Epidemiology (Ph.D.)

View PDF of Epidemiology 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 Epidemiology catalog description

Degree Offered: Ph.D.
Director: Dr. Paul Muntner
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E-mail: pmuntner@uab.edu, janbaker@uab.edu, hawkins@uab.edu
Web site: www.soph.uab.edu/default.aspx?id=16

Faculty

Olivia Thomas Affuso, Associate 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); Cardiovascular Epidemiology, Diabetes Epidemiology, Health Disparities

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, Professor (Epidemiology); Cardiovascular Disease Epidemiology, Stroke Epidemiology
M. Ryan Irvin, Assistant Professor (Epidemiology); Genetic Epidemiology of Cardiometabolic Diseases; Pharmacogenetics

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, Professor (Epidemiology); Environmental Epidemiology, Occupational Epidemiology, Chronic Disease Epidemiology

Sadeep Shrestha, Associate Professor (Epidemiology); Infectious Disease Epidemiology, Genetic Epidemiology

John W. Waterbor, Associate Professor (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.

<table>
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<tr>
<th>Entry Term:</th>
<th>Fall semester only</th>
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<tbody>
<tr>
<td>Deadline for All Application Materials to be in the Graduate School Office:</td>
<td>August 1; February 1 to be considered for financial aid</td>
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<td>Number of Evaluation Forms Required:</td>
<td>Three</td>
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<tr>
<td>Entrance Tests</td>
<td>GRE (TOEFL and TWE also required for international applicants whose native language is not English.)</td>
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<tr>
<td>Comments</td>
<td>Visits to campus are recommended. Telephone interviews may be conducted for applicants who are not able to visit UAB.</td>
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If you have questions please contact Dr. Muntner, 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. Muntner), 205-934-7128 (Judy Baker), 205-975-9749 (Kimberly Hawkins); Fax to Department of Epidemiology, 205-934-8665

E-mail pmuntner@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](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. 3 hours. Summer (Waterbor)

**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 (Levitan)

**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 Institutes 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. Summer. (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

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