

Epidemiology

Degree Offered:	M.P.H., M.S.P.H., Ph.D.
Chair:	Cora E. Lewis, MD, MSPH
Phone:	(205) 975-7699
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Overview

Epidemiology is the study of trends, patterns, and causes related to disease in populations. Students who concentrate in epidemiology are interested in how diseases spread among given populations. Epidemiologists create complex analytical models to help us understand the causes of and solutions to these diseases more clearly.

Graduates of the UAB Epidemiology program have found employment in academia, research organizations and foundations, industry, public and private health services delivery organizations, and international agencies. Many of our doctoral graduates have faculty positions.

Degree Programs

- Master of Public Health (MPH) concentration in Epidemiology (Including the Fast Track Program, Accelerated Bachelors/Masters (ABM) and Online Degree Program)
- Master of Science in Public Health (MSPH) concentration in Applied Epidemiology
- Doctor of Philosophy (PhD) in Epidemiology

Admission Requirements

Applicants must meet the requirements for admission to the UAB School of Public Health and must demonstrate their aptitude for biological sciences and mathematics by virtue of their college transcripts and GRE scores.

Entry Term	Deadline
Master Program Deadline:	www.uab.edu/soph/home/apply/graduate
PhD Program Deadline:	May 15 (U.S.); April 1 (International); Deadline to apply for funding consideration is January 10
GPA:	3.0
Number of Letters of Recommendation Required:	Two
Entrance Tests: GRE	Not required
TOEFL:	TOEFL is required for international applicants whose native language is not English.
SOPH Admissions:	www.uab.edu/soph/home/apply/graduate

UAB has many degree programs (both face-to-face and online) that can lead to professional licensure or certification. Licensure requirements vary from state to state and by professional organization. Federal Regulations require UAB to provide public or general disclosures on educational programs designed to meet educational requirements for a specific professional license or certification, that is required for employment in an occupation, or is advertised as meeting such requirements. For a list of programs that customarily lead to professional licensure or certification, please visit the [UAB Professional Licensure and Certification](#) webpage.

Master of Public Health with a Concentration in Epidemiology

Including the Fast Track Program, Accelerated Bachelors/Masters (ABM) and Online Degree Program

This [MPH in Epidemiology](#) program is intended for persons who anticipate careers in public health practice. In addition, students who wish to enter doctoral-level training should consider majoring in epidemiology at the master's level. Graduates of the MPH in Epidemiology may assume faculty or research positions in academia or management positions in government or industry if they have other professional degrees (e.g., MD, DDS) as well. Graduates of the program without professional credentials generally assume mid-level positions in academia, industry or government. The MPH in Epidemiology in-person program typically takes 4 to 5 semesters of full-time coursework, or 16-20 months of full-time coursework to complete. Part-time coursework generally takes students at least 6-8 semesters to complete.

Curriculum

For full-time students in our MPH program, and for those students who opt to complete our accelerated graduation plan, all core courses can be completed within the first two semesters of enrollment except for the following classes: ENH 690 is taken after completion of all PUH core classes, PUH 601-PUH 606, and PUH 688 Internship are taken after completion of all PUH 601-PUH 606 classes, and finally EPI 689 (Integrative Learning Experience/Capstone) must be taken after EPI 625 and PUH 688 Internship. EPI 689 must be taken in the last semester of enrollment or graduation term.

Requirements	Hours
MPH Core Requirements: (14 hours)	
PUH 601 This is Public Health	1
PUH 602 Community Assessment	3
PUH 604 Programs and Policies	3
PUH 605 Public Health Management and Evaluation	3
PUH 606 Leadership for Evidence-Based Public Health	1
EPI 610 Principles of Epidemiologic Research	3
MPH Degree Requirement: (1 hour)	
ENH 690 Environmental Health Perspectives	1
Concentration Requirements: (11 hours)	
EPI 624 Introduction to Data Analysis with SAS	2
EPI 625 Quantitative Methods in Epidemiology	3
BST 611 Intermediate Statistical Analysis I	3
BST 612 Intermediate Statistical Analysis II	3
Applied Practice Experience: (3 hours)	
PUH 688 Public Health Internship	3

