personal characteristics of population (age, sex, emotional well-being) and external factors (societal and environmental); interventions and other approaches and solutions. Prerequisite: Permission of instructor.

642. Health Behavior and Health Education. Students will examine multiple methods that are used in professional health education practice. Course content will include consideration of the nature of effective helping relationships. Prerequisite: HE 610 or equivalent health education foundations course.

689. Materials and Methods of Health Education. Ethical, theoretical, and practical aspects of health education; teaching techniques, decision-making skills, curricular development, organization skills, and techniques. Prerequisites: HE 610 or an equivalent health education foudnations course.

691. Special Topics in Health Education. Topics in school and community health education; development of new ways to examine situations. 3 or 6 hours.

692. Supervised Research in Health Education. Research problem based on school, community, or public health education needs. Prerequisite: EPR 508, 509, or equivalent graduate-level statistics course ad permision of instructor. 3 or 6 hours.

693. Advanced Field Experience. Professional practice and research supervised by qualified health education professionals in approved health education work setting. 3 or 6 hours.

695. Junior/Secondary Health Education. Student teaching. Prerequisite: HE 610, 689, and other courses identified by advisor. 9 hours.

697. Evaluation of Health Education Programs. Competencies, knowledge and skills to plan and to implement an evaluation of health promotion-disease prevention intervention for a defined population at risk. Students will become familiar with Healthy People 2010: The National Health Promotion and Disease Prevention Objectives for the Year 2010, Health Alabama 2010, NCLBA of 2001, NCHEC Responsibilities and Competencies and current professional literature. Prerequisites: HE 610 or similar Foundations course and EPR 508, 509, or equivalent graduate-level statistics course.

698. Nonthesis Research. 1-6 hours.

699. Thesis Research. Supervised research project. Prerequisite: Admission to candidacy and permission of advisor. 1, 2, 3, or 6 hours.

700. Seminar in Health Education. Presentation of health education research. Completion of HE 705 (HHE 605/ HB 750); HE 701 (HHE 607/ HB 730); & HE 710 (HHE 606/HB 760).

701. Special Topics in Health Education. Topics in school and/or community health education; development of new ways to examine situations. Prerequisite: Permission of advisor. 3 or 6 hours.

702. Supervised Research in Health. Research problem based on school, community, or public health education needs. Prerequisite: EPR 508, 509, or equivalent graduate-level statistics course and permission of instructor. 3 or 6 hours.

703. Advanced Field Experience. Professional practice and research supervised by qualified health education professionals in approved health education work setting. 3 or 6 hours.

705. Advanced Theoretical and Scientific Basis of Health. Analysis of knowledge, attitude and behavior change strategies, and resulting effect on health status.

710. Planning and Administration of Health Education/Health Promotion Programs. Case study of school and community health education interventions. Decision making and development of program planning skills in designing interventions in a variety of health education settings. Prerequisites: HE 705 (HB 750/ HHE 605); HE 701 (HB 730/ HHE 607).

720. Evaluation of Health Education Programs. Evaluation protocols in health education settings; needs assessments, process and formative evaluations, cost benefits, summary reports.

729. Ed.S. Thesis Research. Prerequisite: Admission to candidacy.

730. Evaluation Research Methods. Theory and application of behavioral evaluation research including preparation of research NIH type proposals.

731. Health Education Planning and Promotion.

732. Evaluation of Health Education Programs.

740. Evaluation of Health Education Programs.

* **798. Nondissertation Research.**

* **799. Dissertation Research.** Prerequisite: Admission to candidacy.

Graduate School

Graduate School Professional Development Program

Program director: *Austin*

Faculty

Nancy G. Abney; English as a Second Language, TA Training

Julia S. Austin; Program Director, English as a Second Language, Faculty-Teacher Development, Academic Writing, TA Training

Alan D. Corbin; English as a Second Language, Presentation and Discussion Skills

Jeffrey Engler; Career Development, Extramural Funding

Jennifer Greer; Academic Writing, English as a Second Language

Jonghee Shadix; Pronunciation and Accent Training, English as a Second Language

Program Information

These courses and workshops are offered to improve the academic and professional communication skills of graduate students and postdoctoral fellows and to provide language and cultural support for international graduate students.

Additional Information

For detailed information, contact Dr. Julia S. Austin, HUC 511, 1530 3rd Avenue South, Birmingham, Alabama 35294-1150.

Telephone 205-975-6539

E-mail jaustin@uab.edu

Web www.uab.edu/profdev

Course Descriptions

Graduate School (GRD)

701. Presentation & Discussion Skills. This course is designed to develop professional communication skills through individual presentations and group evaluations. Topics include the basics of oral presentation, content, organization, and delivery of formal presentations; use of voice and nonverbal communication; and speaking to different audiences. Students' presentations are videotaped and critiqued by their classmates and the instructor. Fall and Spring. 3 credit hours. Pass/Fail.

704. Specialized Instruction. Addresses particular writing needs of students actively writing theses, dissertations, articles for publication, grant proposals or pronunciation concerns of second language students. Individual instruction. Prerequisite: Permission of program director. Spring, Summer, and Fall. 1 to 5 hours. Pass/Fail.

705. Teaching at the College Level and Beyond. This course provides an overview of many important aspects of teaching at the college level and beyond. Topics include designing a course and writing an effective syllabus, writing learning objectives, enhancing lectures, testing and grading, dealing with challenging students and difficult situations, learning and the brain, and accessing appropriate active learning strategies. Spring. 2 or 3 credit hours. Pass/Fail.

709. Fellowship Writing. This hand-on workshop takes students through the fellowship or grant writing process from finding funding sources to writing a successful narrative. Topics also include finding the right funding source to match your research topic, the fellowship or grant writing process, the writing and editing process, and effective revisions. Students will prepare a fellowship or grant proposal during the semester. Spring. 3 credit hours. Pass/Fail.

712. Research Writing and Style. Designed for graduate students and professionals whose first language is English, and who are currently working on a writing project (e.g., paper for class, journal article for publication, or dissertation), this course teaches effective strategies of successful writers. Topics include the different types of writing that students and professionals do (such as abstracts, proposals, journal articles, progress reports, and correspondence), publishing, and ethical issues related to writing and publication. Summer. 3 credit hours. Pass/Fail.

714. Individualized Pronunciation Instruction. Prerequisite: GRD 714 or permission of instructor. Students in Individualized Instruction have acquired basic speaking skills in group instruction and are now ready for fine-tuning their language abilities with an experienced instructor, who tailors lessons to their particular pronunciation needs. The course includes a thorough diagnostic and goal-setting session, followed by one-to-one instruction in the sounds and rhythms of English, including computer-assisted

language mapping and techniques used by professional actors. Spring, Summer, and Fall. 3 to 5 credit hours. Pass/Fail.

715. Preparing TAs to be Effective Teachers. 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. Recommendation of department required. Fall. 2 or 3 credit hours. Pass/Fail.

717. Principles of Scientific Integrity. This course surveys ethical issues and principles in the practice of science. Among the topics discussed are the nature, extent, and causes of fraud in the sciences; UAB policies on fraud; ideals of good science; the responsibilities of authorship and peer review; potential problems raised by the commercialization of research; scientists as public policy advisors; and ethical issues involved in animal experimentation and in clinical trials. Fall and Spring. 3 credit hours. Pass/Fail.

720. Oral Communication I. Prerequisite: OPI Level 2-Low or Mid on UAB-adapted OPI Assessment. Learn strategies for clearly and accurately expressing your ideas while building your confidence. On-line lectures allow students to practice listening to presentations and interviews on current topics. In-class discussions build fluency, grammar, and pronunciation. This interactive speaking and listening course prepares students to participate actively in discussions with Americans in both academic and social settings. (First class in a 2-part sequence.) Spring, Summer, and Fall. 3 credit hours. Pass/Fail.

721. Oral Communication II. Prerequisite: OPI Level 2 High or GRD 720. Build academic vocabulary and knowledge of American culture. Improve listening and speaking accuracy, and practice effective language learning strategies. Students in this dynamic, web-enhanced course discuss ethical and global issues while learning to speak and listen effectively in small groups. Class size is limited to ensure maximum participation. Spring, Summer, and Fall. 3 credit hours. Pass/Fail.

724. First-timers' Pronunciation Workshop. This course is for students who have never been exposed to English phonology classes. In this class, students will be introduced to the American intonation patterns, pronunciation of English sounds, and culture related to the language. In addition to the exposure to English phonology, by interacting with peers, students will discover where they stand in terms of English pronunciation. Participation in this workshop will also provide the instructor with ample opportunities to assess students' individual pronunciation needs. Fall and Summer. 3 to 5 credit hours. Pass/Fail.

725. Advanced Pronunciation Workshop. Prerequisite: GRD 714, or permission of the instructor. This course is for those students who have completed the individualized instruction or who have the equivalent proficiency of those who have completed. By applying the voice and speech works of actor training, the students will practice speaking in longer stretches of the speech without losing the clarity of the message. This course helps students prepare for thesis and dissertation defenses, lecturing, and talks given at professional conferences. Spring. 3 credit hours. Pass/Fail.

726. Academic Writing I. Prerequisite: Writing Assessment Level 2. This hands-on course introduces students to the writing process, the elements of effective writing, common academic texts, ethics, peer review, and techniques for efficient editing. Based on guided activities, independent practice, and small-group work with instructor feedback, it is the first of two courses on writing academic journal-style articles. Instruction also addresses key grammatical issues for second language writers. (First class in a 2-part sequence.) Spring, Summer, and Fall. 3 credit hours. Pass/Fail.

727. Academic Writing II. Prerequisite: GRD 726 or permission of instructor. In the second of a 2-part series, academic writers build upon their knowledge of the writing process and peer review while learning to paraphrase, summarize, write literature reviews, and construct research articles. Activities include text analysis, writing practice, review, and revision as students model professional strategies. Instruction addresses key grammar issues for second language writers. Spring, Summer, and Fall. 3 credit hours. Pass/Fail.

728. Advanced Academic Writing. Prerequisite: 2nd language writers: Writing Assessment Level 3 or GRD 727; Native English writers: permission of the instructor. Created for advanced writers, GRD 728 reviews U.S. academic writing genres, standards, and conventions. Fast-paced with text analysis and guided practice, this course covers the writing of conference abstracts, posters, literature reviews, and research papers as students model professional strategies. Embedded language instruction addresses key grammar issues for second language writers. Spring, Summer, and Fall. 3 credit hours. Pass/Fail.

730. Advanced Oral Communication. Prerequisite: OPI Level 2 High or GRD 721. Build communication skills and learning strategies while exploring cultural values. Through small-group interaction, students learn to effectively discuss their opinions, organize effective talks, and analyze complex problems. This Level 3 course prepares students for the kinds of communication expected in graduate school—participating in academic discussions; debating scholarly projects with colleagues; and delivering formal talks at professional meetings. Spring, Summer, and Fall. 3 credit hours. Pass/Fail.

Workshops

706. Grants and Fellowships 101: How to Obtain Funding. This workshop provides an introduction to writing grant proposals and fellowship applications. Topics include funding sources, electronic databases, organization and format of proposals and applications, submission and review processes, use of secondary sources, and guidelines for effective proposal writing. Fall. One-day workshop. 1 credit hour. Pass/Fail.

707. Giving Professional Presentations. This workshop examines elements necessary for giving effective professional presentations. Topics include analyzing audience and purpose, assessing environment, language choices, differences between speaking and writing, nonverbal communication, characteristics of effective delivery, controlling nervousness, poster presentations, visual aids, and handling questions. Fall. One-day workshop. 1 credit hour. Pass/Fail.

708. Writing Successfully. This workshop provides an introduction to various aspects of writing in a variety of professional settings. Topics include strategies for efficient composing, overcoming writer's block, avoiding plagiarism, adjusting for audience, writing for PowerPoint, and editing your own writing. Spring. One-day workshop. 1 credit hour. Pass/Fail.

710. Career Workshop for Graduate Students. This workshop provides participants with insights into a variety of career fields, inside and outside of academia. Discussion panels are made up of invited speakers from business, government, industry, and academia from across the United States. Spring. One-day workshop. 1 credit hour. Pass/Fail.

711. Special Topics. This workshop addressed topics of current interest to graduate students. See UAB Class Schedule for offerings. 1 credit hour. Pass/Fail.

Graduate Student Handbook

2010-2011



UAB GRADUATE
SCHOOL

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University guidelines and updated policies may be found online:
www.uab.edu

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The UAB Graduate School

The Graduate School administers doctoral programs in 38 areas, post-masters education specialist programs in 7 areas, and master's level programs in 42 areas, with additional programs planned for the future. A particular strength of the school is its many programs that unite different disciplines by crossing departmental and school lines.

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

Our graduates have used the knowledge and intellectual skills acquired in graduate school to follow a wide variety of professional paths in academia, government, and industry. We encourage you to take full advantage of the resources of this great university to reach your full potential. As you proceed through your graduate study, we hope that you find your horizons widening and that you will leave prepared for a rewarding professional life.

This handbook is designed to provide you with a general reference to the essentials needed for successful navigation through your graduate career. Take time to familiarize yourself with the contents and also with the specific policies of your own graduate program. The Graduate School staff is always available to answer your questions and provide assistance, but you will find that many of your questions about the policies and procedures surrounding important milestones in your graduate career are answered in the pages that follow. The policies that are reprinted here are those that are most pertinent to graduate students. They address specific aspects of academic performance, academic and non-academic conduct, and student responsibilities. UAB 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. Other policies printed below address UAB's responsibilities to its students. All policies are subject to revision. Students are advised to consult the UAB Web site, www.iss.uab.edu/policy.htm, for the most current versions of these and other UAB policies.

The Graduate Council

The Graduate Council Advisory Committee, <http://main.uab.edu/Sites/gradschool/students/current/policies/7281/#121>, has developed policies and procedures to ensure that high standards for graduate study are maintained at UAB. These policies and

procedures, available at the Graduate School's Web site (<http://main.uab.edu/Sites/gradschool/students/current/policies/>), are the joint responsibility of the Graduate Council and the Dean of the Graduate School.

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 Advisory Committee annually reviews academic requirements, policies, procedures, and Graduate School activities and recommends appropriate changes. Changes in academic requirements and related policies require a majority vote of the Advisory Committee.

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

Graduate School Professional Development Program

Through its Professional Development Program, the Graduate School offers courses and workshops designed to help graduate students, postdoctoral fellows, and other academic professionals develop communication and other career-enhancing skills. Current offerings for credit include courses and one- or two-day workshops 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).

Graduate Degree Programs Program and Course Information

The online program descriptions (<http://main.uab.edu/show.asp?durki=98842>) give details of degree requirements beyond the general statements in this handbook. Specific courses are also listed.

Courses are for 3 semester hours credit unless otherwise noted. Courses marked with an asterisk may be repeated with stipulations.

Combined Degree Programs

UAB offers students opportunities to pursue two advanced degrees concurrently. These are limited primarily to students pursuing both a research degree (such as the Ph.D. or M.S.) and a professional degree (such as the M.D., D.M.D., O.D., or M.P.H.). Students wishing to be enrolled in two programs concurrently should submit with their application material a written statement of support and approval from the director of the program in which he or she originally enrolled. UAB also offers a limited number of 5th year Masters (Fast Track) programs for students who wish to earn both the Bachelors and Masters degree in five years.

Concurrent Degrees

Students who do not qualify for a combined degree program but wish to begin work toward a second advanced degree may earn up to 12 semester hours in the additional program (without special permission) while simultaneously earning credit toward the original degree. However, **no more than 12 semester hours earned in the first degree program may ever be applied toward the second degree.**

Student Organizations and Activities

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* (http://www.uab.edu/handbook/UAB_Handbook_2009-11.pdf).

Graduate Student Association

UAB graduate students are represented by the Graduate Student Association (GSA), 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 GSA, and the GSA Senate is composed of student representatives from the various graduate programs. The GSA provides partial funding for graduate student travel to professional meetings. The organization cosponsors a variety of services and activities, including the Honors Convocation, Graduate Student Research Days, Graduate Student Orientation, and the GSA Emergency Loan Fund. Information on the new Graduate Student Medical Assistance Fund and travel grants may be obtained on the GSA Web site (www.uab.edu/gsa).

Black Graduate Student Association

The Black Graduate Student Association (BGSA) was founded in 1993. The BGSA sponsors

social events, informational sessions on topics of interest, community services, and an annual conference. For detailed information about the BGSA, visit the Web site at <http://www.uab.edu/bgsa/>.

UAB Graduate Career Awareness and Trends (GCAT)

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 nonacademics; stimulate students to begin career development early in their educational experience; and provide information to students about alternative career opportunities. More information regarding the GCAT can be found at <http://main.uab.edu/show.asp?durki=47488>.

Graduate Student Research Days

Graduate Student Research Days (GSRD) is an annual competition in which graduate students present their original research in an open forum. Deadlines for submitting abstracts and presentations for GSRD are announced at the beginning of spring semester and are available at the GSRD Web site (www.uab.edu/graduate/researchday). Awards are presented at the Graduate School Awards Luncheon ceremony each spring semester.

General Academic Requirements

Categories of Graduate Student

Two broad categories of graduate students are recognized: degree-seeking and nondegree-seeking.

Degree-Seeking Students

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 application procedure includes the submission of official transcripts, standardized test scores, and letters of recommendation. Each application is reviewed by the graduate program faculty, who make an admissions recommendation to the Graduate School dean or a representative of the graduate dean.

Nondegree-Seeking Students

The nondegree category serves students who do not wish to pursue a graduate degree at UAB, as well as those who wish to begin graduate study before

being admitted to a degree program. Not all graduate courses are open to nondegree-seeking graduate students. Although there is no limit to the number of credit hours that may be earned as a nondegree-seeking student, should a student later wish to pursue an advanced degree at UAB, the credit earned while in nondegree-seeking status is not automatically acceptable toward the degree. **In no case can more than 12 semester hours earned as a nondegree graduate student be applied toward an advanced degree at UAB.**

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

Unless otherwise stated, the policies in this section apply to both degree-seeking and nondegree-seeking graduate students.

Information on applications for admissions can be found on the Graduate School Web site (<http://main.uab.edu/sites/gradschool/students/prospective/>) and in the Graduate Catalog.

Special Conditions of Admission

Admission with Contingencies

Students lacking a limited number of specific qualifications may be admitted to graduate programs contingent on completion of those qualifications within a specified period of time. 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 may result in dismissal.

Admission of Students Previously Dismissed

When any individual applies to a graduate program, a major 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. To be readmitted, applicants who have previously been dismissed from the Graduate School must present convincing evidence to the 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.

Readmission

The records of students, who have not registered for courses for one year or more, will be removed from the UAB computerized registration system. Such students must apply for readmission before they may register again. Degree-seeking students who (1) were admitted to a UAB Graduate Degree-Seeking Program within the last five years, and (2) have not registered for courses for one academic year (3 semesters) or more BUT have registered for and

successfully passed at least one graduate course at UAB after being admitted to a UAB Graduate Degree-Seeking Program, and (3) have not attended any other university or college in the interim, and (4) wish to return to the graduate program to which he or she was earlier admitted, must fill out the Application for Readmission to Graduate Degree Program form and pay the appropriate fee. These readmitted students must meet the degree requirements operative at the time of readmission. Students who wish to return to the nondegree category after an absence of one or more years must submit a new nondegree online application, together with the required processing fee. These forms can be obtained online at <http://main.uab.edu/Sites/gradschool/students/current/forms/>.

Faculty

To maintain university accountability, UAB faculty and staff who wish to take occasional graduate courses must register for these courses after admission to the Graduate School in the nondegree-seeking basis. Admission of a UAB faculty member 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. Employees must register online for UAB's Educational Assistance Program. Employees are required to certify any eligible dependents/spouses that plan to enroll in classes. For more information regarding Educational Assistance, visit http://www.hrm.uab.edu/main/policy_procedures/policy319.html.

Graduate Credit

For purposes of academic accounting, credits expressed in "semester hours" are assigned to each course. The guideline for lecture courses is that one semester hour of credit is awarded for 13-15 contact hours. Laboratory credit is assigned on the basis of one semester hour of credit for approximately 30 hours of work in the laboratory.

Undergraduates Seeking Enrollment

UAB undergraduate students may be allowed to enroll in a graduate course with the approval of their advisor, the instructor, their undergraduate program director, and the graduate program director. The Undergraduate Student Request for Enrollment in Graduate Level Coursework form can be obtained online (<http://main.uab.edu/Sites/gradschool/students/current/forms/>). Credits earned by undergraduate students may be applied to either an undergraduate degree or a graduate degree, but not both. If the student is subsequently admitted to the Graduate School, use of this credit toward a graduate degree requires the approval of the graduate program director and the

Graduate School dean.