EPI Required Electives: (3 hours - choose one of the following)		3
EPI 602	Epidemiology of Chronic Diseases	
EPI 605	Epidemiology of Infectious Diseases	
Approved Electives: (9 hours)		9
EPI 603	Injury-Epidemiologic Principles and Prevention Strategies	
EPI 607	Fundamentals of Clinical Research	
EPI 609	Introduction to Pharmacoepidemiology and Drug Safety	
EPI 614	Epidemiologic Methods Applied to Comparative Effectiveness Research	
EPI 616	Environmental Epidemiology	
EPI 619	Infection Prevention and Hospital Epidemiology	
EPI 621	HIV/AIDS and STDs	
EPI 627	Data Analysis and Presentation of Epidemiologic Studies	
EPI 635	Genetics in Public Health	
EPI 690	Population and Health Outcomes Research Seminar Series	
EPI 695	Epidemiology Seminar	
EPI 698	Master's Level Directed Research Epidemiology	
BST 626	Data Management and Reporting with SAS	
Integrative Learning Experience: (3 hours)		
EPI 689	Epidemiology Integrative Learning Experience	3
Total Credit Hours:		44

Master of Science in Public Health with a Concentration in Applied Epidemiology

The MSPH with a concentration in Applied Epidemiology program is an academic research degree designed for students who wish to receive education and training in epidemiologic research methods. Completion of didactic course work and a publishable thesis research paper and final defense are required. This degree can be completed in as little as 4 to 5 semesters or 16 to 21 months of full-time course work.

Curriculum

A total of 42 credit hours must be earned to receive the MSPH in Applied Epidemiology degree. Of these 42 total hours, 14 hours are taken to complete the core and school-wide requirements. Students complete 3 semester hours of masters directed research (EPI 698) and 6 hours of masters project research (EPI 699 - after admission to candidacy). Students can consult with their academic advisor for relevant approved electives based on epidemiology focus areas or areas of research interests. During the last term of enrollment or final graduation term, the student is required to complete their final thesis project defense and presentation. A final publishable paper is required for graduation.

All students in an MSPH, MS, DrPH, or PhD program are required to complete PUH 600: Overview of Public Health. The course must be completed in a single semester (Fall or Spring); students must complete the course by the end of their second semester in the program. Students who already possess a Bachelor of Public Health (BS) or a Master of Public Health (MPH) degree from an institution that was CEPH-accredited at the time their degree was awarded are exempt from this requirement.

Requirements		Hours
MSPH Core Requirements: (11 hours)		
BST 611	Intermediate Statistical Analysis I	3
BST 612	Intermediate Statistical Analysis II	3

EPI 610	Principles of Epidemiologic Research	3
EPI 624	Introduction to Data Analysis with SAS	2
School-Wide Requirement: (3 hours)		
GRD 717	Principles of Scientific Integrity	3
Concentration Requirements: (5 hours)		
EPI 625	Quantitative Methods in Epidemiology	3
EPI 691	Data Analysis and Presentation of Epidemiologic Studies	2
EPI Required Elective: (3 hours- choose one of the following)		
EPI 602	Epidemiology of Chronic Diseases	3
EPI 605	Epidemiology of Infectious Diseases	3
Approved Electives: (10 hours)		
BST 625	Design/Conduct Clinical Trials	3
EPI 603	Injury-Epidemiologic Principles and Prevention Strategies	3
EPI 607	Fundamentals of Clinical Research	3
EPI 609	Introduction to Pharmacoepidemiology and Drug Safety	3
EPI 614	Epidemiologic Methods Applied to Comparative Effectiveness Research	3
EPI 616	Environmental Epidemiology	3
EPI 619	Infection Prevention and Hospital Epidemiology	3
EPI 621	HIV/AIDS and STDs	3
EPI 635	Genetics in Public Health	2
EPI 690	Population and Health Outcomes Research Seminar Series	1
EPI 695	Epidemiology Seminar	1
Masters Directed Research: (Minimum 4 credit hours)		
EPI 698	Master's Level Directed Research Epidemiology	1-9
Masters Project Research: (Minimum 6 credit hours)		
EPI 699	Master's Level Project Research Epidemiology	1-9
Total Credit Hours:		42

¹ EPI 699 Masters Level Project Research must be taken after admission to candidacy.

Doctor of Philosophy in Epidemiology

The PhD in Epidemiology emphasizes epidemiologic study design and data analysis. The program is designed to prepare exceptionally qualified individuals for a career of research and teaching. Admission is competitive. Applicants should have earned a Master of Public Health (MPH), Master of Science in Public Health (MSPH), Master of Science (MS) degree or equivalent, with a strong background in epidemiology and statistics. Students who complete the degree will master the skills required for conducting independent research in epidemiology, with a firm background in epidemiology, biostatistics, and information management. Specific areas of concentration include chronic diseases, infectious diseases, molecular epidemiology, and injury epidemiologic methods. Further details about the PhD-EPI program may be obtained by contacting the Program Director, Dr. Russell Griffin at russellg@uab.edu. You may also contact the Coordinator of Graduate Academic Programs, Kimberly Hawkins King at hawkinsk@uab.edu, or (205) 975-9749. For funding questions regarding our PhD program, please contact Dr. Russell Griffin or the program assistant Kate Sreenan at ksreenan@uab.edu or by calling (205) 934-7184.