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 for graduate students. Those numbered 600-699 are intended primarily for students at the master's level, with 698 reserved for nonthesis 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 nondissertation 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.

Time Limitations

Graduate students are generally expected to complete all degree requirements with **5 years of matriculation for master's 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 5 years (master's) or 7 years (doctoral). The request for an extension should include a plan and timeline for completion. Such requests require the approval of the student's dissertation committee and graduate program director and must be presented in writing to the dean of the Graduate School for consideration and approval. Courses taken more than 5 years (master's) or 7 years (doctoral) before graduation may not be applied toward a degree without the approval of the graduate program director and graduate dean.

Leave of Academic Absence

A graduate student may request a leave of academic absence. The request for a leave of academic absence may not exceed one (1) academic year. The Request for Leave of Academic Absence form can be found at the Graduate School Web site (<http://www.uab.edu/graduate/apply/acrobat/leaveofabsence.pdf>). The request must be approved by the student's graduate program director and graduate school dean. Before a student can return from an approved leave of academic absence, the graduate program director must submit to the Graduate School a request to allow the student to re-enroll in courses.

Course Enrollment

Registration

Students must register for all work to be taken for graduate credit. To be classified as "full-time," a

graduate student must register for at least 9 graduate semester hours of work each semester. To be classified as "part-time," a graduate student must register for at least 5 graduate semester hours of work each semester. If you are a degree-seeking student, you must be enrolled at least part-time in order to receive financial aid. The UAB class schedule can be found on the BlazerNET website located at <https://blazernet.uab.edu/cp/home/displaylogin>. The class schedule lists the courses and other work to be offered and gives full details on prerequisites, registration dates, and procedures.

Adding or Changing Courses

Adding or changing courses after registration is possible each semester until the date specified on BlazerNET. Procedures are also specified.

Withdrawal from Courses

Graduate students are expected to complete courses for which they have registered, unless unusual 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 charges.** If a student follows the procedures to withdraw in BlazerNET, then a grade of "W" will be entered on the transcript.

Credit by Examination

Students may not earn "credit by examination" at the graduate level.

Audits

Graduate students may audit courses available for graduate credit with the permission of the instructor and payment of appropriate fees; this approval must be secured **before registration**. Courses taken for audit credit are not counted toward the hours required for full-time status. Provided the instructor's requirements are met, the course will appear on the transcript with the notation AU. The request to audit form can be obtained online at <http://main.uab.edu/Sites/gradschool/students/current/forms/>.

Course Completion

Grading System

The grade of A is used to indicate superior performance, B for adequate performance, and C for 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.

Grades in Pass/Not Pass Courses

With the approval of the graduate program director, a course may be designated as a "pass/not pass course." The grade of P (passing) signifies

satisfactory work. The grade of NP (not passing) indicates unsatisfactory work, without a penalty being assessed with respect to the grade point average (GPA).

Temporary Grade Notations

Temporary notations used by the Graduate School are N for “no grade reported,” and I for “incomplete” coursework.

If there is a special circumstance in which an instructor does not submit a grade at the end of a semester, a temporary grade of N will be recorded. 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.

The temporary notation of I 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 I 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 that semester the I automatically changes to an F. In highly unusual circumstances, the student may request an extension of the 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 Graduate School dean are all required.

Cumulative Credits and Grade Point Average (GPA)

Semester Hours Earned

The student’s “semester hours earned” are increased by (1) earning a grade of C or better in a course for which the student was registered on a regular (“letter grade”) basis or (2) obtaining a P grade in a course taken on a pass/not pass basis.

Semester Hours Attempted

The student’s “semester hours attempted” are increased by receiving a grade of A, B, C, or F in a course for which the student was registered on a regular basis.

Quality Points

Four quality points are awarded for each semester hour in which an A is earned, three quality points are awarded for each semester hour in which a B is earned, and two quality points are awarded for each semester hour in which a C is earned. No quality points are added for other grades.

Grade Point Average (GPA)

The grade point average is determined by dividing the total quality points awarded by the

semester hours attempted.

Repeated Courses

Graduate students may be allowed to repeat courses for graduate credit with the permission of the graduate advisor and graduate program director. All courses taken and all grades earned are permanently recorded on the student’s transcript. The first time a student repeats a course, he or she receives the grade earned for the second attempt. If a course is taken three or more times, all grades after the first are counted. **The Graduate School Records Office must be notified of the first repeat at the time of registration because the calculation using the repeat grade is not automatic.** Some graduate programs may not allow the Repeated Course policy. Check with your advisor to make sure your program has a repeat policy. Note: Many graduate programs also base retention decisions on programmatic guidelines and not on grade point average.

Academic Performance

Good Academic Standing

For a student to maintain good academic standing in the Graduate School, a grade point average of at least 3.0 (B average) and overall satisfactory performance on pass/not pass courses are required. Satisfactory performance on pass/not pass courses is defined as earning at least as many hours of P grades as hours of NP grades.

Conditional Dismissal

A degree-seeking or nondegree-seeking graduate student, who has been in good academic standing but who, at the end of any semester, fails to meet the criteria to continue in good academic standing will be placed on probation. Such a student must re-establish good academic standing within the next two semesters of graduate study undertaken. Students who do not accomplish this level of performance will be dismissed from the UAB Graduate School.

The rules stated above govern university 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, the student may be dismissed from the program.

UAB Student Record Policy

Federal law guarantees students certain rights with respect to their educational records. It is the student’s responsibility to become familiar with the university’s stated policies on these rights (i.e., Student Records Policy).

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://main.uab.edu/Sites/gradschool/students/current/_deadlines/.

Responsibilities of the Graduate Assistant

A fundamental responsibility of the graduate assistant is to work closely with the faculty supervisor in carrying out research or teaching activities, while at the same time making good progress toward the completion of the degree program. If the student's assistantship responsibilities and academic program are properly coordinated, these responsibilities will be compatible. The assistant should articulate his or her goals early in the term of appointment and work with the supervisor to achieve them. The graduate assistant is obligated at all times to maintain high ethical standards in academic and nonacademic activities, and to report violations of these to the faculty supervisor. The graduate assistant should keep well informed of departmental, school, and institutional regulations, and follow them consistently. If problems arise in the assistantship assignments, the graduate assistant should seek help first from the faculty supervisor. If problems cannot be resolved, the student should consult the Program Director.

In general, graduate assistants are expected to be available in the periods between academic terms. Graduate assistants are entitled to the following short-term leaves:

- A maximum of 15 calendar days (one-half month) paid leave of absence (vacation) per calendar year,
- 3 calendar days paid sick leave of absence per calendar year, and
- Parental leave of absence (with pay) of 30 consecutive days per calendar year upon the birth or adoption of a child. Either or both parents are eligible for parental leave.

These leaves (vacation, sick, parental) do not accrue. All leaves must be requested and require approval by the mentor or graduate program director and may be extended, if necessary, with permission

of the graduate program director. Program policies regarding leaves of absence must apply equitably to all full time students in good standing in the program. With the agreement of the mentor and graduate program director, extended, unpaid, non-emergency absences from campus for periods up to a month may be approved. Extended absences (without pay) for non-academic purposes should be limited. Students should consult the Graduate School Policies and Procedures concerning leaves of absence. In emergencies, graduate assistants should inform their mentors or program directors as soon as possible about the need for a leave of academic absence. NOTE: Graduate students (trainees and assistants) are not eligible for FMLA.

Requirements for the Master's 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.

Graduate Study Committee

As soon as possible, a specific plan of study should be developed. Traditionally, graduate study is highly flexible and individualized, and a graduate study committee is appointed, chaired by the student's advisor, to guide the student toward the degree. (Some graduate programs, particularly where flexibility in the course of study is limited by accreditation and other external constraints, do not always use a graduate study committee for Plan II students.) When used, the committee should consist of at least three Graduate School faculty members, one of whom should be from outside the student's graduate specialization and each of whom should be able to bring some relevant insight and expertise to guide the student. 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. Committee members must have credentials equal to or exceeding that of the degree that the student is pursuing and must have been approved by the Graduate School dean for Graduate Faculty status. Graduate faculty appointees and instructions for requesting new appointments are available at http://main.uab.edu/Sites/gradschool/faculty/graduate_faculty/. New Graduate Faculty appointments should be requested by the department and approved by the

Graduate School dean prior to being placed on the recommendation for a student committee. Graduate Faculty status definitions are available at <http://main.uab.edu/Sites/gradschool/faculty/categories/>.

Changes to this committee must also be submitted online on the appropriate form at <http://main.uab.edu/Sites/gradschool/students/current/forms/>.

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. One or the other of these plans may be appropriate in particular circumstances, and in some programs a choice is available.

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, 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, but 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. A plan of study/course curriculum outline is required for all Plan II master's students when submitting the application for degree (before graduation).

Where both Plan I and Plan II are available within one graduate program, an early and meaningful choice should be made by the student, in close consultation with the advisor. A change in choice of plans requires the approval of the program director and the Graduate School Dean.

Transfer of Credit

Previously earned graduate credit that has not been applied toward another degree (either at UAB or elsewhere) is eligible for transfer into the student's current degree program. (Ordinarily no more than 12 semester hours of transfer credit can be applied to a degree program.) All transfers must be initiated by the student and require the approval of the graduate program director and the Graduate School Dean. Transfer of Credit forms are available online at <http://main.uab.edu/Sites/gradschool/students/current/forms/>. An application for transfer of credit will not be considered until the student has completed at least 9 semester hours of graduate credit in the current UAB program and is in good academic standing. Once transfer credit has been accepted, it will be included in the calculation of the grade point average in the student's current UAB program.

Graduate credit earned with a grade of B or above while a graduate student is in another accredited

graduate school may be considered for transfer. 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 are eligible for consideration for transfer into the current program.

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.

Candidacy for Degree (Plan I Only)

Admission to candidacy is a formal step recommended by the student's graduate study committee and approved by the graduate program director and the Graduate School dean, acknowledging that the student has been performing well and is likely to complete the degree. For Plan I students, admission should occur when the student has obtained an adequate background (although not all coursework needs to be complete) and has provided the committee with an acceptable proposal for thesis research. 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). Forms are available online at <http://main.uab.edu/Sites/gradschool/students/current/forms/>.

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 must be kept current until the research is completed (please refer to Tip Sheet for Students Involved in Research Involving Human or Animal Subjects located at the end of the *[Handbook](#)*). The student's name must appear on the IRB approval form. The IACUC form must display the appropriate protocol number.

Application for Degree

Each candidate for a master's degree must

signify the intention to complete the requirements by a particular graduation date by submitting a completed Application for Degree Form. Because this form is used to document completion of requirements, order the diploma, and to include the student in the commencement program, the form must be received in the Graduate School Records Office **no later than 3 weeks into the semester of expected graduation. However, because each graduate program may have an earlier deadline, the student should check with his or her program office for those deadlines as well.** A plan of study/course curriculum outline is required for all Plan II master's students when submitting the application for degree (before graduation). See deadline dates (<http://main.uab.edu/sites/gradschool/students/current/deadlines/>). Students must be registered for at least 3 semester hours of graduate work in the semester they plan to graduate. Forms are available online at <http://main.uab.edu/Sites/gradschool/students/current/forms/>.

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 with the proper selection and execution of research methodology.

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 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 <http://main.uab.edu/Sites/gradschool/students/current/theses/7299/>).

The final approved version of the thesis must be submitted as a single PDF on a good quality CD to the Graduate School for final review no later than 2 weeks (10 business days) following the public defense. Master's students submit the Approval Form, signed by each committee member and the program director. The UAB Publication Agreement form is submitted online. Additional information concerning completing the final steps of the publication process is available online at <http://main.uab.edu/sites/gradschool/students/current/theses/>.

Additional assistance is available for students registered in GRD 704 (offered every semester by the Professional Development Program).

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 advise the student that the thesis fails to meet the requirements of the program. The chair shall notify the student in writing about the reason(s) for failure. If the student resubmits or submits a new thesis for consideration by his/her graduate program at least two members of the new examining committee shall be drawn from the original committee. If the modified or new thesis 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 three committee members dissent, that individual must submit a letter in which he/she outlines 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 his/her 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 (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 deadline.** Plan I candidates must be registered during the semester in which degree requirements are completed. If degree candidates are covered by the student health insurance policy, or have student loans, it may be necessary to maintain at least half time registration status of 5 credit hours to retain these benefits.

When Plan II is followed, the final examination should take the form of a comprehensive survey of the candidate's activities in the graduate program. (A Plan II final examination is not used in some graduate programs.)

Recommendation for Degree

The candidate will be recommended for the master's degree to the Graduate School dean by the graduate study committee or by the student's advisor and the graduate program director. This recommendation must be received no later than 20

days before the end of the semester in which the candidate is expected to complete all degree requirements. The recommendation will be based on evaluation of all work performed, the final examination, and the thesis if Plan I was followed. The recommendation will automatically be nullified if (1) the remaining courses needed for the degree are not passed, (2) the candidate fails to maintain good academic standing, (3) the candidate fails to remove all temporary grades from the transcript, or (4) the Plan I candidate fails to complete the thesis.

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.

Steps Toward Earning the Master's Degree

- Admission to master's degree program
- Selection of faculty advisor
- Maintenance of good standing
- Appointment of graduate study committee—Plan I (Thesis) only
- IRB and/or IACUC approvals obtained and renewed annually
- Admission to candidacy—at least one semester before graduation is expected—Plan I (Thesis) only
- Application for Degree—no later than 3 weeks from the beginning of the semester in which graduation is expected
- Production of preliminary version of thesis (Plan I only)
- Defense of thesis (for Plan I only)
- One PDF (on a CD) of the defended committee-approved thesis to Graduate School office (Plan I only) – no later than 2 weeks (10 business days) after the public defense
- Recommendation for degree
- Conferring of degree

Requirements for the Doctoral Degree

General Statement

The doctoral degree is granted in recognition of (1) scholarly proficiency and (2) 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) and 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. Students in professional doctorate programs must demonstrate competence in clinical practice and 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 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. This assignment may be a temporary arrangement. The student and the advisor should confer about the initial 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

As soon as possible, a graduate study committee should be formed 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. This committee should consist of at least five graduate faculty members, two of whom should be from outside the student's graduate specialization and each of whom should be able to bring some relevant insight and expertise to guide the student. In all cases, at least half of the committee must be comprised of UAB Graduate Faculty members. 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. Committee members must have credentials equal to or exceeding that of the degree that the student is pursuing and must have been approved by the Graduate School dean for Graduate Faculty status. Graduate faculty appointees and instructions for requesting new appointments are available at <http://main.uab.edu/Sites/gradschool/faculty/graduatefaculty/>. 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://main.uab.edu/Sites/gradschool/faculty/categories/>. Changes to this committee must also be submitted online on the appropriate form at <http://main.uab.edu/Sites/gradschool/students/current/forms/>.

Transfer of Credit

Previously earned graduate credit that has not been applied toward another degree (either at UAB or elsewhere) is eligible for transfer into the student's current degree program. Ordinarily, no more than 12 semester hours of transfer credit can be applied to a degree program. Acceptance of more than 12 hours will require approval by the program director, department chair, and Graduate School dean. All transfer requests must be initiated by the student and require the approval of the graduate program director and the Graduate School dean. Transfer of Credit forms are available online at <http://main.uab.edu/Sites/gradschool/students/current/forms/>. Once transfer credit has been accepted, it will be included in the calculation of the GPA in the student's current UAB program.

Graduate credit earned with a grade of B or above by a graduate student in another accredited graduate school may be considered for transfer. 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, credits not applied toward meeting the degree from the previous program are eligible for consideration for transfer into the current program.

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 minimums. Graduate School minimum requirements are as follows:

1. If entering with a baccalaureate degree:
 - a. Completion of 48 credit hours of course work prior to candidacy
 - b. Up to 16 credits of the 48 can be as non-dissertation research credits
 - c. Up to 10 credits can be as lab rotation, seminar, or directed study credits
 - d. Doctoral students must satisfy one of the following:
 - Must complete at least two semesters in candidacy and accumulate at least 24 semester credit hours in 799 dissertation research. **OR**

- Must complete at least two semesters as a student in candidacy and have accumulated 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. Courses which have been previously applied toward meeting the requirements of another degree are not eligible to satisfy the research credit requirement. The student's graduate department or program should provide a course planning curriculum worksheet detailing the courses taken which are intended to be used toward meeting degree requirements along with the application for degree.

2. If entering with a previous Masters degree appropriate to the doctoral degree field (Also applies to previously earned M.S., D.V.M., D.M.D., D.D.S., etc.):
 - a. Completion of 27 credit hours of course work prior to candidacy
 - b. Up to 6 credits of the 27 can be as non-dissertation research credits
 - c. Up to 6 credits can be as lab rotation, seminar, or directed study credits
 - d. Doctoral students must satisfy one of the following:
 - Must complete at least two semesters in candidacy and accumulate at least 24 semester credit hours in 799 dissertation research. **OR**
 - Must complete at least two semesters as a student in candidacy and have accumulated 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. Courses which have been previously applied toward meeting the requirements of another degree are not eligible to satisfy the research credit requirement. The student's graduate department/program should provide a course planning curriculum worksheet detailing the courses taken which are intended to be used

toward meeting degree requirements along with the application for degree.

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.

Residence Requirement

The usual minimal period in which the doctoral degree can be earned is three academic years of full-time study, or longer if the student has periods of part-time enrollment. 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. Therefore, doctoral students should be in residence (enrolled) for three full semesters each year, including summers, during a three year period or collectively a minimum of nine semesters if the student has to take a leave of absence or stop out during the course of their doctoral education.

Foreign Language or Other Special Tools of Research

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 should precede the oral so that there is an opportunity for the student to clarify any misunderstanding of the written questions.

Admission to Degree Candidacy

When the student has passed the 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. A student must be in good academic standing to be admitted to candidacy. 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).

Admission to candidacy is an important step forward in the student's pursuit of the doctorate. By approving admission to candidacy, the graduate committee indicates its confidence that the student is capable of completing the proposed research project and the doctoral program.

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 must be kept current until the research is completed (please refer to Tip Sheet for Students Involved in Research Involving Human or Animal Subjects located at the end of the *[Handbook](#)*). **The student's name must appear on the IRB approval form.** The IACUC form must display the appropriate protocol number.

Application for Degree

Each candidate for a doctoral degree must signify his/her intention to complete the degree requirements to meet a particular graduation date by submitting a completed Application for Degree Form. Because this form is used to check requirements, order the diploma, and include the student in the commencement program, it must be received in the Graduate School Records Office **no later than 3 weeks into the expected semester of graduation.** **However, because each graduate program may have an earlier deadline, the student should check with his or her program office for those deadlines as well.** The deadline dates can be accessed on the Graduate School website. Students must be registered for during the semester in which degree requirements are completed. If degree candidates are covered by the student health insurance policy, or have student loans, it may be necessary to maintain at least half time registration status of 5 credit hours to retain these benefits. Forms are available online at <http://main.uab.edu/Sites/gradschool/students/current/forms/>.

Dissertation

The results of the 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 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 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 (available online at http://www.uab.edu/graduate/theses_dissertation/FormatManual.pdf).

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 (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 deadline. 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 advise the student that the dissertation fails to meet the requirements of the program. The chair shall notify the student in writing about the reason(s) for failure. If the student resubmits or submits a revised dissertation for consideration by his/her graduate program at least three members of the new examining committee shall be drawn from the original committee. If the revised dissertation 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 in which he/she outlines 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 his/her 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.

Submission of the Dissertation

No later than 2 weeks (10 business days) following the public defense, the completed, final version of the committee-approved dissertation, as a single PDF, must be submitted for final review. There is a \$65 charge, paid online at the time of submission. This fee covers perpetual archiving and maintenance of the dissertation in the ProQuest/UMI database. Also submitted online are the UAB Publication Agreement and the Survey of Earned Doctorates. 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://main.uab.edu/Sites/gradschool/students/current/theses/>.

Recommendation for Degree

The candidate will be recommended for the doctoral degree to the Graduate School dean by the graduate study committee and the graduate program director. This recommendation must be received no later than 20 days before the end of the semester in which the candidate is expected to complete all degree requirements. Candidates must be in good academic standing to graduate, with no temporary grades for courses required for the degree on their transcripts.

Award of Degree

Upon approval by the Graduate School dean and payment of any outstanding financial obligations to the university, the student will be awarded the doctoral degree. Doctoral students are generally expected to complete all degree requirements within 7 years of matriculation.

Steps Toward Earning the Doctoral Degree

- Admission to doctoral degree program
- Selection of faculty advisor
- Maintenance of good standing
- Appointment of graduate study committee
- Passing of comprehensive examination
- IRB and/or IACUC approvals obtained and renewed annually
- Admission to candidacy—no later than two semesters before expected graduation
- Application for degree—no later than 3 weeks into the expected semester of graduation
- Draft of preliminary version of dissertation
- Review of the draft by committee members
- Revisions made to dissertation in response to committee feedback
- Dissertation Defense—no later than 30 days before expected graduation
- A PDF of the defended committee-approved dissertation to UAB/ProQuest submission

- web site --no later than 2 weeks (10 business days) following the public defense
- Recommendation for degree
- Conferring of the doctoral degree

Academic Ethics and Conduct

As a graduate student at UAB, you have joined a distinguished academic community that is guided by a conviction in the worth of knowledge and its pursuit. By virtue of your membership in this community, you 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. For this reason, we provide guidance here in the forms of both general standards of conduct and university policies.

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.

Academic Integrity — Honor Code

The University of Alabama at Birmingham expects all members of its academic community to function according to the highest ethical and professional standards. Students, faculty, and 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: helping another student commit an act

of academic dishonesty. Allowing others to copy your quiz answers, or use your work as their own are examples of abetting.

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

PLAGIARISM: 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, use of commercially available scholarly papers, failure to cite sources, and copying others' ideas.

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

MISREPRESENTATION: falsification, alteration or misstatement of the contents of documents, academic work, or other materials related to academic matters, including representing work substantially done for one class as work done for another without receiving prior approval from the instructor. Misrepresentation also includes misrepresenting schedules, prerequisites, transcripts, or other academic records.

A student who commits an act of academic misconduct within the context of meeting course requirements will be given the grade of F in the course or on the assignment at the discretion of the department or program in which the misconduct occurred. Academic misconduct can occur in other contexts as well, such as when taking comprehensive examinations, performing research, preparing manuscripts or generally during the performance of other activities related to the process of satisfying degree requirements. Under Graduate School policy the program in which the student is enrolled may choose to expel the student from the university on the first offense. Students should consult the policies of their graduate program to determine whether expulsion can occur with a first offense. If, as determined by the records of the Graduate School or the department or program, the act of academic misconduct is a second offense, the student will be expelled from the university. The transcript of a student expelled for committing academic misconduct will bear the statement "Expelled for Academic Misconduct."

Reporting Academic Misconduct

When a faculty member or another student sees cause to charge a student with academic misconduct, within 7 days of noting the incident that individual will communicate the charge to the department chair or program director of the department or program in which the accused student is enrolled. The department chair or program director to whom the

charge is presented will notify the student of the charge and provide the student with an opportunity to respond. If the student can respond in a way that, in the opinion of the program director and the department chair, either dispels the charge or provides the opportunity to resolve the issue informally, an informal resolution can be prescribed. If the student cannot refute the charge effectively, the department chair or program director will expeditiously notify the student of the administrative action to be taken. The notice shall also inform the student of the right to appeal and the steps involved in that process. Copies of any such communication will be provided to the academic dean of the school in which the student is enrolled.

If the school or department in which the student is enrolled has its own honor code, then the procedures of that honor code must be followed, including any prescribed appeals process. For dual degree students whose academic misconduct occurs in one of their two schools, the honor code of the school in which the infraction occurred should prevail.

However, if no local honor code exists, the following procedure must be followed.

Right to Appeal and Formation of an Honor Council

If a student is the subject of an administrative action as the result of an academic misconduct violation and wishes to contest that administrative action, he / she may appeal in writing to the Dean of the school in which the student is enrolled. The dean will then convene an Honor Council consisting of five students and three faculty members from various departments within the school. All of the students chosen to serve must be in good academic standing.

The Honor Council shall elect a chairperson from among the eight members. The Chair may be either a student or faculty member. The duties of the Chair include convening the Honor Council, presiding over hearings and communicating with the administration of their school on behalf of the Honor Council. In all matters, the members of the Honor Council are instructed to treat the information put forward to them in the strictest of confidence. Breaches of confidentiality are themselves violations of the Student Honor Code and will be treated as such.

Initial Procedures

After being informed of the charges and the failure to reach an informal resolution, the Academic Dean may also attempt to informally resolve the impasse between the student and the faculty member(s). In the event this attempt is unsuccessful, the Academic Dean shall refer the allegation(s) to the Honor Council. The Academic Dean will provide the Honor Council with a statement of the allegation(s) against the accused student, a description of the

evidence and supporting documents (if available). The Honor Council shall convene to review the charge and all evidence supporting it. After review, the Council may either dismiss the allegation(s) on the grounds that insufficient substantiating evidence exists, or support the charges, also based on the evidence. The Honor Council shall provide notice of the specific charge or of the dismissal of the alleged violation to the accused student by certified mail, return receipt requested, or by hand delivery, and to the Academic Dean. If substantiated, the statement of the charge shall include a brief summary of the alleged violation and the evidence presented in support of the charge, in enough detail as to allow the accused the opportunity to rebut the charge, and shall provide notification to the accused student of his/her right to a hearing. The accused student must respond to the charge within five days, unless excused by the Honor Council. In his/her written response to the Honor Council, the accused student must admit or deny the charge and must formally request or waive his/her right to a hearing before the Honor Council.

Once notice of the specific charge has been provided to the accused student and to the Academic Dean, the Honor Council shall decide on a time for the hearing and any preliminary deadline(s) for the submission of supporting documents and the names of proposed witnesses. Granting a request from the accused, or from the School, to reschedule the hearing is within the discretion of the Honor Council, but shall not be unreasonably denied. The Honor Council shall provide written notice to the accused student of the time and place for the hearing, and if witnesses are to be called in his/her defense, ask the student to provide their names along with a statement describing the testimony of each witness. The Honor Council shall review any documentary evidence provided by the student in advance of the hearing.

The Hearing

The process shall generally include the following: (1) call to order by the Chair; (2) introduction of those present; (3) statement of the Charge and possible penalties if the charge is proven; (4) statement of the evidence and testimony in support of the charge, and questioning of witnesses; (5) statement of evidence and testimony in opposition to the charge (rebuttal), and questioning of witnesses; (6) closing statement. All questioning of witnesses shall be by the Honor Council unless the Honor Council shall decide otherwise.

A hearing before the Honor Council shall not be bound by formal rules of evidence or judicial rules of procedure. The Honor Council may hear any testimony or receive any supporting evidence that it deems to be pertinent to the charge. Both the accused and a representative of the School may be present throughout the hearing. The accused student shall be afforded a reasonable opportunity to be heard, to question witnesses indirectly through the Honor

Council, to rebut adverse evidence, and to make a brief closing statement. Members of the Honor Council may ask any questions at any time during the hearing and may elect to disallow or to curtail testimony that the Honor Council determines to be unnecessarily redundant or not relevant to the issue(s) being heard. Throughout the hearing, all persons present shall conduct themselves in an orderly manner.

The accused may be accompanied at the hearing by an advisor of his/her choosing, however, the advisor may not participate in the hearing. The Honor Council shall be responsible for the conduct of the hearing at all times and shall keep a record of the proceedings in a format it chooses. Hearings before the Honor Council are confidential proceedings and only those persons determined by the Honor Council to have a need to be present shall be included. Except for the accused (and an advisor if invited by the accused) and the representative of the School, all other witnesses shall be excluded from the hearing room, except when testifying. No more than one witness shall be called to testify at a time. The School or the Honor Council may elect to invite UAB Security to be present at an Honor Council hearing.

As soon as practicable following the conclusion of the hearing, the Honor Council shall meet in private session to consider all of the evidence presented, and shall decide on one of two outcomes. The decision of the Honor Council shall be that the charge is either (1) proven by a preponderance of the evidence or (2) not proven by a preponderance of the evidence. A vote of six of the eight members shall be required for the charge against the accused to be proven. Following the vote, the Honor Council shall record the vote and shall provide a brief narrative statement explaining the rationale for their finding(s). The written decision and rationale of the Honor Council shall be transmitted to the Academic Dean, by internal communication, upon the conclusion of the Honor Council's deliberations. The Honor Council shall notify the accused of the outcome by certified mail, return receipt requested, or by hand delivery. A decision of the Honor Council in favor of the accused student shall conclude the case.

Penalties for Violation of the Honor Code

Generally, a first violation of the Honor Code shall result in the assignment of a failing grade in the assignment or in the course in which the violation occurred, at the discretion of the instructor. A notation on the student's permanent academic record may also be made to indicate that a reduced or failing grade was assigned because of an Academic Misconduct violation (e.g., "F, Academic Misconduct violation, June 15, 2006"), on the judgment of the Honor Council. A second violation of the Honor Code shall result in expulsion from the University. No student may graduate until pending allegations of an Academic misconduct violation have been

resolved. No student expelled from the Graduate School because of an academic misconduct violation shall be eligible for readmission.

If at the end of the appeals process performed at the school level, the accused student wishes to appeal to the Graduate School Appeals Board, he/she must follow the procedure outlined in this Handbook. Upon receipt of the appeal from the student, the Graduate Dean will request from the Academic Dean of the school in which the student is enrolled all appropriate documentation accumulated to that point. The Graduate Dean will then be responsible for maintaining records of all additional proceedings.

Nonacademic Conduct

The university is a community of scholars and learners; therefore, all participants are expected to maintain conduct that (1) facilitates the institution's pursuit of its educational objectives, (2) exhibits a regard for the rights of other members of the academic community, and (3) provides safety for property and persons. Through appropriate "due process" procedures, disciplinary action will be taken in response to conduct that violates these principles. A more detailed description of nonacademic misconduct can be found in the student handbook, [Direction](#). It is the student's responsibility to be fully aware of the policies and procedures described in [Direction](#). The Vice President for Student Affairs has the responsibility for coordinating policies and procedures regarding students' nonacademic misconduct.

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 for which the student has not fully used all other applicable appeal or review processes,
3. 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,
4. misconduct in research which falls under the Policy Concerning the Maintenance of High Ethical Standards in Research and Scholarly Activities.

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 for 2- or 3-year terms by the Graduate Dean. Appointments will be staggered so that no more than three faculty and two graduate students will rotate off the committee in one year. Members may be reappointed for a second term or a term may be extended in order to complete an appeal. The Graduate School will provide support personnel for the board to record hearings.

D. Meetings:

The GSAB will meet as soon as possible when notified by the Graduate Dean that an appeal is pending and requires a quorum for a meeting of at least three persons: two graduate faculty members and at least one graduate student member. Any member of the GSAB may disqualify himself or herself. 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 his or her 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 for resolution. In some cases, if the advisor and department chair have not been able to satisfy the appeal or the action still needs to be pursued, it may be appropriate to pursue the issue with the academic college 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 at any one of these levels, an appeal to the GSAB may then be pursued.

All requests for appeals must be submitted to the dean of the Graduate School, in writing, on the approved form (available at 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 both parties 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 further action by the GSAB is warranted. Appeals that fail to set forth grounds for an appeal 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 like

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 board.
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 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 for all findings and recommendations. In concluding 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, Hill University Center Room 511, and at the Graduate School's Web site (<http://www.uab.edu/graduate/apply/acrobat/appeal/application.pdf>).

Requirements for UAB Employees

Policy 1: UAB Employees who enroll in a Ph.D. program

UAB employees who enroll in a Ph.D. program and continue to work full time:

- A. Cannot also be a full time student*
- B. Cannot enroll for more than 18 credit hours per academic year (fall, spring and summer)*
- C. Are not eligible to be supported on a training grant as they are not full time students
- D. Cannot be simultaneously supported by a UAB Graduate Assistantship
- E. 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)
- F. Must meet the same set of program requirements as all other students
- G. The dissertation committee is responsible for assuring that these stipulations are met
- H. The mentor/employer must acknowledge in writing his/her agreement for the employee to be a part time student while continuing to be a full time UAB employee. Written acknowledgments must be submitted to the program director and the Graduate School.*
- I. The Program Director and committee must agree in writing to a protracted course of study*

*Stipulations A, B, H and I do not apply to employees of companies which support their employees as full time students in a UAB Ph.D. program.

Policy 2: Compliance with institutional and Graduate School policies for student compensation

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

Policy 3: Minimum Course credit requirements in

Ph.D. programs

- A. If entering with a baccalaureate degree:*
1. Completion of 48 credit hours of course work prior to candidacy
 2. Up to 16 credits of the 48 can be as non-dissertation research credits
 3. Up to 10 credits can be as lab rotation, seminar, or directed study credits
 4. Doctoral students must satisfy one of the following:
 - Must complete at least two semesters in candidacy and accumulate at least 24 semester credit hours in 799 dissertation research **OR**
 - Must complete at least two semesters in candidacy and have accumulated 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. Courses which have been previously counted toward another degree are not eligible to satisfy the research credit requirement. The student's graduate department/program should provide a course planning curriculum worksheet detailing the courses taken which are intended to be used toward meeting degree requirements along with the application for degree.

- B. If entering with a previous Master's degree appropriate to the Ph.D. degree field: Also applies to previously earned M.D., D.V.M., D.M.D., D.D.S., etc.*
1. Completion of 27 credit hours of course work prior to candidacy
 2. Up to 6 credits of the 27 can be as non-dissertation research credits
 3. Up to 6 credits can be as lab rotation, seminar, or directed study credits
 4. Doctoral students must satisfy one of the following:
 - Must complete at least two semesters in candidacy and accumulate at least 24 semester credit hours in 799 dissertation research **OR**
 - Must complete at least two semesters as a student in candidacy and have accumulated 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. Courses which have been previously counted toward another degree are not eligible to satisfy the research credit requirement. The student's graduate department/program should provide a course planning curriculum worksheet detailing the courses taken which are intended to be used toward meeting degree requirements along with the application for degree.

C. Program requirements for course work may exceed the Graduate School minimums.

Financial Information

UAB Payment Policies

Most universities require payment of tuition and fees at the time of registration. UAB gives students this option but also offers alternatives. Student account payment deadlines are available on the Academic Calendar for each term. Fifty percent of your total student account balance must be paid by the first payment deadline and the entire account balance must be paid in full by the second payment deadline. Failure to meet the listed payment deadlines will result in late fees ranging from \$50.00 after missing the first deadline up to \$250.00 after missing the second deadline. A list of detailed tuition and fees charges are located at <http://main.uab.edu/Sites/apply/accepted/tuition/41509/>.

Internal Payment Options

Payments can be made directly to UAB by cash, check, or credit cards (Visa, MasterCard, and Discover). Payment by mail should be directed to UAB Student Accounting Services; HUC 322, 1530 3rd Ave. S., Birmingham, AL 35294-1150. Payments may be made in person in the Hill University Center, 1400 University Boulevard, in Room 322; Making payments via the Web is available through BlazerNET.

Monthly Payment Option

Tuition Management Systems (TMS) is an Interest-Free Monthly Payment Option and an alternative to large annual or term payments and helps limit borrowing. The monthly payment option allows individuals to begin making tuition payments before the semester begins ~ May, June, or July for Fall term and October, November, or December for Spring term. Students contract with TMS, and then TMS submits the student's payments to UAB. Funds are then applied to the student's account prior to the payment deadline. Students may split their semester costs into either 3, 4 or 5 payments per semester (8 or 10 payments per academic year) depending on when they enter into the contract with TMS. For more information, visit <http://www.afford.com/uab>.

Amount Owed

An account balance summary is provided for each student under the Student Resources tab on BlazerNET. Charges shown on that statement are based on the student's status and courses as of the date of registration. School, classification, or course changes made after registration may result in additional charges. Credit for financial aid, external payment plans, UAB Educational Assistance

benefits, or payments to be billed to a third-party vendor may not be reflected on the account summary. For information or clarification concerning the amount due, please call Student Accounting Services at 205-934-3570.

Delinquency Policy

If any student has an unpaid financial obligation to UAB, all grades will be withheld and no transcripts will be issued for that student. Such a student will not be permitted to register at UAB again and all services will be withheld until the obligation is paid in full, at which time withheld grades will be reinstated. A debt to UAB is, of course, legally enforceable. To be fair to the overwhelming majority of students who honor their commitment, UAB's policy is to pursue unpaid student debts vigorously by all legal means.

Tuition Adjustment Policies

If you withdraw from a course (using the appropriate procedures) prior to the close of business on the published date for Last Day to Drop Without Paying Tuition and Fees, you will owe no tuition for that course. However, if you are still registered for a course at the close of business on the Last Day to Drop Without Paying Tuition and Fees, you must pay full tuition and fees for that course, even if you withdraw later. No refunds can be made unless a licensed physician certifies that a condition, which arose after the last day to withdraw during the Drop/Add period, was of sufficient duration and severity to make it impossible for you to continue in the course.

Withdrawals and Refunds

Students who wish to withdraw from courses for which they are registered must use the official procedures specified on BlazerNET. **Mere failure to attend class does not constitute a drop or withdrawal.** If the withdrawal form is received after the Last Day to Withdraw Without Paying Full Tuition and Fees during the Drop/Add period, full tuition and fees will be due for the courses from which the student withdraws.

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 Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, 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.

To obtain the name and address of a state coordinator, visit the Academic Common Market Web site (<http://www.sreb.org/programs/acm/acmindex.aspx>).

Financial Aid

Assistantships and Fellowships

In many programs, graduate student awards are available in limited number in the form of assistantships (service required) or fellowships (no service required).

Applications for assistantships or fellowships should be submitted to the director of the graduate program in which the student is, or plans to be, enrolled. 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 students who are registered at least part-time are eligible for financial aid. For information concerning these programs, contact the Office of Student Financial Aid, Room 317, Hill University Center, 1400 University Blvd, Birmingham, Alabama 35294-1150, 205-934-8223, <http://main.uab.edu/Sites/students/32619/>.

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. You may also pick up a paper application from UAB Veterans Affairs (UAB-VA) in the Office of Student Retention Programs. After processing your application, the Regional VA office will contact you in reference to your eligibility to receive benefits. UAB-VA is responsible for verifying your 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 Student Retention Programs, Room 524, Hill University Center, 1400 University Boulevard, Birmingham, AL 35294-1150, telephone 205-934-8804, email veteransaffairs@uab.edu.

Facilities and Services

Lister Hill Library of the Health Sciences

The Lister Hill Library of the Health Sciences, established in 1945, is the largest biomedical library in Alabama and one of the leading such libraries in the South. It serves as a resource library in the National Network of Libraries of Medicine for the Southeast/Atlantic Region. Its collections span 7 centuries of knowledge, from rare historical books to print and electronic journal subscriptions, books, bound journals, microforms, and other media relating to medicine, dentistry, nursing, optometry, allied health sciences, public health, and the basic biomedical sciences.

Reynolds Historical Library

The Reynolds Historical Library was a gift of Dr. Lawrence Reynolds, a distinguished radiologist and editor. The collection includes ivory anatomical manikins, 30 incunabula original manuscripts, and rare medical and scientific books.

Lister Hill Library at University Hospital

The Lister Hill Library maintains a small collection in the University Hospital West Pavilion to serve the clinical staff of the hospital. It includes 300 textbooks and 25 current subscriptions of clinically-oriented journals.

Mervyn H. Sterne Library

The [Mervyn H. Sterne Library](#) houses a collection of over one million items selected to support current teaching and research at UAB. In addition to books and more than 2,500 periodicals, the collection consists of microforms and other print and nonprint materials. Access to the collection and other information resources is provided through an online public access catalog system. Users may access the system from the library or remotely. Study areas and photocopying machines are located throughout the library, which is located at 917 13th Street South. The facility has seating space for about 1,100 students. More than 100 lockable study carrels are available for use by faculty and graduate students involved in writing projects.

Reference services are provided by subject specialist librarians and at information desks staffed to assist patrons in identifying and locating materials. Reference service also includes computerized database searching. Through the use of OCLC, the national bibliographic utility, the staff can locate, and in many cases borrow, materials from libraries across the country. The User Services Department, through its automated circulation system, tracks materials continuously and can determine the location or status of a book on request. The reserve desk circulates high-use materials identified by classroom instructors.

Student Housing and Residential Life

Student residence halls, centrally located on campus, are within walking distance of all classroom buildings, libraries, and the Medical Center.

To live in student housing, you must be admitted to UAB and be in good standing. "Good standing" means you are not on academic or disciplinary suspension. You must be enrolled for 12 credit hours as an undergraduate student or 9 credit hours as a graduate student each semester. (Summer semester is treated under a different contract.) You will be required to satisfy these eligibility standards throughout the term of your student housing contract, and you must inform UAB Student Housing and Residential Life if your status changes.