Curriculum

To earn the PhD degree in Epidemiology students must complete a minimum of 60 total credit hours of academic course work. Of this 60 credit hour minimum, 21 hours are taken to fulfill the department requirements and include Biostatistics, Epidemiology, and a Grant Writing course. At least 24 credit hours must be earned in doctoral level didactic epidemiology courses or advanced biostatistics courses. GRD 717 Principles of Scientific Integrity is also a required course that students take in the program. Students must also complete at least 12 semester hours of directed research (EPI 798) and 12 semester hours of dissertation research (EPI 799). Additionally, students must complete at least two semesters in candidacy (of EPI 799) before being allowed to graduate.

All students in an MSPH, MS, DrPH, or PhD program are required to complete PUH 600: Overview of Public Health. The course must be completed in a single semester (Fall or Spring); students must complete the course by the end of their second semester in the program. Students who already possess a Bachelor of Public Health (BS) or a Master of Public Health (MPH) degree from an institution that was CEPH-accredited at the time their degree was awarded are exempt from this requirement.

Requirements	Hours
Departmental Requirements: (21 hours)	
BST 621 Statistical Methods I	3
BST 622 Statistical Methods II	3
EPI 704 Advanced Epidemiologic Methods	3
EPI 710 Analysis of Case Control Studies	3
EPI 720 Analysis of Follow-Up Studies	3
GRD 717 Principles of Scientific Integrity	3
PUH 703 Public Health Grant Writing	3
At least one additional doctoral-level Epidemiology course - Select from the following:	
EPI 706 The Epidemiology of Cardiovascular Disease	2
EPI 713 Cancer Epidemiology and Control	3
EPI 721 HIV/AIDS and STDs	3
EPI 781 Special Topics in Epidemiology Research	3
EPI 795 Epidemiology Seminar	1
At least two advanced level Biostatistics courses: ¹	
BST 623 General Linear Models	3
BST 640 Nonparametric Methods	3
BST 655 Categorical Data Analysis	3
BST 660 Applied Multivariate Analysis	3
BST 661 Structural Equation Modelling	3
BST 665 Survival Analysis	3
BST 670 Sampling Methods	3
BST 671 Meta-Analysis	3
BST 723 Theory of Linear Models	3
BST 735 Advanced Inference	4
BST 740 Bayesian Analysis	3
BST 750 Stochastic Modeling	3
BST 760 Generalized Linear and Mixed Models	3

Area Course: At least one (1) preferred 700 level course in an area of medicine or in one of the major areas of PH other than EPI and BST must be taken. The following courses are acceptable. Other courses are available (check course catalog). Please consult with your advisor and PhD program director for approval and any additional recommended courses.

HPO Courses

ENH Courses

HB Courses

PATH Courses

GBS or GBSC Courses

Other approved 700 level relevant doctoral courses

Doctoral Seminars: (4 hours)		4
EPI 790	Doctoral Seminar in Epidemiology (Spring Term Topic: Manuscript and Grant Reviews)	2
EPI 791	Doctoral Seminar in Epidemiology: Scientific Writing (Summer Term Topic: Scientific Writing)	2
EPI Directed Research: (Minimum 12 credit hours)		
EPI 798	Doctoral Level Directed Research Epidemiology ²	12
EPI Dissertation Research: (Minimum 12 credit hours)		
EPI 799	Dissertation Research ³	12
Minimum Credit Hours:		60

¹ Other courses may be available in Biostatistics, with your advisor's approval. Please check the course catalog.

² EPI 798: Doctoral-Level Directed Research - Register prior to admission to candidacy; Must have at least 12 hours.

³ EPI 799: Dissertation Research - Register after admission to candidacy; Must have at least 12 hours and at least 2 semesters.

Courses

EPI 600. Introduction to Epidemiology. 3 Hours.

EPI 600 is an introductory course designed to teach graduate level public health students the basic principles, methods, and applications of epidemiology. This course is a CORE requirement for non-Epidemiology MPH majors.

EPI 602. Epidemiology of Chronic Diseases. 3 Hours.

This course will explore the breadth and depth of the epidemiology of chronic diseases including classification, surveillance, frequency, distribution, etiology, natural history, risk factors, and control. It will address details of large-scale epidemiologic studies in cardiovascular diseases and cancer, and will discuss epidemiologic papers relating to the use of various study designs. The course will be presented in three modules: (1) Overview, Risk Factors and Control of Chronic Diseases; (2) Epidemiology of Cardiovascular Diseases; (3) Epidemiology of Cancer; and Other Chronic Diseases. Besides the course master, guest lecturers will participate in teaching the course.