UAB housing communities are designed to give you a sense of security 24 hours a day. A supervisor and five officers from the UAB Police's special Student Housing Police Precinct routinely patrol the residence halls and parking areas on both foot and bicycle. Officers interact with students and conduct programs and activities to help residents prevent crime. All halls have front desks manned 24 hours a day. All guests must show a photo ID, sign in, and be escorted by a resident of the building before they can pass the front desk. After dark, a designated UAB escort can accompany you to any on-campus destination by foot or in a marked vehicle. To use the service, call 934-8772 or use the white phones located across campus.

To live in student housing, professional students, interns, residents, and postdoctoral fellows must be verified by their departments. Postdoctoral fellows must have a UAB classification of 20.

Additional information concerning residential life and an application for housing may be obtained online through the UAB Web site
<http://main.uab.edu/Sites/students/facilities-finance/housing/>
studenthousing@uab.edu

(205) 934-2092

Mailing Address: DNMH 101, 1530 3rd Ave. S., Birmingham, AL 35294-1230

Because housing at UAB is limited, students should apply as early as possible in order to improve chances of getting the desired housing options.

Student Health and Insurance Programs

Student Health Service

The fee for participation in the Student Health Service plan is \$90 per semester or summer session and \$270 for a full year including the summer session.

Participation is required for all students in the Schools of Medicine, Dentistry, Joint Health Sciences, Public Health, Optometry, Health Professions, all international students, and students in the following programs: Engineering, Biology, Chemistry, Mathematics, Physics, and Psychology.

Students in the preceding areas are also required to have major medical insurance to cover hospital, emergency room, specialty care referrals, and lab/x-ray costs which are not included in the basic Student Health plan. More information regarding the Student Health Service can be found at <http://main.uab.edu/Sites/students/student-health-services/48149/>.

Hospital and Major Medical Insurance Programs

Hospitalization and major medical insurance coverage is available at attractive rates to students enrolled in the Student Health Service. Spouses and children of eligible graduate students may also obtain coverage under this policy at a proportionate increase in premium. Students who are already covered by hospitalization insurance that offers coverage equivalent to that in the UAB student hospitalization policy may sign a waiver to this effect and not be required to take the UAB policy. Failure to sign and file a waiver with the Student Health Service will result in automatic coverage with Student Health Service insurance, and the student will be billed.

Health Forms and Insurance Information

For all students who will be participating in the Student Health Service, the application for student insurance, <http://www.vivaemployer.com/Download.aspx?ID=81&Type=doc>, OR waiver of insurance plan, <http://www.vivaemployer.com/Download.aspx?ID=294&Type=doc>, must be completed and sent to Student Health Service. The Certificate of Immunization Form must be completed by all students and returned to the Graduate School office.

For additional information on UAB's Student Health Service and group hospital insurance plan, students should contact UAB Student Health Service, Suite 301, Community Health Service Building, 933 South 19th Street, Birmingham, Alabama 35294-2041 (telephone 205-934-3580, www.uab.edu/studenthealth).

Student Services

The following services are provided to assist students during their academic careers: TRIO Academic Services, Career Services, Disability Support Services, Veterans Services, Counseling and Wellness Services, and Women's Services. Some of these services are described online at <http://main.uab.edu/Sites/students/services/>, and <http://main.uab.edu/Sites/students/life/>.

If you are a first-generation college student, have a disability, or meet federal income requirements, you might be eligible for free support services and incentives created to help you achieve your goal of graduating in four years. UAB's **TRIO Academic Services** (TAS) is a Student Support Services program that is a part of a network of TRIO programs fully funded by the U.S. Department of Education.

The mission of TAS is to provide academic and personal support to help participants be successful as they pursue their educational goals at UAB. Contact 205-934-2729 or TrioAcademicServ@uab.edu for detailed information.

UAB Career Services engages students in the career development process of exploring career options, gaining experience in a chosen field, preparing for the job search, and succeeding in their career goals. More information is located at www.careerservices.uab.edu

UAB is committed to making its academic programs and services accessible to students with disabilities. Qualified students with disabilities are protected from discrimination based on their disability, as guaranteed by the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973. Contact the **UAB Disability Support Services** office at dss@uab.edu, (205) 934-4205 (Voice), or (205) 934-4248 (TDD) for details.

The **Office of Veterans Services** works closely with the U.S. Department of Veterans Affairs to offer various entitlement programs to students who have served in the military on active duty, are members of the selected Reserves/National Guard, or are dependents or spouses of veterans. Contact veteransaffairs@uab.edu or 205-934-8804 for more information.

It is the goal of **Counseling and Wellness Services** to encourage students as they resolve problem areas and to help them cope with difficulties they are presently experiencing. Counselors are interested in supporting students as they find solutions. It is the role of the counselor to listen, attempt to understand personal perspectives, and to be helpful to the fullest extent of his or her professional training. It is the client's responsibility to help the counselor learn about his or her life situation, thoughts, and feelings, and to have the courage to try to master identified problem areas. For more information about the Counseling and Wellness Center, call 205-934-5816.

The **Women's Counseling Services** offers personal (non-academic) counseling services to currently enrolled UAB students. These services are confidential, are provided by a Licensed Professional Counselor, and are free of charge to all UAB students. Issues dealt with by the Women's Center Counselor include (but are not restricted to) eating disorders, relationship problems, sexual assault and abuse, sexual harassment, and stress management. Personal counseling is the primary component of the Women's Center's services. For more information about the Women's Center, call 205-934-6946.

UAB Policies

In addition to the UAB policies contained in this handbook, other university-wide policies apply to students. These include additional policies concerning health care for international students and visiting international scholars, AIDS and AIDS-related conditions, a drug-free workplace, alcoholic beverage use, smoking, sexual harassment, electronic data processing security, and computer software use. Copies of these policies are available in the Graduate School office, in the online [Graduate Catalog](#), and on the Office of Planning and Analysis Web site (<http://main.uab.edu/show.asp?durki=9189>)

Graduate School Policy Concerning Student Participation in Proprietary Research

August 28, 2007

Faculty, staff, and students of a university create, disseminate, and apply knowledge for the benefit of society. When faculty of the university are involved in research, some of which may be of a proprietary nature, particular care must be taken to ensure that the need for graduate students to publicly present and publicly defend the results of their thesis or dissertation research is not compromised. Graduate student advisors, graduate program directors, and graduate students themselves, therefore, share in the responsibility to ensure that graduate students are well informed if they become involved in thesis or dissertation research that is, or has the potential to become, proprietary if participation in that research will delay completion of their degree requirements or negatively affect their productivity or future employability. Students must be made aware of the implications of performing thesis or dissertation work of a proprietary nature. For example, will that work delay time to degree, or will it have a potential negative effect on obtaining a postdoctoral position or an employment opportunity? In cases where the thesis or dissertation work has intellectual property implications, adherence to university policies on intellectual property is required.

It is the policy of the Graduate School that a faculty member or a graduate student should not enter into an agreement that prevents or significantly delays the presentation or publication of research results unless the delay is required for proprietary reasons. Students and their advisors can embargo the release of the contents of a thesis or dissertation by both the UAB library and ProQuest UMI for up to two years to provide time to resolve intellectual property considerations or prior publication issues. If, however, a decision is made to embargo a

student's thesis or dissertation, or delay publication of work described therein, these decisions should not delay the student's time to completion of his/her degree requirements.

In instances where, despite good faith efforts on the part of the graduate student advisor, the graduate program director, and the graduate student, a dispute arises regarding the release or publication of a graduate student's thesis or dissertation research, the Graduate School dean must be notified. The Graduate School dean will immediately convene a meeting of the graduate student, the graduate advisor, the involved graduate program director, and members of the student's thesis or dissertation committee. This group, in consultation with the Vice President for Research and/or the Executive Director of the Research Foundation, will resolve the problem.

If the situation cannot be resolved through the efforts of this group, a ruling will be made by the Senior Vice President and Dean, School of Medicine; the Vice President for Research and Economic Development; or the Provost.

UAB Policy Concerning the Maintenance of High Ethical Standards in Research and Other Scholarly Activities

January 27, 1997

[Editorial changes made June 28, 2007]

This policy has been adapted from a statement on "The Maintenance of High Ethical Standards in the Conduct of Research" published by the Executive Council of the Association of American Medical Colleges and has been revised to be in compliance with the Public Health Service final rule entitled "Responsibilities of Awardee and Applicant Institutions for Dealing With and Reporting Possible Misconduct in Science." It incorporates recommendations of the UAB Faculty Policies and Procedures Committee and the UAB Faculty Senate.

Introduction

The principles that govern scientific research and scholarship have long been established and have been applied by faculties and administrators for the discovery of new knowledge needed by mankind. The maintenance of high ethical standards in research based on these principles is a central and critical responsibility of faculties and administrators of academic institutions. Validity and accuracy in the collecting and reporting of data are intrinsically essential to the scientific process; dishonesty in these endeavors runs counter to the very nature of research, that is, the pursuit of truth.

The responsibility of the academic community to the public is acknowledged. The maintenance of public trust in this pursuit is vital. In short, it is in the best interest of the public and of academic

institutions to prevent misconduct in research and to deal effectively and responsibly with instances in which misconduct is suspected.

Policy Statement

1. UAB shall accept as faculty members only those individuals whose career activities clearly demonstrate the highest ethical standards. To this end, the credentials of all potential faculty are to be thoroughly examined by the appropriate department/unit heads or their representatives in order to verify the claimed accomplishments of the candidate. The appropriate department/unit heads or their representatives shall seek further confirmation of the candidate's accomplishments during the normal procedures of personal interviews and letters from references. Proof of faculty credentials shall be maintained by the appropriate dean or department head.

2. Faculty members who are in supervisory positions with regard to colleagues, fellows, technicians, and students are expected to work closely with those individuals to provide them with appropriate guidance and counsel to the end that those individuals continue to maintain the highest professional and ethical standards.

3. The faculty is encouraged to increase student and staff awareness of the importance of maintaining high ethical standards in research and to discuss issues related to research ethics in formal courses, in seminars, and by other informal means.

4. Research results should be supported by verifiable evidence. Faculty and staff should maintain sufficient written records or other documentation of their studies. It is the responsibility of department/unit heads, division directors, and experienced investigators to develop among junior colleagues and students the necessary respect for careful recording and preservation of primary data.

5. The faculty is encouraged to engage in free discussion of results, to share data and techniques, and to avoid secrecy in the conduct of original investigations. It should be remembered that independent confirmation of results is important in direct proportion to the potential significance of the results in question and may be crucial to the establishment of new concepts.

6. Faculty members are responsible for the quality of all reports based on their own efforts or on the collaborative work of students, technicians, or colleagues, especially those which bear the faculty member's name. The term "reports" as used here includes, but is not limited to, manuscripts submitted for publication and abstracts submitted for presentation at meetings. The same standards of scientific integrity apply to abstracts as to full-length publications. Abstracts or other reports of preliminary findings should indicate clearly that the findings are preliminary. No faculty member shall allow his or her name to be used on any report containing results for

which that faculty member cannot assume full professional and ethical responsibility.

7. Any UAB employee (including, but not limited to, regular and adjunct faculty, fellows, technicians, and student employees) or any UAB student who has reason to suspect any other employee or student of misconduct with regard to the conducting or reporting of research has the responsibility of following up these suspicions in accordance with the procedures outlined below. For purposes of this policy, "misconduct" means fabrication, falsification, plagiarism, or other practices which seriously deviate from those that are commonly accepted within the scientific community for proposing, conducting, or reporting research. It does not include honest error or honest differences in interpretations or judgments of data. Intentionally withholding information relevant to the investigation of an alleged case of misconduct, intentionally pressuring others to do so, or bringing malicious charges against another individual shall itself be considered misconduct. Also, any act of interference, retaliation, or coercion by a UAB employee against a student or employee for using this policy is prohibited and is itself a violation of this policy.

Procedures To Be Followed

The "Scientific Misconduct Allegation Review Checklist" is to be used in conjunction with the procedures in this section.

It is the responsibility of student employees, trainees, fellows, faculty members, staff members, or other employees who become aware of misconduct in research and other scholarly activities to report such misconduct to one of the following: (a) their department/unit head, (b) the dean of the school in which their department/unit is located, or (c) the UAB Scientific Integrity Officer. In the case of graduate students or of trainees at any level, such evidence also may be reported to the Dean of the Graduate School.

The individual receiving such evidence of misconduct must immediately report such evidence and the allegation of misconduct to the UAB Scientific Integrity Officer, the department/unit head and the dean of the unit in which the alleged misconduct occurred, and the Provost. If the UAB Scientific Integrity Officer determines that the allegation warrants initiation of the inquiry process, the inquiry shall be initiated immediately, and the Office of Counsel shall be informed.

Allegations of this nature are very serious matters, and all parties involved should take measures to assure that the positions and reputations of all individuals named in such allegations and all individuals who in good faith report apparent misconduct are protected. Details of the charge, the name of the accused, the identity of the individual bringing suspected fraud, and all other information about the case shall be kept confidential as far as

possible, compatible with investigating the case. Revealing confidential information to those not involved in the investigation shall itself be considered misconduct.

Because UAB is interested in protecting the health and safety of research subjects, students, staff, and faculty and because UAB is responsible for protecting sponsored research funds and for ensuring that those funds are spent for the purposes for which they are given, if the situation warrants it, interim administrative action may be used prior to conclusion of either the inquiry or the investigation to provide for the protection of individuals and funds in accordance with existing UAB policy. Such action includes, but is not limited to, administrative suspension; re-assignment of student(s); involvement of the Institutional Review Board, the Institutional Animal Care and Use Committee, and the Office of Internal Audit-UAB; or notification of external sponsors when required by federal regulations.

Initial Inquiry

For purposes of this policy, “inquiry” means information gathering and initial fact finding to determine whether an allegation or apparent instance of scientific misconduct warrants an investigation.

1. The department/unit head or dean shall investigate immediately the charges through an inquiry process, including an interview with the suspected individual. The person conducting the inquiry shall ensure that individuals with the necessary and appropriate expertise are consulted concerning technical aspects of the activities in question. At least one of those individuals must be from outside the suspected individual’s department. The record of the inquiry shall document the review of relevant evidence.

The department/unit head or dean conducting the inquiry shall keep the UAB Scientific Integrity Officer informed and may request assistance from the UAB Scientific Integrity Officer. The UAB Scientific Integrity Officer shall keep the Office of Counsel informed during the inquiry process, and the Office of Counsel shall provide advice concerning procedural matters. In order to ensure that a real or apparent conflict of interest does not exist, the UAB Scientific Integrity Officer shall review the selection of persons to be involved in the inquiry. If it is determined that a conflict of interest exists, the UAB Scientific Integrity Officer is responsible for designating who will be involved in the inquiry.

If UAB plans to terminate an inquiry for any reason prior to completion of the normal progression of such an inquiry, the UAB Scientific Integrity Officer shall notify the federal Office of Research Integrity and shall include in that notification a description of the reasons for termination of the inquiry.

UAB will make every effort to complete the inquiry within 60 days of its initiation. If the inquiry

extends beyond 60 days, the reasons for the extension will be documented by the UAB Scientific Integrity Officer and will be retained with the record of the inquiry.

The written report of the inquiry shall state what evidence was reviewed, shall indicate the relevant expertise of the persons reviewing the evidence, shall summarize the relevant interviews, and shall include the conclusions of the inquiry. The individual(s) against whom the allegation was made shall be given a copy of the inquiry report and shall have an opportunity to make written comment regarding the report. This report, including a conclusion as to whether there is reasonable cause to believe that misconduct has occurred, shall be forwarded to the provost (with a copy to the UAB Scientific Integrity Officer) through the appropriate dean who should make whatever comment or recommendation is deemed warranted.

2. The Provost, with the advice and counsel of the UAB Scientific Integrity Officer and others as appropriate, shall decide whether to close the matter or to appoint an Investigating Committee. If findings from the inquiry provide sufficient basis for conducting an investigation, the investigation must be started within 30 days of completion of the inquiry. The written report of the inquiry will be made available to the Investigating Committee.

3. If the Provost determines that it is not necessary to undertake an investigation, the Provost will report to the President the reasons for this decision and the findings of the inquiry. The report will be maintained in a secure manner for at least 3 years by the Office of the UAB Scientific Integrity Officer.

Investigation

For purposes of this policy, “investigation” means the formal examination and evaluation by a committee of all relevant facts to determine if scientific misconduct has occurred.

1. The Investigation Committee is appointed by the Provost and will elect its own chairperson. Members of the Committee shall consist of at least three tenured faculty members who have the expertise to deal with technical aspects of the activities in question. At least two of these faculty members must be from outside the suspected individual’s department. The Provost shall take precautions not to appoint any committee member who has a real or apparent conflict of interest with the outcome of the investigation.

The chairperson shall conduct meetings of the Investigating Committee as frequently as required in order to determine whether or not the activities in question do indeed constitute misconduct. All such meetings and the deliberations thereof shall be held in confidence to protect the affected individual or individuals. Those accused of misconduct shall be given a written summary of the charges and

supporting evidence and shall be afforded an opportunity to appear before the Committee to comment on allegations. The accused may be represented by counsel. The Office of Counsel shall be kept informed of the investigation process and shall advise the Investigating Committee concerning procedural matters.

The Committee should take no more than 60 days to complete its review and to prepare its report for submission to the President. UAB will make every effort to complete all investigative matters within 120 days from initiation of the investigation. This includes the work of the committee, preparing the report, submitting the report to the President, making the report available for comment by the subject(s) of the investigation, and submitting the final report to the federal Office of Research Integrity. If the investigation cannot be completed within 120 days, the UAB Scientific Integrity Officer shall request an extension from the federal Office of Research Integrity. The extension request will include an explanation for the delay, an interim report on progress to date, an outline of what remains to be done, and an estimated date of completion.

If UAB plans to terminate an investigation for any reason prior to completion of the normal progression of such an investigation, the UAB Scientific Integrity Officer shall notify the federal Office of Research Integrity of UAB's plan to terminate the investigation and shall include a description of the reasons for such termination.

2. The President, based on the Investigating Committee's findings and responses to those findings, shall determine what actions are appropriate. Appropriate actions may include discharge from employment at UAB or expulsion from UAB in the case of a student. Such actions shall be consistently applied throughout UAB. The President will notify the UAB Scientific Integrity Officer who in turn will work with the Office of Grants and Contracts Administration to notify any agencies or foundations supporting the research in question and any journals or other publications which may have been affected by the publication of results of that research.

3. The UAB Scientific Integrity Officer shall submit the report of the investigation to the federal Office of Research Integrity and shall include in that report the policies and procedures under which the investigation was conducted, how and from whom information was obtained relevant to the investigation, the findings of the investigation, and the basis of the findings. Also included will be a description of any sanctions taken by UAB and the actual text of, or an accurate summary of, the views of any individual(s) found to have engaged in scientific misconduct.

Additional Notifications

1. If the Provost initiates a formal investigation,

any agency or foundation supporting the research in question shall be notified by the Director of the Office of Grants and Contracts Administration upon receipt of information from the UAB Scientific Integrity Officer. Any such agency or foundation shall be notified immediately if it is ascertained at any time during the initial inquiry or subsequent investigation that there is an immediate health hazard involved; an immediate need to protect federal funds or equipment; an immediate need to protect the interest of the persons making the allegations, the individuals who are the subject of the allegations, or any co-investigators and associates, if any; a probability that the alleged incident is going to be publicly reported; or a possibility that criminal violation has occurred. The agencies also will be given interim reports of any investigation should the circumstances warrant.

2. If the initial inquiry or the subsequent investigation indicates that the allegations are unsubstantiated, UAB will make diligent efforts to restore the reputation of those accused at UAB, with any involved funding agencies and elsewhere.

3. Any involved funding agencies shall be notified of the final outcome of any investigation.

Copyright Policy

September 18, 2006

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 without restraint, consistent with applicable law and policy.

To carry out the purposes of this policy, the University shall:

- Provide the University community with information about copyright law, with emphasis on the application of fair use in academic setting, and such information shall be provided in accordance with the provisions of the Technology, Education and Copyright Harmonization (TEACH) Act and such other applicable laws and regulations.
- Provide web-based resources on copyright laws in general and on the application of fair use in specific situations.
- Make copyright and fair use informational resources available in the University's libraries.

Ownership of the various rights associated with copyright is dependent upon several factors, listed below. As a general rule, creator(s) retain all rights to copyrighted works, unless subject to the conditions discussed in the section.

- A. Individual efforts: The copyrightable work produced by faculty, staff or students on their own initiative shall be the exclusive

- property of such individual(s) unless the work was specifically commissioned or assigned (refer to Section B), or unless the work was prepared under the terms of a contract or grant, or unless preparation involved substantial use of University resources. Except in the cases covered in paragraphs B through E below, the ownership of books, scholarly articles/monographs, trade publications, maps, charts, articles in popular magazines and newspapers, novels, nonfiction works, supporting materials, artistic works, syllabi, lecture notes, and like works will reside with the creator(s) and any revenue derived from their work will belong to the creator(s).
- B. **University assigned efforts:** The copyright in a copyrightable work prepared by faculty, staff or students in the course of their regular employment duties or by special direction or commission shall be the property of the University. Such condition of employment or such directions shall be in writing and shall be agreed to in advance by both the University and the individual. A faculty member's general obligation to produce scholarly and creative works does not constitute a University assignment in the context of this paragraph. Works created by students in the normal course of their coursework, such as a term paper, thesis/dissertation or similar scholarly work, does not constitute a University assignment in the context of this paragraph. A copyright agreement provided for the sharing of royalties, as discussed later in this policy, may, at the discretion of the University, be entered into by the University and the individual in regard to the work.
- C. **Sponsor supported efforts:** Copyright ownership in copyrightable materials developed during work supported partially or in full by an outside sponsor, through a contract or grant with the University, is determined by the applicable provisions of such contract or grant. In the absence of any governing provision, the ownership of any copyright shall be determined in accordance with paragraphs A, B, D or E herein.
- D. **University-assisted individual efforts:** A copyrightable work that is developed with substantial use of University resources and is not sponsor-supported shall be the property of the University. "Substantial use" of institutional resources may include the commitment of staff, faculty or material support in the creation of the copyrightable work, but does not include the ordinary use of the University's libraries, faculty time, faculty offices, departmental office equipment, routine secretarial support or University owned personal computers. Should a question arise as to whether substantial use of University resources has occurred or may occur, a determination will be made by the Provost of his or her designee.
- E. **Distance Learning:** With respect to distance learning materials, ownership of such materials shall be determined in accordance with the provisions of paragraphs A through D above.
- F. **Shop Rights:** "Shop Rights" means a non-exclusive, non-transferable, royalty-free license to reproduce, distribute, publicly perform, publicly display, or make derivative works of the copyrighted work, for educational or research purposes only. Except for textbooks and articles published in scholarly journals, the University shall have shop rights to copyrighted materials developed by its faculty, staff and students, pursuant to paragraph A above, and faculty, staff and students of the University shall have shop rights to copyrighted materials owned by the University, pursuant to paragraphs B and E above; provided, however, that no faculty, staff or student shall use any shop rights hereunder in competition with the University while such individual is employed by the University.

There is no mandatory disclosure requirement for works created by faculty, staff or students for works that meet the criteria set forth in paragraph A above. For works that meet the criteria set forth in paragraphs B, C, or D, the creator must disclose the existence of the work during or immediately after its creation. Disclosure shall be made in writing to the creator's unit leader and to The UAB Research Foundation. If any questions exist regarding whether disclosure is required, contact The UAB Research Foundation.

All costs and revenues from the commercialization of any intellectual property hereunder, owned by the University, shall be distributed in accordance with the University's Patent Policy (*approved by the Board of Trustees on February 23, 1980, and revised on January 14, 1986*). Nothing contained in this policy shall be construed to supersede the University's Patent Policy or Computer Software Policy (*approved on January 14, 1986, corrected on May 28, 1986, and edited February 26, 1996*), and the terms of the University's Patent Policy and Computer Software Policy shall control in the case of any conflict between those policies and this policy.

Computer Software Copying and Use Policy

July 13, 1999

Introduction

Respect for the intellectual work of others is a tradition at UAB. UAB values the free exchange of ideas but not plagiarism or the unauthorized copying of computer software, including programs, applications, and data. Under federal copyright law, it is illegal to make a copy of computer software except for archival or back-up purposes without the permission of the copyright holder. Therefore, unauthorized copying of computer software or its documentation is illegal for substantial damages. The person responsible may be held liable.

All state and federal laws and UAB policies must be adhered to in the use of UAB's computer equipment and systems. Any use of UAB equipment that violates copyright law or licensure contracts, that compromises or attempts to compromise the integrity of UAB-based or any other computers or computer systems, or that involves gambling or other illegal activity also is forbidden and may subject the computer user to criminal, civil, and/or UAB sanctions. Any use of UAB's software, including shareware, must comply with all copyright laws and with the terms of the license granted by the software owner, including any prohibitions against simultaneous use on multiple computers. Unauthorized use or copying of any software (whether or not owned by UAB) is not permitted on any UAB equipment.

This policy covers computer software which has been purchased by, acquired by, donated to, and/or licensed to, UAB and includes software that is bundled with, or preloaded on, computer systems purchased by UAB. It also includes software downloaded from networks (including the Internet), and in those instances it is important for UAB users and departments/units to ensure that any such commercial software or shareware may legally be downloaded, that the software is freeware, or that the software is in the public domain. UAB and individuals must comply with all terms and conditions of software downloaded from networks, including the Internet.

If computer software carries a UAB copyright, it may be used and distributed by UAB as long as such distribution is in keeping with the desires of the originating department/unit and is not in violation of the "Computer Software Policy." If a UAB determination of interest in licensing the software is pending, the software would be considered non-UAB software for the purposes of this policy until such time that UAB determines its interest in licensing the software. This policy does not alter the categories of software and the rights pertaining thereto as indicated in the UAB "Computer Software Policy."

Definitions

For purposes of this policy, the following definitions apply:

"*Computer software*" includes, but is not limited to, purchased or commercial software, sound, graphics, images, or datasets; shareware, freeware; and electronically stored documentation and the media that hold it. *Not* included in the definition as used in this policy are noncopyrighted computer data files that have no significance beyond the individual or department/unit.

"*UAB software*" is defined as computer software purchased or acquired by a UAB department or unit or by a UAB employee as part of his or her role at UAB. It includes software donated to UAB or software purchased by related foundations and donated for use by UAB. It includes computer programs written by UAB employees or students if creating such software is a UAB-associated effort.

"*Non-UAB software*" is defined as computer software purchased, acquired, or created by an individual(s) and not officially acquired by a UAB department or unit.

"*UAB-associated efforts*" (related to computer software development) is defined relative to the UAB "Computer Software Policy" as UAB-assisted efforts and UAB-assigned efforts.

Policy Statement

It is the policy of the University of Alabama at Birmingham to comply with copyright law and license agreements entered into with vendors or authors of computer software. No illegally obtained or illegally copied (often referred to as "pirated") computer software is allowed at UAB. UAB does not, and will not, condone illegal copying of computer software or the use of illegally copied or obtained computer software. Anyone connected with UAB who causes unauthorized computer software to be installed or loaded in connection with his or her role at UAB is in violation of this policy.

Whenever a staff member, faculty member, contractor of services to UAB, student, or visitor to the campus, in connection with his or her role at UAB, receives a copy of computer software from UAB, requests software to be loaded or installed on a UAB computer, or loads or installs computer software on a UAB computer, he or she must abide by the stipulations included in the license agreements associated with that computer software. It is the responsibility of anyone requesting installation of, or installing or loading, computer software onto a UAB computer to be familiar with the license agreements for that computer software, as documented by the vendor. *Individual employees are accountable for software they load or install on UAB computers or which they supply for loading or installing on the department's or unit's computers or networks. They also are accountable for any existing software on*

UAB computers over which they have control.

The installation or use of non-UAB software on UAB computers is prohibited unless approved in writing by the department/unit head. The department/unit head may choose to give blanket permission to an individual on a per-machine basis. The non-UAB software should be free of viruses or other destructive mechanisms to the greatest extent possible and must be used for legitimate UAB purposes directly related to UAB's instruction, research, and service activities.

Taking UAB-owned computer software home or elsewhere off campus to use on a non-UAB computer, even if the purpose is to perform UAB-related work, also is prohibited unless such use is authorized in writing and is permitted in the license agreement associated with the computer software. This constitutes theft of UAB property unless the software license specifically allows concurrent use and such use has been approved in writing by one's supervisor or department/unit head. If the software license does not allow such use and a department/unit requests an employee to perform such work, the department/unit should purchase a separate copy of the software for installation on the employee's computer.

A computer lab or a department/unit with publicly accessible computers which allows non-UAB software to be installed *temporarily* on the network or computers for purposes such as completing class assignments, printing documents, converting document formats, etc., must have documented procedures in place for removing any non-UAB software installed on the computers. This practice is not considered a violation of this policy as long as use of the non-UAB software on such UAB computers is directly related to UAB's instruction, research, and services activities.

Proof of Ownership of Software

Computer software purchased by, and/or licensed to, UAB is an institutional resource and, therefore, should be safeguarded and accounted for in the same manner as other UAB resources. All commercial computer software license agreements, records of purchase, and original and back-up disks (or other software distribution media) must be kept by the department/unit in a safe place and must be made available for review or inspection. All license or use agreements for shareware or freeware computer software also must be available for inspection. Likewise, any written authorizations for the use of UAB-owned software on non-UAB computers must be available for inspection.

The following are examples of documents which can be used to show ownership or right to use software:

A. The dated purchase order, invoice, or sales receipt for purchased software or proof of a site-license agreement covering all copies in use or

accessible by users in the department.

B. The original software distribution media.

C. The original documentation.

D. Vendor software that is bundled with, or preloaded on, computer systems purchased by UAB, an itemized listing of the software on the dated purchase order, invoice, or sales receipt for the computer.

E. For software downloaded from external networks or acquired from noncommercial sources, a statement indicating the nature of the software (for example, downloadable commercial software, shareware, freeware, or public domain), the use and registration requirements for the software, and proof of registration of the software, when applicable. Acquisition of software universally known to be available free to educational institutions and/or to the general public does not have to be documented. (Note: Examples of statements to document legality of downloaded software include, but are not limited to, receipts for payment of shareware registration, printed copies of e-mail messages if the user is required to e-mail the author, screen prints of the status of freeware or public domain software, etc.) It is recognized that the extent of documentation needed for freeware or public domain software will not be as extensive as for other types of software.

These proofs of purchase/ownership must cover *all* copies in use or accessible by users in the department.

Software License Registration

Registration with the author(s) or vendor(s) of computer software purchased by, or received from, UAB for installation on a UAB computer in connection with one's role at UAB must include UAB or one's department/unit as the licensee.

Applicability

This policy applies to all staff, faculty, students, contractors of services to UAB, and visitors.

Disciplinary Action

A violation of this policy by a student constitutes nonacademic misconduct, and the student will be subject to established disciplinary action.

Ownership of Intellectual Property Rights

UAB recognizes that research and scholarship should be encouraged and carried out without regard to financial gain from licensing fees, royalties, or other such income. However, UAB also recognizes that patentable inventions, discoveries, software programs, and other intellectual property often arise from UAB-related student efforts.

The policies governing the administration of

inventions are included in the Board of Trustees Rule 509. Other institutional policies govern other forms of intellectual property including computer software. Those policies also provide recognition and incentive to inventors and at the same time ensure that UAB shares in the rights pertaining to inventions in which it has an investment. Any income accruing to UAB is used in the furtherance of its academic mission.

Disclosure of discoveries and inventions which appear to have commercial value and/or utility should be made to the UAB Research Foundation. Any such invention or discovery (1) which is the result of research carried on by, or under the direction of, any employee of the University and/or having the costs thereof paid from University funds or from funds under the control of, or administered by, the University, or (2) which is made by an employee of the University and which relates to the inventor's field of work at the University, or (3) which has been developed in whole or in part by the utilization of resources or facilities belonging to the University shall be assigned to the University. Therefore, employees or students may not themselves assign or grant any option to any such intellectual property developed during the course of their employment without a release from UAB.

Questions concerning intellectual property rights should be directed to the UAB Research Foundation.

Employee Falsification of UAB Records and Documents—Summary

April 20, 1998

[Edited May 31, 2007, for change in unit name]

NOTE: Falsification of documents and records by a student who is not functioning in a UAB employee capacity is considered nonacademic misconduct and is handled in accordance with regulations covering nonacademic misconduct. See [Direction Student Handbook](#).

As a health-care, research, and educational institution, the University of Alabama at Birmingham is acutely interested in issues relating to the integrity of its employees.

For purposes of this policy, falsification of records exists when a UAB employee is discovered to have provided false information on the employment application; to have failed to disclose requested information; knowingly to have falsified information; or knowingly to have recorded false information on any UAB document or record, regardless of format and including electronic communications.

The following is a partial list of infractions which are specifically prohibited: falsifying information on an application for initial employment or for transfer; falsifying employee recruitment/credential records; falsifying employee expense account records or other reimbursement

records; falsifying personnel/ payroll documents (including, but not limited to, pay records, time sheets, or other types of time records); clocking the time card/time record of another employee or completing and submitting for approval the time sheet/time record of another employee; falsifying health records or vacation/sick leave records; falsifying research records, medical records, or departmental administrative records; and falsifying student records (including, but not limited to, admissions application materials, transcripts, grade sheets, registration documents, and student identification documents).

Falsification of UAB records or documents is prohibited. Any knowing or negligent misrepresentation of a material fact or any failure to make a complete disclosure of any requested information are causes for immediate discharge without notice or pay in lieu of notice for nonfaculty employees or termination for cause for faculty employees. Any exception to the immediate and automatic discharge of nonfaculty employees for these reasons must be approved in writing by the Chief Human Resources Officer. Any exception to the recommendation of termination for cause for faculty for these reasons must be approved in writing by the Provost and by the Chief Human Resources Officer.

The Office of the Vice President for Financial Affairs and Administration is responsible for procedures to implement this policy as it relates to employee or departmental administrative records. The Office of the Provost is responsible for procedures to implement this policy as it relates to academic records, research records, or faculty recruitment/credential records.

UAB Equal Opportunity Policy

January 7, 2010

[Equal Employment Opportunity](#)

The University of Alabama at Birmingham is expressly committed to maintaining and promoting nondiscrimination in all aspects of recruitment and employment of individuals at all levels throughout UAB. UAB prohibits, and will not tolerate, discrimination in any personnel actions, UAB programs, and UAB facilities on the basis of race, color, religion, sex, sexual orientation, national origin, disability unrelated to job performance, veteran status, or genetic or family medical history. UAB also complies with the Age Discrimination in Employment Act which prohibits employment discrimination against persons 40 years of age or older. UAB will not tolerate any conduct by an administrator, supervisor, faculty, or staff member which constitutes any form of prohibited discrimination. All personnel actions, programs, and facilities are administered in accordance with UAB's

equal opportunity commitment and affirmative action plan.

UAB will state its position as an equal opportunity/affirmative action employer in all solicitations and advertisements for employment vacancies placed by, or on behalf of, UAB. UAB will broadly publish and circulate its policy of equal employment opportunity by including a statement in all media communication and printed matter for employment purposes. Further, UAB will consider, through appropriate established procedures, complaints of any individual who has reason to believe that he or she has been affected by prohibited discrimination. See also the "Complaints" section below.

Equal Education Opportunity

As an institution of higher education and in the spirit of its policies of equal employment opportunity, UAB hereby reaffirms its policy of equal educational opportunity. UAB prohibits, and will not tolerate, discrimination in admission, educational programs, and other student matters on the basis of race, color, religion, sex, sexual orientation, age, national origin, disability unrelated to program performance, veteran status, or genetic or family medical history. Complaints by any applicant or student who has reason to think he or she has been affected by discrimination will be considered through appropriate established procedures. See also the "Complaints" section below.

This policy must be included in all student handbooks and catalogs. The following summary statement may be printed in other UAB publications:

The University of Alabama at Birmingham prohibits discrimination in admission, educational programs, and other student matters on the basis of race, color, religion, sex, sexual orientation, age, national origin, disability unrelated to program performance, veteran status, or genetic or family medical history.

Complaints

For purposes of this policy, a "complaint" is a formal notification (usually in writing) of the belief that prohibited discrimination has occurred. Prior to filing a formal complaint, an individual is strongly encouraged to resolve a discrimination allegation through an informal process.

UAB Staff, Faculty, and Students: The procedure for resolving allegations when both the individual making the complaint and the person against whom the complaint is made are employed or enrolled at UAB is described in the sections entitled "Informal Resolution Procedure" and "Submitting a Formal Complaint."

All Others: Situations that involve other individuals (for example, visitors, patients, alumni or former students, applicants for admission or employment, or former employees) who believe they

have been discriminated against by someone either employed by, or enrolled at, UAB are to be addressed through the process entitled "Informal Resolution Procedure".

Informal Resolution Procedure

(NOTE: Procedures similar to the following informal process are also included in UAB's "Problem Resolution Procedure for Nonfaculty Employees" and in the UAB *Faculty Handbook and Policies*.)

Although none of the actions set forth below is required before an individual is eligible to file a formal complaint, UAB encourages use of these mechanisms for informal resolution of the complaint. This list is not exhaustive. Actions taken using any of these mechanisms do not necessarily constitute a finding of discrimination.

1. One-on-one Meeting. The person making the complaint is encouraged to meet with the person whose behavior is considered discriminatory to discuss the situation and to seek resolution.

2. Intervention by Supervisor, Manager, or Department/Unit Head. The person making the complaint is encouraged to contact his/her supervisor to request assistance with resolving the allegation of discrimination.

3. Facilitated Conversation. If one-on-one meetings or intervention by departmental officials as indicated above do not resolve the discrimination allegation, the individual making the complaint may contact the appropriate office to request the assistance of a "facilitator." Facilitated conversations allow the parties involved to discuss the relevant issues in order to seek mutually agreeable solutions.

Individuals may contact the following for assistance with any aspect of the Informal Resolution Procedure:

Employees may contact their assigned HRM Consultant or Employee Relations.

Faculty employees may contact the Office of the Provost or Employee Relations.

Students may contact the Office of the Vice President for Student Affairs.

Disability Support Services is available for consultation in any instances involving disabilities.

The Office of the Vice President for Equity and Diversity is also available for consultation.

Should the above mechanisms fail to resolve the matter satisfactorily, a complaint may be filed by *Staff, Faculty and Students* through the formal complaint process.

Submitting a Formal Complaint

Before filing a formal complaint of alleged discrimination, the relevant parties are encouraged to use one or more of the options outlined above for informal resolution of the allegation. If one chooses to proceed with a complaint, the complaint may be submitted in writing to one of the following, as appropriate:

Staff and Faculty- HRM Consultant/ Employee Relations, Office of the Chief Human Resources Officer, Office of the Provost, Office of the Vice President for Equity and Diversity.

Students - Non-academic Judicial Affairs Officer, Disability Support Services (for disability discrimination), Office of the Vice President for Student Affairs.

All complaints will be handled confidentially and addressed in accordance with UAB policy. The complaints will be referred to the appropriate area for review and investigations will be conducted in a timely manner. In instances where staff, faculty and student issues overlap, the areas listed above will confer and/or work collaboratively to resolve the issue. All individuals may use the procedures without penalty or fear of retaliation.

Also, any inquiries or complaints concerning the application of the Americans with Disabilities Act (ADA); Title VII of the Civil Rights Act of 1964; Executive Order 11246, as amended; Title IX of the Education Amendments of 1972; the Rehabilitation Act of 1973; or other legislation and its implementing regulations as they relate to the University of Alabama at Birmingham should be directed to one of the officials listed above.

Overall Implementation

The Office of the Vice President for Financial Affairs and Administration and the Office of the Provost are responsible for submitting revisions to be considered for this policy. This policy may be accessed on the web at
<http://www.iss.uab.edu/Pol/EeoEtab.pdf>.

UAB Student Records Policy

The General Education Provisions Act, Section 438, as amended, and the regulations promulgated for the enforcement of the act, found at 45 Federal Register 30911, as amended at 45 Federal Register 86296, provide that all students enrolled or previously enrolled at the University of Alabama at Birmingham have the following rights in relation to their educational records:

I. General Policy

No information from records, files, or other data directly related to a student, other than public information defined below, shall be disclosed to individuals or agencies outside the university without

the written consent of the student, except those disclosures set forth in paragraph IX.

II. Definition of Education Record

Student educational records are defined as those records, files, documents, and other material which contain information directly related to students and which are maintained by UAB or a party acting for UAB. Records of instructional, supervisory, and administrative personnel which are in the sole possession of the maker and accessible only to the maker or a substitute are specifically excluded from this definition of educational record.

Educational records of students are not available to UAB Police personnel, and records of the University Police, which, at UAB, are maintained separately from educational records, are maintained solely for purposes of law enforcement, and are not disclosed to individuals other than law enforcement personnel of the same jurisdiction, are not part of the educational record. Records which are made or maintained by physicians, psychiatrists, psychologists, or other professionals or paraprofessionals and which are maintained in connection with treatment and are not available to anyone else are also excluded from student's educational record, but such records are available to another physician or appropriate professional of the student's choice if requested. Records that only contain information relating to a person after that person is no longer a student are not considered part of the student's educational record.

III. Definition of Student

For the purpose of this policy a student is defined as any individual currently or previously enrolled in any academic offering of UAB. It does not include prospective students.

IV. Public Information

The following is a list of public information which may be made available by the university without prior consent of the student and which is considered part of the public record of the student's attendance: name, address (local and permanent), telephone number, date and place of birth, major field of study, participation in officially recognized activities and sports, dates of attendance, degrees and awards received, and institution most recently previously attended. The information will not be made available if a student directs a written instruction to the appropriate records official prior to the end of the registration period for any given term.

V. Types and Location of Records

Each school maintains a file on each student enrolled, containing applications, grade reports or other performance evaluations, and correspondence. Some departments or programs maintain similar files. The counseling service, placement service, and

financial aid office maintain a file on students who use those services. The university has designated the following officials as responsible for student records within their respective areas: University Registrar, Academic Affairs, Room 207, Hill University Center; Associate Director for Records, School of Medicine, Room P100, Volker Hall; Director of Dental Student Affairs, School of Dentistry, Room 207, School of Dentistry Building; Assistant dean for Student Affairs, School of Optometry, Room 104, School of Optometry Building; Director of Student Services, School of Nursing, Room 105B, School of Nursing Building; Graduate Records Office, Graduate School, Room 511, Hill University Center; Director of Admissions and Enrollment Services, School of Health Related Professions, Room 117B, SHP Building; Associate dean for Academic Affairs, School of Public Health, Room 308, Ryals Building.

The above shall hereinafter be referred to as "records officials." Each of these records officials is responsible for maintaining a listing of student records within such records official's area of responsibility, indicating the location and general content of the records. Any student's request concerning records of files, including requests that public information not be disclosed, requests for disclosure to third parties, and requests for access by the student should be directed to this official. Forms for all such requests may be obtained from these officials. These persons will also act as hearing officers when the content of a record is challenged as provided below.

VI. Disclosure of Student Records to the Student

The student is accorded the right to inspect, in the presence of a university staff member, records, files, and data primarily and directly related to the student. To inspect a file a student should go to the office of the appropriate records official and initiate a request in writing. If a student desires to obtain copies of the items in the educational record rather than personally reviewing the record, the written request to the records official for copies must be signed and notarized to prevent disclosure to persons other than the student. A time for inspection shall be granted within 45 days of the date of the request, and copies will be mailed within the same time period. Copies shall be made and provided to the student at a cost to the student equal to actual cost of reproduction and payable in advance.

The right of inspection does not include financial statements of parents, confidential recommendations placed in the file prior to January 1, 1975, provided that such recommendations were solicited with a written assurance of confidentiality or sent or retained with a documented understanding of confidentiality and used only for the purpose solicited, and other confidential recommendations, access to which has been waived by the student in accordance with paragraph VIII.

VII. Challenging the Contents of the Record

UAB will respond to any reasonable request for an explanation or interpretation of any item in a student's file. Requests for such explanation or interpretation should be addressed in writing to the appropriate records official.

If, after inspecting a record, a student believes that information contained in the educational record is inaccurate or misleading or violates his or her privacy, the student may request that the record be amended by presenting such request in writing to the appropriate records official. A request that the record be amended shall be answered by the records official within 15 days of its receipt with information that the record has been amended as requested or that the record has not been amended and that the student has a right to a hearing on the matter. A written request for a hearing should be addressed to the appropriate records official as listed in V, who will set a date and time for hearing with reasonable notice of same to the student within 45 days of receiving the request.

The request for hearing should identify the item or items in the file to be challenged and state the grounds for the challenge, e.g., inaccuracy, misleading nature, inappropriateness. The records official shall examine the contested item, shall hear the person responsible for placing the item in the file, if appropriate, and shall examine any documents or hear any testimony the student wishes to present. A student may be assisted or represented by individuals of his or her choice, including an attorney, at his or her own expense. The records official may decide that the item should be retained or that it should be deleted or altered. The records official shall issue a written decision, based solely on the evidence presented at the hearing, within 10 days of the conclusion of the hearing. If the decision is adverse to the student, the notice of decision shall include a statement in the record commenting on the information and/or setting forth reasons for disagreeing with the decision.

VIII. Waiver of Access

UAB may request that a student waive the student's right to inspect confidential recommendations respecting that student's application for admission, provided that the student be notified, upon request, of the names of all those providing the recommendations, the recommendations are used only for the purpose solicited, and the waiver is not a condition of admission or any other benefit. Confidential recommendations respecting application for employment or the receipt of an honor or other recognition may also be waived. A waiver may be revoked with respect to actions occurring after revocation by so notifying the records official in writing.

IX. Providing Records to Third Parties

The general policy of UAB is to refuse access to or disclosure of information from student records to third parties without the written consent of the student. Should a student wish to have such records released, a signed and dated written request must be directed to the proper records official, specifying the records to be released, the reason for release, the party or class of parties to whom records are to be released, and a request for copies to the student, if desired. UAB will then transfer or grant access to the information. The transferred information shall contain a statement that the information may be used by the receiving party or, if an organization, by its officers, agents, and employees for the purpose requested, but that the party shall not transfer the information to any other party except with the written consent of the student. A charge not to exceed the actual cost of reproduction will be assessed against the student when copies are made for the party or the student.

Student records are available to the following persons with the accompanying conditions without written consent of the student:

1. Instructional or administrative personnel whose duties include responsibilities to students which in the institution reasonable require access to student records.

2. Officials of other schools in which a student seeks to enroll. UAB will make a reasonable attempt to notify the student of the transfer, as well as the student's right to a copy, upon request, and the right to a hearing to challenge the contents if desired.

3. Certain representatives of federal departments or agencies or state educational authorities as provided by the law. In absence of consent or specific authorization by federal law of the collection of personally identifiable data, data collected by excepted officials shall be protected in a manner which will not permit personal identification of students and parents by other than those officials, and personally identifiable data shall be destroyed when no longer needed.

4. Financial aid officers or their assistants in connection with the application for or receipt of financial aid, provided that personally identifiable information may only be disclosed for the purpose of determining eligibility, amount, and conditions and to enforce terms and conditions.

5. Organizations conducting studies for administrative evaluation, tests, etc., provided that studies are not conducted in a manner which will permit personal identification of students or their parents by other than representatives of the organization and that the information will be destroyed when no longer needed for the purposes collected.

6. Accrediting organizations.

7. Other appropriate persons in an emergency to protect health or safety of student or others. In

determining appropriateness of disclosure, consideration will be given to the seriousness of the threat to health or safety of the student and others, the need for information to meet the emergency, whether the parties requesting information are in a position to deal with the emergency, and the extent to which time is of the essence.

8. In response to lawful subpoena or court order. UAB will keep a record, indicating the name and legitimate interest, of all disclosures except those made to a student, those made pursuant to written consent, those designated as public information, and those made to persons at UAB with a legitimate educational interest. This record of disclosure will become a part of the educational record, subject to inspection and review.

X. Publication

The UAB Student Records Policy shall be published in the catalog of each school, and a copy shall be displayed prominently on a bulletin board in each school. To comply with the requirement that UAB give annual notice of this policy to enrolled students, a short notice of the policy shall be included in the Class Schedule for each semester.

XI. Violation of Rights

Any student who believes that UAB has violated his or her right to access or privacy of educational records as established by the Family Education Rights and Privacy Act of 1974, as amended, the accompanying regulations published at 45 Federal Register 30911, as amended at 45 Federal Register 86296, and this policy may address a complaint to:

The Family Educational Rights and Privacy
Act Office
Department of Education
400 Maryland Avenue SW
Washington, DC 20202

Non-resident Tuition Policy

February 9, 1990

[Edited May 18, 2007, to reflect changes in organizational structure]

Introduction

The Board of Trustees has established a "Non-resident Tuition Policy" which addresses non-resident tuition, certification of residency status by campus officials, and establishment of campus policies to administer an appeals process. This UAB policy implements certain provisions of that Board policy.

Policy Statement

The Division of Student Affairs, the Graduate School, and the admissions/registration offices of the Health Affairs schools, as appropriate, are designated

as the offices empowered at UAB to determine and certify “resident” or “non-resident” student status. These offices are responsible for documenting each residency status evaluation and for maintaining the records used to substantiate that evaluation.

As the provisions of section II. of the Board policy indicate, “though certification of an address and an intent to remain in the state indefinitely are prerequisites to establishing status as a resident, ultimate determination of that status shall be made by the institution by its evaluation of the presence or absence of connections with the state of Alabama...” However, meeting the specific criteria included in section II. of the Board policy may not in all circumstances result in certification as a “resident student.” Also, according to the provisions of the board policy, UAB has been given the authority to, and has by separate Board resolution, expanded the definition of “resident student” to encompass all the categories in sections III.A. and III.B. of the Board policy.

The decision by an admissions or registration officer concerning certification of residency status may be appealed in writing by the student to the Vice President for Student Affairs who may overrule the decision or may, at his or her discretion, convene a review committee composed of appropriate university officials. If the decision of the review committee is appealed by the student, the Vice President for Student Affairs may add a recommendation of concurrence or non-concurrence with the review committee and forward the findings to the President for determination. The decision of the President is final.

I. Non-Resident Tuition Fee:

All students registering at the University of Alabama, the University of Alabama at Birmingham, or the University of Alabama in Huntsville who do not establish that they are “resident students” shall pay a “non-resident student” tuition which shall be at least twice that of “resident student” tuition.

Classification of students as “non-resident students” or “resident students” shall be made at the time of their initial registration and shall continue unchanged through all subsequent registrations at that institution until satisfactory evidence to the contrary is submitted at the time of any subsequent registration.

A “resident student” is one who, at the time of registration: Is not a “minor” and is resident of the state of Alabama and has been a resident of the state for at least one year immediately preceding the date of registration; OR is a “minor” and whose “supporting person(s)” is a resident of the state of Alabama and has been a resident of the state for at least one year immediately preceding the date registration.

II. Definitions:

a) *Minor*: An individual who, because of age, lacks the capacity to contract under Alabama law. Under current law, this means a single individual under nineteen (19) and a married individual under eighteen (18), but excludes an individual whose disabilities of non-age have been removed by a court of competent jurisdiction for a reason other than establishing a legal residence in Alabama.

b) *Supporting person*: Either or both of the parents of the student (if they are living together) or if they are divorced or living separate, then either the parent having legal custody or, if different, the parent providing the greater amount of financial support of the two. If both parents are deceased or if neither has legal custody, then supporting person shall mean, in the following order: the legal custodian of the student and if none, the guardian, and if none, the conservator.

c) *Resident*: One whose residence is in the state of Alabama. Residence means the single location at which a person resides with the intent of remaining there indefinitely as evidenced by more substantial connections with that place than with any other place. Individuals claiming resident status under this policy shall certify under penalty for perjury that a specific address or location within the state of Alabama is their residence, that they intend to remain there indefinitely, and that they have more substantial connections with the state of Alabama than with any other state. Though certification of an address and an intent to remain in the state indefinitely are prerequisites to establishing status as a resident, ultimate determination of that status by the institution by its evaluation of the presence or absence of connections with the state of Alabama including the following:

1. Payment of Alabama state income taxes as a resident.
2. Ownership of a residence or other real property in the state and payment of state and local taxes thereon.
3. Full-time employment (not temporary) in the state.
4. Residence in the state of a spouse, parents, or children.
5. Previous periods of residency in the state continuing for one year or more.
6. Voter registration and voting in the state; more significantly, continuing voter registration in the state that initially occurred at least one year prior to the initial registration of the student in Alabama at a public institution of higher education.
7. Possession of state or local licenses to do business or practice a profession in the state.
8. Ownership of personal property in the state and payment of state taxes thereon (e.g., automobile, boat, etc.) and possession of state license plates.
9. Continuous physical presence in the state for a purpose other than attending school and except for temporary absences for travel, military service,

temporary employment, etc.

10. Membership in religious, professional, business, civic, or social organizations in the state.

11. Maintenance in the state of checking and savings accounts, safe deposit boxes, or investment accounts.

12. In-state address shown on selective service registration, driver's license, automobile title registration, hunting and fishing licenses, insurance policies, stock and bond registrations, last will and testament, annuities, or retirement plans.

13. Location within the state of the high school from which the individual graduated.

III. Authority to Expand the Definition of "Resident Student"

The President of each campus may recommend to the Chancellor for consideration by the board of Trustees that the term "resident student" may include any one or more of the following categories at that campus:

A) One who, at the time of registration, is not a "minor" and:

1. Is a full-time employee (not temporary) of the institution at which the student is registering or is the spouse of such an employee;

2. Is able to verify full-time permanent employment within the state of Alabama and shall commence said employment no more than ninety (90) days after registration with the institution, or is the spouse of such an employee;

3. Is a member or the spouse of a member of the United States military on full-time active duty stationed in Alabama under orders for duties other than attending school;

4. Is employed as a graduate assistant or fellow by the institution at which the student is registering; or

5. Is a resident of any county within fifty (50) miles of the campus of the institution at which the student is registering, and had been a resident of that county for at least one year immediately preceding the date of registration. "Resident" shall have the same meaning, as to the relevant county, which it has as to the state of Alabama in the definitions section of this policy statement.

B) One who, at the time of registration, is a "minor" and whose "supporting person(s)":

1. Is a full-time employee (not temporary) of the institution at which the student is registering;

2. Is able to verify full-time employment within the state of Alabama and shall commence said employment not more than ninety (90) days after registration with the institution;

3. Is a member of the United States military on full-time active duty stationed in Alabama under orders for duties other than attending school; or

4. Is a resident of any county within fifty (50) miles of the campus of the institution at which the student is registering, and had been a resident of that county for at least one year immediately preceding the date of registration. "Resident" shall have the same meaning, as to the relevant county, which it has as to the state of Alabama in the definitions section of this policy statement.

IV. Authority to Implement Policy

The Presidents are authorized (and authorized to delegate to admissions officers and others) and directed to implement this policy by appropriate written policies, guidelines, and procedures. Such policy shall provide that classification as a "resident student" shall be based upon the required certificate and other written evidence to be filed in the admissions office and that any decision by an admissions officer may be appealed by the student to a review committee which shall be constituted, appointed, and operated as provided in such policy. The decision of the review committee may be appealed to the President, whose actions thereon shall be final.

Sexual Harassment Policy

January 27, 1999

Introduction

The University of Alabama at Birmingham is firmly committed to providing an environment that is free of discrimination, including sexual harassment. Sexual harassment includes unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature when (1) submission to such conduct is made, either explicitly or implicitly, a term or condition of an individual's employment or academic evaluation, (2) submission to, or rejection of, such conduct by an individual is used as the basis for employment or academic decisions affecting such individual, or (3) such conduct has the purpose or effect of unreasonable interfering with an individual's work performance or of creating an intimidating or hostile working or educational environment. Such behavior may violate federal law and/or give rise to personal liability for the results of such behavior. Consequently, UAB prohibits all forms of sexual harassment and will investigate complaints thoroughly and with the utmost seriousness.

A violation of this policy may result in the taking of disciplinary action up to, and including, discharge.

Sexual Harassment in the Workplace

It is a violation of UAB policy for any employee, including faculty, to engage in sexual harassment in the workplace or in work-related situations. Employees who believe that they have been sexually

harassed by a supervisor, co-worker, or other employee of UAB should report the incident promptly to the Human Resource Management Relations Office. Only Human Resource Management has the responsibility for coordinating and conducting an investigation of sexual harassment claims in the workplace and also for recommending corrective action to the UAB administration.

Sexual Harassment in the Instructional Setting

UAB prohibits sexual harassment of student's by teaching staff or other employees of UAB. For purposes of this policy, the term "teaching staff" means all those who teach at UAB and includes, but is not limited to, full-time faculty, part-time faculty, students functioning in teaching roles (such as graduate assistants), and academic administrators.

A student who believes that he or she has been sexually harassed should report the incident promptly to the Vice President for Student Affairs.

Sexual harassment by a student is considered nonacademic misconduct, and the alleged student offender will be subject to the disciplinary process contained in the [Direction: Student Handbook](#).

Sexual Harassment—General

Full and prompt reporting is necessary for effective implementation of this policy, and UAB encourages such reporting. However, UAB's duty to protect employees and students exists when UAB's supervisory personnel know, or have reason to know, of unreported sexual harassment. Supervisors therefore are directed to take all appropriate steps to prevent sexual harassment in their areas of responsibility and to take corrective action, including disciplinary action, in response to inappropriate behavior which may constitute sexual harassment even in the absence of a complaint.

This policy seeks to encourage students, staff, and faculty to express freely and responsibly, through established procedure, complaints of sexual harassment. All such complaints shall be treated as confidential information and shall be disclosed only to those with a need to know as part of the investigatory and resolution process. Any act of interference, retaliation, or coercion by a UAB employee against a student or employee for using this policy interferes with such free expression and is itself a violation of this policy.

Implementation

This policy will be published regularly in the *UAB Reporter* and in the *Class Schedule*. The policy will be included in revisions of handbooks relating to staff, faculty, and students.

The Vice President for Financial Affairs and Administration is responsible for implementation of this policy as it relates to sexual harassment in the workplace. The Vice President for Student Affairs is responsible for implementation of this policy as it

relates to sexual harassment in the instructional setting.

Drug-Free Campus Policy for Students

December 14, 1991

NOTE: See also the following related policies: Drug-free Workplace Policy; Drug Screening Policy for Student Athletes; and the "Policy on Impairment and Chemical Substance Abuse" as published by the School of Medicine, School of Dentistry, and School of Nursing.

Policy Statement

This policy is applicable to all students enrolled in credit course(s) or degree-granting programs at the University of Alabama at Birmingham (UAB) and to all students receiving academic credit at UAB (other than for continuing education units) for study in a program in a foreign country conducted by UAB alone or in conjunction with a foreign university.

Unlawful possession, use, manufacture, distribution, or dispensing of illicit drugs, controlled substances, or alcoholic beverages by any UAB student on UAB property or as part of any UAB-sponsored or UAB-sanctioned activity is prohibited. The legal possession, use, or distribution of alcoholic beverages on UAB property or at UAB-sponsored or UAB-sanctioned activities is governed by [the UAB General Policy Regarding the Use and Consumption of Alcoholic Beverages](#) and applicable local, state, and federal laws.

In certain situations, the university is required to report the activities prohibited by this policy to appropriate law enforcement authorities. In all cases, the University may report activities prohibited by this policy to appropriate law enforcement authorities if it appears that the activity is a violation of law.

Disciplinary Actions

Violations of this policy constitute nonacademic misconduct and will be subject to established disciplinary action for nonacademic misconduct in accordance with stipulations in the [Direction Student Handbook](#) or other applicable procedures. Violations of this policy by students should be reported to the appropriate student affairs office or other office handling student nonacademic misconduct in the same manner in which other instances of nonacademic misconduct are reported.

In some cases of violation of this policy for unlawful use, a student may be given, at the discretion of the University, the option to participate satisfactorily in an approved drug or alcohol abuse assistance or rehabilitation program in lieu of dismissal. Participation in such an assistance or rehabilitation program is at the expense of the student.

Drug-free Awareness Program

At least annually, UAB shall inform students of the dangers of drug and alcohol abuse on campus, of the existence of this policy statement and its penalties for violations, and of available drug and alcohol counseling, rehabilitation, and assistance through the following activities:

1. publication, at least annually, of this policy in appropriate student publications and distribution to students in UAB's foreign programs and to students in programs conducted in conjunction with foreign universities;
2. inclusion of this policy in future editions of student class schedules and/or registration materials, student handbooks, and student catalogs;
3. dissemination of this policy and of information at student orientation and assistance programs regarding the dangers of drug and alcohol use and abuse and available rehabilitation programs; and
4. continuation, and expansion, of the UAB drug and alcohol awareness program which includes sponsorship of the "Alcohol/Drug Awareness Week" and publication of pamphlets and other materials.

Applicability to Other Policies

Other drug-free policies created to cover specific areas of the university may be more restrictive than this policy but may not be less restrictive. At a minimum, other such policies must include, or reference, the provisions of this policy. Violators will be subject to the provisions of the more stringent policy but will not be punished under more than one policy for the same offense.

This policy does not revoke or otherwise interfere with policies in the health professional schools designed to determine whether health care professionals are impaired and to offer rehabilitation, subject to the above provisions.

The wording in the "Non-academic Conduct" section of the *Direction Student Handbook* which relates to causes of dismissal due to the use, possession, etc. of illicit drugs, controlled substances, or alcoholic beverages references only certain provisions of this more extensive policy. The entire policy is applicable in all cases even if the policy itself is not printed in full.

Attachments

The "Applicable Legal Sanctions," "Drug and Alcohol Use Health Risks," and "Drug and Alcohol Counseling, Treatment, and Rehabilitation Programs" attached to this policy are a part of the policy but may be revised from time to time without affecting the policy itself.

Effective Date and Implementation

This policy is effective immediately upon its being signed by the President.

The offices of the appropriate Vice Presidents

are responsible for the development and maintenance of procedures to implement this policy within their areas of responsibility.

In addition to being distributed to students on the UAB campus, this policy will be distributed to students in UAB's foreign programs and to students in programs conducted in conjunction with foreign universities. The Vice President for Student Affairs is responsible for all distributions to students covered by this policy.

Attachment A

"Applicable Legal Sanctions"

Federal Penalties and Sanctions for Illegal Possession of a Controlled Substance (55 Federal Register 33589)

21 U.S.C. 844(a)

First conviction: Up to 1 year imprisonment and fined at least \$1,000 but not more than \$100,000, or both.

After 1 prior drug conviction: At least 15 days in prison, not to exceed 2 years and fined at least \$2,500 but not more than \$250,000, or both.

After 2 or more prior drug convictions: At least 90 days in prison, not to exceed 3 years and fined at least \$5,000 but not more than \$250,000, or both.

Special sentencing provisions for possession of crack cocaine: Mandatory at least 5 years in prison, not to exceed 20 years and fined up to \$250,000, or both, if:

(a) First conviction and the amount of crack possessed exceeds 5 grams.

(b) Second crack conviction and the amount of crack possessed exceeds 3 grams.

(c) Third or subsequent crack conviction and the amount of crack possessed exceeds 1 gram.

21 U.S.C. 853(a)(2) and 881(a)(7)

Forfeiture of personal and real property used to possess or to facilitate possession of a controlled substance if that offense is punishable by more than 1 year imprisonment. (See special sentencing provisions re: crack.)

21 U.S.C. 881(a)(4)

Forfeiture of vehicles, boats, aircraft, or any other conveyance used to transport or conceal a controlled substance.

21 U.S.C. 844a

Civil fine of up to \$10,000 (pending adoption of final regulations).

21 U.S.C. 853a

Denial of Federal benefits, such as student loans, grants, contracts, and professional and commercial licenses, up to 1 year for first offense, up to 5 years for second and subsequent offenses.

18 U.S.C. 922(g)

Ineligible to receive or purchase a firearm.

Miscellaneous

Revocation of certain Federal licenses and benefits, e.g., pilot licenses, public housing tenancy, etc., are vested within the authorities of individual Federal agencies.

Note: See Attachment A.1 for additional Federal drug trafficking penalties and information.

Note: These are only Federal penalties and sanctions. Additional *State* penalties and sanctions may apply.

Summary of State Penalties and Sanctions

Under Alabama law, the possession, purchase, or consumption of alcoholic beverages by a person under 21 years of age is punishable by a fine of up to \$500 and by up to three months in jail. Also under Alabama law, for a first offense, unlawful possession of a controlled substance (that is, illegal drugs) may be punished by imprisonment up to 10 years and a \$5,000 fine and unlawful distribution of controlled substances may be punished by imprisonment up to 20 years and a \$10,000 fine. Subsequent offenses may carry more stringent sentences.

Drug-Free Schools and Communities Act

Illegal drug and alcohol use, consumption, distribution, etc. on college and university campuses also are covered by the provisions of the United States Drug-Free Schools and Communities Act Amendment of 1989 (Public Law 101-226).

Legal Sanctions in Foreign Countries

Students in a program in a foreign country conducted by UAB or in conjunction with a foreign university also may be subject to sanctions under foreign law or under the Uniform Code of Military Justice. Although the legal sanctions described in this policy under United States law may not apply to students in a foreign country, UAB will nevertheless hold such students to the same standards as students within the United States and will take the disciplinary actions described in this policy for violations of these standards.

Attachment B

“Drug and Alcohol Use Health Risks”

General

Although there has been recent change in American health habits and societal attitudes toward recreational drug and alcohol use, problems continue to exist and experimentation is starting at an earlier age. An important piece of information to surface in recent years is that even moderate, nonprescribed use of alcohol and nonprescribed use of drugs can have an adverse effect on overall health and well-being.

Consider the following facts:

1. Drinking more than one or two alcoholic beverages a week promotes more visible signs of aging.

2. Consuming one and one-half or more alcoholic beverages per day increases the risk of breast cancer.

3. Drinking alcoholic beverages poisons the heart muscle, counteracts the benefits of exercise, increases male impotence, and depresses the body's immune system.

4. Tobacco use is a contributing factor in the development of chronic bronchitis, emphysema, circulatory problems, and coronary disease, as well as being the leading cause of lung cancer.

5. Cocaine use is responsible for kidney damage, stroke, lung and heart diseases, seizures, and intense psychological problems.

6. Many forms of narcotics are highly addictive to users.

7. Marijuana use creates certain dysfunction related to thinking, learning, and recall; aggravates asthma, bronchitis, and emphysema; contributes to fertility problems, and contributes to the development of lung cancer.

8. The nonprescribed use of tranquilizers, barbiturates, and amphetamines is dangerous and may cause major health problems, including death.

9. Extended drug and/or alcohol use may result in substance dependency and loss of control of an individual's life.

Source

Drug data compiled by UAB Substance Abuse Program from the following resources:

Drug Data: What Everyone Needs to Know about

Mood-altering Drugs, Comp Care Publications, Minneapolis.

You Are What You Drink, Allan Luks and Joseph Barbato, Villard Books, New York.

You Can Stop, Jacquelyn Rogers, Simon & Schuster, New York.

Attachment B.1

Alcohol—Effects (55 Federal Register 33591)

Alcohol consumption causes a number of marked changes in behavior. Even low doses significantly impair the judgment and coordination required to drive a car safely, increasing the likelihood that the driver will be involved in an accident. Low to moderate doses of alcohol also increase the incidence of a variety of aggressive acts, including spouse and child abuse. Moderate to high doses of alcohol cause marked impairments in higher mental functions, severely altering a person's ability to learn and remember information. Very high doses cause respiratory depression and death. If combined with other depressants of the central nervous system, much lower doses of alcohol will produce the effects just described.

Repeated use of alcohol can lead to dependence.

Sudden cessation of alcohol intake is likely to produce withdrawal symptoms, including severe anxiety, tremors, hallucinations, and convulsions. Alcohol withdrawal can be life-threatening. Long-term consumption of large quantities of alcohol, particularly when combined with poor nutrition, can also lead to permanent damage to vital organs such as the brain and the liver.

Mothers who drink alcohol during pregnancy may give birth to infants with fetal alcohol syndrome. These infants have irreversible physical abnormalities and mental retardation. In addition, research indicates that children of alcoholic parents are at greater risk than other youngsters of becoming alcoholics.

Attachment B.2

Uses and Effects of Controlled Substances

See Attachment B.2 for additional information concerning health risks involved in drug use.

Attachment C

“Drug and Alcohol Counseling, Treatment, and Rehabilitation Programs”

Student Services

The Campus Assistance Program is designed to address the following issues: continued longitudinal needs assessments, campus community awareness, enlistment of support from all campus segments, identification of high-risk students, early intervention, development of peer counseling and support groups, and referral to on/off campus resources and treatment facilities when indicated. The following are on-campus programs available to students:

Campus Assistance Program
Counseling and Wellness Center
924 19th Street South
Birmingham, AL 35294-2100
934-5816

UAB Mental Health Services
Center for Psychiatric Medicine
1713 Sixth Avenue, South
Birmingham, Alabama 35294-0018
ACCESS line 934-7008

UAB Substance Abuse Program
401 Beacon Parkway West
Birmingham, Alabama 35209
917-3733

Other non-UAB, off-campus services are available in the Birmingham area and in many of the foreign countries in which UAB conducts programs of study. Such counseling, treatment, and rehabilitation services are too numerous to list here, but anyone needing assistance with locating such off-campus or foreign country services may contact one

of the programs listed above or the UAB Center for International Programs, as appropriate.

Immunization Policy

March 20, 2002

[Edited February 11, 2009, for change in unit name]

Introduction

The American College Health Association recommends that students be immunized against certain diseases. Therefore, UAB hereby establishes this policy on immunization.

For purposes of this policy, immunization against Rubeola (Red Measles) includes an initial vaccine plus a second dose of vaccine (see below).

First-time Entering UAB Students

All first-time entering students born on or after January 1, 1957, who enroll in credit courses on UAB's main campus must show proof of immunization against Rubeola (Red Measles). (*Two doses are required for proof of previous immunization: dose 1 must have been given at 12 months after birth or later, and Dose 2 must have been given after 1980.*) Enrolling students must show proof of these immunizations with either an official certificate of immunization, a photocopy of an immunization certificate, or written documentation from their physician. If the person has never been immunized, two injections of the vaccine at least one month apart are required.

International Students and International Scholars

Because of the disparity of immunization requirements among many foreign countries, all UAB international students and international scholars are required to be immunized against Tetanus, Diphtheria, Mumps, Rubeola (Red Measles), and Rubella (German Measles). In lieu of being re-immunized, such individuals may present proof of having had such immunizations. If they do not have such proof or have not been immunized, they must be immunized against these diseases prior to attending, enrolling, or participating in UAB academic, research, observing, or clinical programs and activities.

Furthermore, all international students and international scholars must show proof of a non-reactive Tuberculin skin test (or appropriate treatment if positive) within three months prior to enrollment or visiting. Individuals who have a history of reactive Tuberculin skin testing must provide a current chest x-ray (taken since their last reactive skin test but within three months prior to enrollment or visiting) indicating that the person currently is clear of Tuberculosis.

Students Enrolled in Health-related Schools

Because of the nature of their work, students engaged in health professional training programs could have a higher risk of contracting Rubeola, Mumps, Tetanus, Diphtheria, Varicella (Chickenpox), Tuberculosis, and Hepatitis B. Therefore, all UAB students in the Joint Health Sciences programs and in the Schools of Medicine, Dentistry, Optometry, Public Health, Nursing, and Health Related Professions are required to be immunized against Tetanus, Diphtheria, Varicella (Chickenpox), Mumps, Rubeola (Red Measles), Rubella (German Measles), and Hepatitis B. In lieu of being re-immunized, such individuals may present proof of having had such immunizations. Proof must be either official medical documentation or certificates of immunization or positive titer. If students do not have such proof or have not been immunized, they must begin the immunization process against these diseases prior to being admitted, attending, enrolling, or participating in UAB academic, research, or clinical programs and activities.

Students completing their Hepatitis B series of vaccines must obtain Hepatitis B titer 1 to 2 months after their third vaccine to see if additional boosters are necessary. If the titer is negative, students will be given the option either to repeat the entire Hepatitis B series or to take 1 to 2 Hepatitis B "booster" shots to try to attain a positive titer. Students who have completed their Hepatitis B vaccine series prior to matriculation are required to take a Hepatitis B titer prior to participating in a clinical environment to see if additional boosters or labs are required.

All students enrolled in health-related schools must have had a Tuberculin skin test with negative results (or appropriate treatment if positive) within three months prior to matriculation. Students participating in clinical environments with patients will be required to obtain a two-step Tuberculin skin test before starting clinical rotations and are mandated to renew their Tuberculin one-step skin test once per year.

General

The UAB Student Health Service will provide such immunizations and titer testing on a fee-for-service basis for any student who needs to meet his or her UAB immunization or titer requirements. Students may choose to fulfill these requirements at the Jefferson County Health Department or with a private physician.

Individual UAB schools may impose additional immunization requirements as needed for their students.

Exceptions

Exceptions to this policy will be made only for those students who can document medical or religious contraindications to the vaccine. Such

documentation must be submitted to the appropriate admissions or registration office as indicated in the procedures to implement this policy.

Implementation

The Provost (in conjunction with the Vice President/Dean, School of Medicine and the Assistant Vice President for Enrollment Services and University Registrar) is responsible for procedures to implement this policy for students in the Joint Health Sciences programs and in the Schools of Medicine, Dentistry, Optometry, Public Health, Nursing, and Health Professions.

The Vice President for Student Affairs (in conjunction with the Assistant Vice President for Enrollment Services and University Registrar and the Associate Vice President for Enrollment Management) is responsible for procedures to implement this policy for all other UAB students.

The Office of International Scholar and Student Services is responsible for procedures to implement this policy for international students and international scholars.

Health Care Policy for International Students and Scholars

May 1, 2000

Introduction

The purpose of this policy is to ensure that international students and scholars have appropriate health-care opportunities and health insurance coverage while they are enrolled as UAB students or are participating in UAB activities.

Students and Scholars Covered by this Policy

1. All UAB degree-seeking international students, regardless of course load, school, or degree program, must participate in the UAB Student Health Service and must have adequate health insurance coverage.

2. All transient and temporary international students must have adequate health insurance coverage. Those students may use the services of the UAB Student Health Service on a fee-for-service basis.

3. International scholars who participate in activities at UAB for longer than four weeks should be encouraged to participate in the UAB Student Health Service and must have adequate health insurance coverage. International scholars here for four weeks or less who do not participate in the UAB Student Health Service may use the services of Student Health on a fee-for-service basis. The inviting UAB department will be offered the opportunity to accept responsibility for the fee-for-service charges incurred. If the department does not wish to pay the fee-for-service bills, the international scholar will be responsible for the bills.

Definitions

For purposes of this policy, the following definitions apply:

“Transient international students” are defined as international students who are in the United States under the authorization of another institution organization but who are taking coursework at UAB.

“Temporary international students” are defined as international students who are taking less than a full-time course of study at UAB and who are not pursuing an official UAB degree or certificate.

“Adequate health insurance” is defined as follows:

a. Insurance provided through the UAB Student Health Service, *OR*

b. Equivalent personal health insurance, the evidence for which must be shown to, and verified by, the UAB Student Health Service.

Implementation

The Vice President for Student Affairs is responsible for procedures to implement this policy.

Policy Concerning AIDS and HIV Infection

April 24, 1998

Definitions

The following are definitions or explanations of terminology used in this policy:

AIDS—Acquired immunodeficiency syndrome occurs in someone with HIV infection when one or more of certain disease or infections occurs or when a CD4 (also known as T4 helper) lymphocyte cell count is below 200.

HIV—Human immunodeficiency virus (the virus which causes AIDS).

HIV antibody—A protein in the body produced in response to infection with HIV. (There are tests which look for HIV antibody in a person infected with HIV.)

HIV infection—A condition involving asymptomatic (without symptoms) or symptomatic (with symptoms) stages of infection.

Introduction

Human immunodeficiency virus (HIV) is the virus which causes the disease, AIDS. Infection with that virus damages the human body's immune (defense) system and allows life-threatening infections to develop. HIV has no known cure or vaccine for prevention. Available medical knowledge indicates that transmission of HIV is primarily through sexual contact or sharing intravenous drug paraphernalia with someone who has an HIV infection. It also can be spread from an infected mother to her baby before, or during, delivery and through breast feeding. HIV cannot be transmitted

through casual contact such as sharing food or drink, touching surfaces, shaking hands, dry kissing, or working together. HIV cannot be transmitted by mosquitoes or other insects.

Even if there are no symptoms, an HIV-infected person can transmit HIV to a sexual partner or needle-sharing partner.

Because of the seriousness of the HIV/AIDS issue, the University of Alabama at Birmingham has established this policy which focuses on prevention (through detailed education of students, faculty, and staff) and on the compassionate care of people with HIV infection or AIDS.

A supervisor or anyone in the UAB community who becomes aware of an HIV/AIDS related situation involving an employee, student, or visitor shall follow the guidelines stated in this policy.

Policy Statement

1. Admissions or Employment

The University of Alabama at Birmingham accepts otherwise-qualified individuals presenting themselves for admission or employment, irrespective of their HIV status.

2. Handicapping Conditions

Persons with AIDS (and, possibly, those with other manifestations of HIV infection) will be considered as having handicapping conditions as defined in the Rehabilitation Act of 1973 and the Americans with Disabilities Act. In determining policy and in making related decisions, UAB officials shall properly attend to the legal rights of these individuals and shall make reasonable accommodations as are appropriate for individuals with handicapping conditions.

Decisions regarding the continuation of employment of faculty and staff with HIV infection or AIDS will be made on the basis of job-related criteria. Within current UAB policies and procedures, individuals may be reassigned to accommodate a disabling condition. Termination will be pursued only when the employee, even with reasonable reassignment of responsibilities, can no longer perform the duties and responsibilities of his or her position. Any such termination action will be taken in accordance with established UAB procedures.

3. Student Attendance

UAB students who have HIV infections, whether they are symptomatic or asymptomatic, will be allowed regular classroom attendance as long as they are physically and mentally able to attend classes as determined by current UAB academic standards.

HIV-infected students enrolled in UAB health profession schools may have their educational program modified by their school to limit the risk of disease transmission, in accordance with the Alabama Infected Health-care Worker Management Act.

4. Access to Facilities

There will be no unreasonable restriction of access on the basis of HIV infection to student or employee facilities, theaters, restaurants, snack bars, gymnasiums, swimming pools, saunas, recreational facilities, or other common areas.

5. Student Housing

Currently available medical information does not indicate that there exists a risk of transmission of infection by casual contact which would preclude sharing a residence with a person with AIDS or HIV infection. However, there may be reasonable concern for the health of students with immune deficiencies (of any origin) when those students might be exposed to certain contagious diseases (for example, measles or chicken pox) in a close living situation. For these reasons, decisions regarding housing and private rooms for students with HIV infections will be made on a case-by-case basis by UAB Student Housing and Residential Life officials. It is the responsibility of the student to make his or her HIV status known to UAB in order for any accommodation request to be considered. It also is the responsibility of an HIV-infected student to take necessary precautions to avoid exposure of others to infection through known means of transmission.

6. Self-disclosure

In general, students, student applicants, employees, and applicants for employment at UAB will not be asked to respond to questions concerning the existence of HIV infection. However, both students and employees with HIV infection are encouraged to inform campus health-care providers so that UAB may provide information about proper medical care, medical care availability, support, counseling, and education. This, like any other medical information, will be handled in a strictly confidential manner in accordance with established UAB policy and Alabama law.

7. Immunizations

Incoming students known to have HIV infection need not be exempted from UAB requirements for non-live virus vaccinations. However, because of potentially serious consequences for HIV-infected persons' receiving live virus vaccines, persons who are recommended to receive such immunizations should consult the UAB Student Health Center or the Jefferson County Department of Health for current recommendations.

8. Information, Testing, and Counseling

A. Testing. Students or employees requesting HIV antibody testing will be referred to the Jefferson County Department of Health. UAB University Hospital employees also may receive such testing through the Employee Health Services.

B. Services. Counseling, information, and education are available through various UAB units including the Student Health Service, the Division of Student Affairs, the Hospital Employee Health Service, and the Office of Human Resource Management. These services currently are made available to the students or employees at no cost and in accordance with the guidelines in each unit.

9. Confidentiality of Information

A. Standards. No information concerning HIV infection or AIDS or their diagnoses will be provided to any third party other than an employee's immediate supervisor without the expressed written consent of the infected person. Medical information cannot be released to any person, group, agency, insurer, employer, or institution without specific written consent of the patient or legal guardian, except as required by law. All disclosures of diagnoses of HIV infection or AIDS to individuals functioning in supervisory roles must be treated as confidential information.

According to present law, UAB physicians and other health-care providers are mandated to protect the confidentiality of medical information with exceptions being made only if the need arises to protect others in very specific, life-threatening circumstances. Also, disclosure by persons other than health-care providers that an individual has HIV infection or AIDS may be considered an invasion of that individual's privacy. Situations in which disclosure will be made will be determined on a case-by-case basis in consultation with the chair of the AIDS Activities Coordinating Committee and the Office of Counsel, if needed.

B. Public Health Reporting Requirements. UAB will observe the public health reporting requirements of the Alabama State Department of Public Health. Individuals known to have HIV infection will be reported to the State Department of Public Health according to prevailing statutes.

C. "Need to Know." According to the American College Health Association, current medical information concerning HIV neither justifies nor requires warning others of the presence of someone with HIV infection or AIDS. Given the absence of any evidence of transmission of HIV by casual contact, there is no need or justification for warning individuals in the academic workplace, administrative officers, or instructors of the presence of such an individual. Therefore, the number of people at UAB who will be aware of the existence and/or identity of students or employees who have HIV infection will be kept to an absolute minimum, both to protect the confidentiality and the privacy of the infected persons and to avoid the generation of unnecessary fear and anxiety among faculty, staff, and students.

10. Education

Training requirements for employees deemed at-risk by the AIDS Activities Coordinating Committee shall consist of sessions sufficient in number and depth to comply with prevailing Centers for Disease Control and Prevention recommendations and "Bloodborne Pathogens Standards." In the absence of such guidelines, the AIDS Activities Coordinating Committee shall determine educational standards. Records of AIDS education training for at-risk employees shall be maintained in the appropriate UAB Human Resource Management Office.

11. Safety Precautions

A. Personnel. Since many people with HIV infection are not identified in advance, universal precautions as defined by the Centers for Disease Control and Prevention and by the Occupational Safety and Health Administration will guide the procedures for the handling of blood and body fluids containing viable blood of any student, employee, or patient. Questions regarding these safety guidelines should be directed to the Department of Occupational Health and Safety, the Hospital Employee Health Service, the Office of Human Resource management, the Hospital Committee on Infections, or the UAB Biosafety Committee. Each unit has the responsibility for developing department-specific directives and procedures. Departments also have the responsibility for compliance monitoring and staff education to prevent the transmission of HIV infection.

B. Equipment. Manuals and procedures already in use at UAB cover the precautions which should be taken when handling infectious materials. Certain of those procedures are re-emphasized here especially as pertains to the transmission of HIV infection.

UAB personnel will use disposable, single-use needles and other equipment whenever such equipment will puncture the skin or mucous membranes of patients, employees, or students. Extreme caution should be exercised when handling sharp objects, particularly in disposing of needles. All used needles should be placed in puncture-resistant containers designated for this purpose. Needles should never be bent or recapped after use. Any needles which are made to be re-used or other equipment that punctures skin or mucous membranes should be appropriately cleaned and sterilized before re-use. Blood-soaked articles should be placed in leak-proof bags with biohazard labels before being sent for reprocessing or disposal in accordance with establish UAB infection control guidelines.

C. Teaching Laboratories. Laboratory courses require exposure to blood, such as biology courses in which blood is obtained by finger prick for typing or examination, should use disposable equipment, and no lancets or other blood-letting devises should be re-used or shared. No students, except those in health-care professions, should be required to obtain or process the blood of others.

12. Job Performance

Faculty, staff, students, and all other persons affiliated with UAB shall perform the responsibilities of their positions irrespective of the HIV status of patients, students, or co-workers. Failure to comply with this policy will be considered a failure to adequately perform the responsibilities of one's position and may result in disciplinary action up to, and including, discharge.

13. Behavior Risk

UAB students, faculty, and staff with HIV infection or AIDS who are aware of the potential danger of their condition to others and who engage in behavior (while performing their employee-related or student-related activities) which threatens the safety and welfare of others may be subject to disciplinary action in accordance with established UAB disciplinary procedures and/or applicable law.

Applicability to Other UAB AIDS Policies

More specific, written guidelines and procedures are the responsibility of individual departments and may be developed, as needed, by department/unit heads. All unit policies must be compatible with this UAB-wide policy and may not be in conflict with it.

Federal Trafficking Penalties

As of November 18, 1988

CSA	PENALTY		DRUG	Quantity	PENALTY	
	2nd Offense	1st Offense			1st Offense	2nd Offense
I and II	Not less than 10 years. Not more than life.	Not less than 5 years. Not more than 40 years.	METHAMPHETAMINE	100 gm or more or 1 kg ¹ or more mixture	Not less than 10 years. Not more than life.	Not less than 20 years. Not more than life.
	If death or serious injury, not less than life.	If death or serious injury, not less than 20 years. Not more than life.	HEROIN	1 kg or more mixture	If death or serious injury, not less than 20 years. Not more than life.	If death or serious injury, not less than life.
	Fine of not more than \$4 million individual \$10 million other than individual.	Fine of not more than \$2 million individual \$5 million other than individual.	COCAINE	5 kg or more mixture	Fine of not more than \$4 million individual \$10 million other than individual.	Fine of not more than \$8 million individual \$20 million other than individual.
			COCAINE BASE	50 gm or more mixture		
			PCP	100 gm or more or 1 kg or more mixture		
			LSD	10 gm or more mixture		
			FENTANYL	400 gm or more mixture		
			FENTANYL ANALOGUE	100 gm or more mixture		
Drug		Quantity	First Offense		Second Offense	
Others ²		Any	Not more than 20 years. If death or serious injury, not less than 20 years, not more than life. Fine \$1 million individual, \$5 million not individual.		Not more than 30 years. If death or serious injury, life. Fin \$2 million individual, \$10 million not individual.	
III	All	Any	Not more than 5 years. Fine not more than \$250,000 individual, \$1 million not individual.		Not more than 10 years. Fine not more than \$500,000 individual, \$2 million not individual.	
IV	All	Any	Not more than 3 years. Fine not more than \$250,000 individual, \$1 million not individual.		Not more than 6 years. Fine not more than \$500,000 individual, \$2 million not individual.	
V	All	Any	Not more than 1 year. Fine not more than \$100,000 individual, \$250,000 not individual.		Not more than 2 years. Fine not more than \$200,000 individual, \$500,000 not individual.	

¹Law as originally enacted states 100 gm. Congress requested to make technical correction to kg.

²Does not include marijuana, hashish, or hashish oil. (See separate chart.)

Federal Trafficking Penalties - Marijuana

As of November 18, 1988

Quantity	Description	First Offense	Second Offense
1, 000 kg or more; or 1,000 or more plants	Marijuana Mixture containing detectable quantity*	Not less than 10 years, not more than life. If death or serious injury, not less than 20 years, not more than life. Fine not more than \$4 million on individual, \$10 million other than individual.	Not less than 20 years, not more than life. If death or serious injury, not less than life. Fine not more than \$8 million individual, \$20 million other than individual.
100 kg to 1,000 kg; or 100-999 plants	Marijuana Mixture containing detectable quantity*	Not less than 5 years, not more than 40 years. If death or serious injury, not less than 20 years, not more than life. Fine not more than \$2 million individual, \$5 million other than individual.	Not less than 10 years, not more than life. If death or serious injury, not less than life. Fine not more than \$4 million individual, \$10 million other than individual.
50 to 100 kg	Marijuana	Not more than 20 years. If death or serious injury, not less than 20 years, not more than life. Fine \$1 million individual, \$5 million other than individual.	Not more than 30 years. If death or serious injury, life. Fine \$2 million individual, \$10 million other than individual.
10 to 100 kg	Hashish		
1 to 100 kg	Hashish Oil		
50-99 plants	Marijuana	Not more than 5 years. Fine not more than \$250,000, \$1 million other than individual.	Not more than 10 years. Fine \$500,000 individual, \$2 million other than individual.
Less than 50 kg	Marijuana		
Less than 10 kg	Hashish		
Less than 1 kg	Hashish Oil		

*Includes Hashish and Hashish Oil.

(Marijuana is a Schedule I Controlled Substance.)

Attachment B.2
(55 Federal Register 33590)

Controlled Substances - Uses & Effects										
DRUGS/ CSA SCHEDULES	TRADE OR OTHER NAMES	MEDICAL USES	DEPENDENCE Physical Psychological	TOLERANCE	DURATION (hours)	USUAL METHODS OF ADMINISTRATION	POSSIBLE EFFECTS	EFFECTS OF OVERDOSE	WITHDRAWAL SYNDROME	
NARCOTICS										
Opium	II III V Dover's Powder, Parageoric, Parageotolin	Analgesic, antidiarrheal	High	High	Yes	3-6	Oral, smoked, inhaled, injected	Euphoria, drowsiness respiratory depression, constricted pupils, Nausea	Slow and shallow breathing, clammy skin, convulsions, coma, possible death	Watery eyes, runny nose, yawning, loss of appetite, irritability, tremors, panic, cramps, nausea, chills and sweating
Morphine	II III Morphine, MS-Contin, Roxanol, Roxanol-SR	Analgesic, antitussive	High	High	Yes	3-6	Oral, injected			
Codeline	II III V Tyrotil w/Codene, Empirin w/Codene, Releasene A.C., Formal w/Codene	Analgesic, antitussive	Moderate	Moderate	Yes	3-6	Oral, injected			
Heroin	I Diacetylmorphine, Horse, Smack	None	High	High	Yes	3-6	Inhaler, sniffed, Oral, injected			
Hydromorphone	II Dilaudid	Analgesic	High	High	Yes	3-6	Oral, injected			
Meperidine (Pethidine)	II Demerol, Mepergan	Analgesic	High	High	Yes	3-6	Oral, injected			
Methadone	II Dolophine, Methadone, Methadose	Analgesic	High	High-Low	Yes	12-24	Oral, injected			
Other Narcotics	I II III IV V Nalorphine, Pentazocine, Perazine, Fentanyl, Isomsgesic, Temgesic, Temgesic SR	Analgesic, antidiarrheal, antitussive	High-Low	High-Low	Yes	Variable	Oral, injected			
DEPRESSANTS										
Chloral Hydrates	IV Nocton	Hypnotic	Moderate	Moderate	Yes	5-8	Oral	Slurred speech, disorientation, drunken	Shallow respiration, clammy skin, dilated pupils, weak pulse, rapid pulse, coma, possible death	Anxiety, insomnia, tremors, delirium, convulsions, possible death
Barbiturates	II III IV Amytal, Butal, Fiorinal, Luminal, Nembutal, Seconal, Tuinal, Phenobarbital, Alurate, Veronal, Desmethyl, Luminal, Xanax, Serax, Valium, Tranxene, Veronal, Verelan, Halcion, Paxipam, Barbit	Anesthetic, anticonvulsant, sedative, hypnotic, veterinary anesthetic agent	High-Mod.	High-Mod.	Yes	1-16	Oral			
Benzodiazepines	IV Alprazolam, Clorazepate, Librium, Xanax, Serax, Valium, Tranxene, Veronal, Verelan, Paxipam, Barbit	Anesthetic, anticonvulsant, sedative, hypnotic	Low	Low	Yes	4-8	Oral			
Methaqualone	I Quaalude	Sedative, hypnotic	High	High	Yes	4-8	Oral			
Glutethimide	III Dondan	Sedative, hypnotic	High	Moderate	Yes	4-8	Oral			
Other Depressants	III IV Equanil, Miltown, Novetrol, Pexid, Valmid	Anxiolytic, sedative, hypnotic	Moderate	Moderate	Yes	4-8	Oral			
STIMULANTS										
Cocaine ¹	II Coke, Palis, Snow, crack	Local anesthetic	Possible	High	Yes	1-2	Inhaler, sniffed, smoked, injected	Increased alertness, excitation, euphoria, increased pulse rate & blood pressure, insomnia, loss of appetite	Agitation, increase in body temperature, hallucinations, convulsions, possible death	Apathy, long periods of sleep, irritability, depressions, disorientation
Amphetamines	II Buphetamine, Dexedrine, Desoxyn, Dextrostat, Ondansetron	Attention deficit disorders, narcolepsy, weight control	Possible	High	Yes	2-4	Oral, injected			
Phenmetrazine	II Preludin	Weight control	Possible	High	Yes	2-4	Oral, injected			
Methylphenidate	II Ritalin	Attention deficit disorders, narcolepsy	Possible	Moderate	Yes	2-4	Oral, injected			
Other Stimulants	III IV Adips, Cogent, Dexam, Ionamin, Metat, Plegine, Sarcone, Stimulex, Tegard, Preo-2	Weight control	Possible	High	Yes	2-4	Oral, injected			
HALLUCINOGENS										
LSD	I Acid, Microdot	None	None	Unknown	Yes	8-12	Oral			
Mescaline and Peyote	I Mess, Buttons, Buttons	None	None	Unknown	Yes	8-12	Oral			
Amphetamine Variants	II 2-CMA, PMA, 4-TP, MOA, MDMA, TMA, DOM, DOB	None	Unknown	Unknown	Yes	Variable	Oral, injected	Illusions and hallucinations, poor perception of time and distance	Longer, more intense "trip" episodes, psychosis, possible death	Withdrawal syndrome not reported
Phencyclidine	II PCP, Angel Dust, Hog	None	Unknown	High	Yes	Days	Smoked, oral, injected			
Phencyclidine Analogues	II PCG, PCP, TCP	None	Unknown	High	Yes	Days	Smoked, oral, injected			
Other Hallucinogens	II Butylone, Bognane, DMF, DMT, Palkoxyb, Palkon	None	None	Unknown	Possible	Variable	Smoked, oral, injected, snorted			
CANNABIS										
Marijuana	I Pot, Amsterdam Gold, Green, Rainbow, Skunk, That Stinks	None	Unknown	Moderate	Yes	2-4	Smoked, oral	Euphoria, relaxed inhibitions, increased appetite, disorientated behavior	Fatigue, paranoia, possible psychosis	Insomnia, hyperactivity, and decreased appetite occasionally reported
Tetrahydrocannabinol	II THC, Marinol	Cancer chemotherapy antiemetic	Unknown	Moderate	Yes	2-4	Smoked, oral			
Hashish	I Hash	None	Unknown	Moderate	Yes	2-4	Smoked, oral			
Hashish Oil	I Hash Oil	None	Unknown	Moderate	Yes	2-4	Smoked, oral			

¹ Designated a narcotic under the CSA. 2 Not designated a narcotic under the CSA.

Graduation Deadline Dates, 2010 - 2011

These dates are subject to change. Check the UAB Class Schedule each semester for any changes to these dates. Also check with your department because some programs have earlier deadline dates for submission of the application for degree.

Plan I

Graduate School deadlines for students completing a thesis or dissertation.

Semester	Diploma Date	Deadline for application for degree	Last day for public defense of thesis or dissertation	Graduate School Format Acceptance Review
Fall 2010	December 18	September 3	November 5	No later than 10 business days following public defense
Spring 2011	May 7	January 21	March 25	No later than 10 business days following public defense
Summer 2011	August 6	June 4	July 8	No later than 10 business days following public defense

Plan II

Graduate School deadlines for students NOT completing a thesis or dissertation.

Semester	Diploma Date	Deadline for application for degree	Last day for receipt of final papers
Fall 2010	December 18	September 3	December 6
Spring 2011	May 7	January 21	April 25
Summer 2011	August 6	June 3	July 29

PLEASE NOTE:

Failure to meet these deadlines will require the filing of a “**NEW**” Application for Degree Form (reorder) and registration in subsequent semesters. The Application for Degree form (approved at the department level and received in the Graduate School) should be filed prior to the beginning of the semester the student plans to graduate. **It is the student’s responsibility to see that the above deadlines are met.** Students will not be cleared for graduation until all paperwork has been processed, all grades have been finalized, and all fees (e.g., binding and microfilm) have been paid. Fee payment receipts for binding, microfilming, and copyrighting must be turned into the Graduate School office. The above dates are subject to change. Check with the Graduate School, 511 Hill University Center, or call 934-0656 if you have any questions concerning graduation.

Tip Sheet for Students Involved in Research Involving Human or Animal Subjects

	<i>IRB</i>	<i>IACUC</i>	<i>OH&S</i>
Who can serve as Principal Investigator (PI)?	PI may be the student, however, the faculty mentor must be listed as Co-PI and is equally responsible for the conduct of the study.	PI must have faculty status. List faculty mentor as PI on animal protocol and list student's name in parentheses after title.	PI may be the student, however, the faculty mentor must be listed as Co-PI and is equally responsible for the conduct of the study.
How are students added to a protocol?	(1) Submit amendment/revision form noting addition of personnel to existing protocol, (2) submit new protocol including student's name as PI (3) add student's name to request for changes in Investigator's Progress Report (renewal form) if involvement coincides with renewal due date.	(1) Submit modification request form noting addition of personnel to existing protocol, (2) submit new protocol including student's name in personnel section, or (3) add student's name to renewal form if involvement coincides with renewal due date.	(1) Send email to Glenda P. Moon (Glenda@uab.edu) or Donna S. Williamson (dsw@uab.edu) and indicate protocol name and funding agency (provide OH&S project #) and list students to be added. (2) Amend Project Registration form to include additional student names. Make a note that the addition of students is the only amendment.
When is it a procedural vs personnel modification?	n/a	If the student proposes to conduct animal procedures that are not already part of an approved protocol under their mentor then the mentor must either submit an amendment or a new protocol.	n/a
Timeline for review and approval.	Amendment/Revisions are normally reviewed within a week – you may add RUSH to top of form with an explanation as to the nature of the RUSH request – some request may be returned in 2 – 3 working days.	Personnel modifications are reviewed within 1 -2 business days of receipt and can be approved when all required training documentation is on file. Procedural modifications and new protocols received by the 21 st of the month (or next regular business day if 21 st is holiday or weekend) are entered into the subsequent month for review. Voting for protocols called for Full Committee Review occurs on the last Wednesday of the assigned review month.	Personnel modifications are reviewed within 1 -2 business days of receipt. PI and added personnel will be notified if additional information is needed.
Required training.	Initial and continuing Human Subjects Training which as applicable. Available training options and instructions are available at http://main.uab.edu/show.asp?durki=56078 . If students have completed training at another institution it may be submitted for review by the OIRB and may be accepted to meet UAB's training requirements. On-line training may be started before student arrives on campus.	Students must complete the following training items, accessible through BlazerNet: (1) Basic training in rules, regulations, ethics and (2) species-specific training. Items 1 and 2 are on-line training modules (ca. 3 hrs).	Depends on the nature of the research. In addition to IACUC and IRB requirements, the use of material of human origin requires annual bloodborne pathogen training.
Occupational Health Requirements		The requirements for the UAB Occupational Health Program must be met before final approval to work with animals is granted. All non UAB employees	The requirements for the UAB Occupational Health Program must be met before final approval to work with animals and certain

		<p>must receive clearance from their personal physician indicating that the physician has reviewed the proposed work and the medical history of the individual, that the individual is current for all required immunizations, and has been cleared to conduct the work proposed on the UAB Employee Occupational Health Enrollment Form. The letter and the form must be submitted before the requirements are met and the student cleared. Please note: this may take extra time.</p>	<p>other work (i.e., work with material requiring immunizations) is granted. All non UAB employees must receive clearance from their personal physician indicating that the physician has reviewed the proposed work and the medical history of the individual, that the individual is current for all required immunizations, and has been cleared to conduct the work proposed on the UAB Employee Occupational Health Enrollment Form. The letter and the form must be submitted before the requirements are met and the student cleared. Please note: this may take extra time.</p>
Student defined.	An individual enrolled in a UAB undergraduate or graduate program.	An individual enrolled in a UAB undergraduate or graduate program.	An individual enrolled in a UAB undergraduate or graduate program.
Non-UAB students.	An individual enrolled in an undergraduate or graduate program at another institution. Non-UAB students must complete training, however, training from their "home" institution may be accepted. Please call OIRB for clarification. Non-UAB students may need a "blazer ID" to access on-line training. Faculty mentors may contact Human Resources for more information about obtaining a blazer ID and appointment of the student.	An individual enrolled in an undergraduate or graduate program at another institution. Non-UAB students may complete training items 1 and 2 but are not eligible for enrollment in the UAB Occupational Health Program. They must submit documentation of an equivalent evaluation provided through their own personal physician. They may use the UAB form, which must be submitted with a physician clearance, as the basis for that evaluation.	An individual enrolled in an undergraduate or graduate program at another institution. Non-UAB students may complete UAB on-line training (call to register) but are not eligible for enrollment in the UAB Occupational Health Program. They must submit documentation of an equivalent evaluation provided through their own personal physician. They may use the UAB form, which must be submitted with a physician clearance, as the basis for that evaluation.
Sponsored Projects	If the student is the Prime Awardee of their own sponsored research project they must submit a new protocol specifically detailing the protocol which must be concordant with the funding application.	<p>If the student is the Prime Awardee of their own sponsored research project (i.e., funds budgeted for direct support of animal purchases, per diems, supplies, etc.) they must submit a new protocol specifically detailing the animal procedures proposed in the corresponding grant, fellowship, contract, etc.</p> <p>If the student is the Prime Awardee of a grant, fellowship, contract, etc with funds solely for salary support they must submit the IACUC form to register the project as a salary support project.</p> <p>Note: faculty mentor should be listed as PI on the IACUC form.</p>	If the student is the Prime Awardee of their own sponsored research project, and that project either involves material that is potentially hazardous or requires some sort of approval from OH&S, they must submit a new protocol specifically detailing the protocol which must be concordant with the funding application.
Forms and staff directory.	www.uab.edu/irb	www.uab.edu/iacuc	www.healthsafe.uab.edu