Prerequisites: EPI 610 [Min Grade: C] or EPI 610Q [Min Grade: C]

EPI 603. Injury-Epidemiologic Principles and Prevention Strategies. 3 Hours.

Concepts and methods of epidemiology applied to injury; epidemiology of major injury types, utilization of injury data sets; development and evaluation techniques of preventive strategies. EPI 600 or EPI 610 is a recommended prerequisite but is not required.

EPI 605. Epidemiology of Infectious Diseases. 3 Hours.

The course provides an introduction to basic principles of infectious disease epidemiology, surveillance, and control. Time is also dedicated to critical analysis of the magnitude, distribution, risk factors, and public health significance of selected infectious diseases in community and institutional settings. While the primary geographic focus is the U.S., international comparisons and perspectives are included. The course focuses on the major infectious diseases affecting developing nations and on diseases of major current interest. The course also provides an overview of vaccinology principles, current immunization strategies, their public health rationale, and use of vaccines in disease control and eradication.

Prerequisites: EPI 610 [Min Grade: C]

EPI 607. Fundamentals of Clinical Research. 3 Hours.

This course will provide an overview of principles and practices related to the study of determinants and outcomes of medical interventions. Methods for conducting epidemiologic research in the "clinic", assessing the validity of diagnostic and screening tests, measuring therapeutic efficacy and safety, and describing the natural history of disease will be reviewed. EPI 600 or EPI 610 is a recommended prerequisite but not required.

EPI 609. Introduction to Pharmacoepidemiology and Drug Safety. 3 Hours.

The purpose of the course is to 1) introduce to students the emerging field of pharmacoepidemiology (PE) and comparative effectiveness research (CER); 2) to have an overview of the shared and unique methodological issues that commonly and negatively affects the validity and interpretation of PE and CER research; and 3) to introduce methods in study design and data analysis to address such issues. The course is a requirement for the MSPH Pharmacoepidemiology and Comparative Effectiveness Research track. NOTE: Introductory training in epidemiology (EPI 610 or BST 611) is recommended but not required.

EPI 610. Principles of Epidemiologic Research. 3 Hours.

Concepts, philosophy, and methods of epidemiology. Measures of disease frequency, association and impact; study design and data analysis, indices of disease and health; overview of major categories of acute and chronic disease, outbreak investigations, and screening. EPI 610 is a track requirement for MPH - Epidemiology and MSPH – Epidemiology majors, and is also open to other graduate students at the instructor's discretion.

EPI 614. Epidemiologic Methods Applied to Comparative Effectiveness Research. 3 Hours.

This course will focus on methodological issues pertaining to the design, analysis and interpretation of comparative effectiveness research studies. Special focus will be placed on comparative effectiveness research studies using a non-experimental design and large data base analyses. This course is intended for Master of Science in Public Health and doctoral students in epidemiology, biostatistics, or health care and policy. Doctoral students in other disciplines as well as others interested in comparative effectiveness research are also welcome to enroll with the instructor's permission.

Prerequisites: EPI 610 [Min Grade: C] or EPI 610Q [Min Grade: C]

EPI 616. Environmental Epidemiology. 3 Hours.

Design and conduct of studies examining health effects of environmental exposures. Strengths and limitations of research strategies and interpretation of study results. Areas of interest include air and water pollution, lead, and biological marker outcomes.

Prerequisites: EPI 610 [Min Grade: C]

EPI 618. Fieldwork in Public Health. 2 Hours.

Application of public health principles in communicable disease control and environmental health programs carried out at Jefferson County Department of Health.

Prerequisites: EPI 605 [Min Grade: C] and EPI 610 [Min Grade: C]

EPI 619. Infection Prevention and Hospital Epidemiology. 3 Hours.

The course will provide students with a basic understanding of the area of hospital epidemiology and infection prevention. Notably, the course will cover a review of basic epidemiological methodology, and will then focus on the main areas of surveillance that are critical to infection prevention in addition to methodologies that are specific to hospital epidemiology. Prerequisites: EPI 610 or equivalent introduction to epidemiology course as approved by the course director.

Prerequisites: EPI 610 [Min Grade: C]

EPI 621. HIV/AIDS and STDs. 3 Hours.

Basic biology and pathogenesis, historical and current trends, domestic and international epidemiology, determinants of spread, immunogenetics and host susceptibility, options for prevention, surveillance and control of sexually transmitted diseases (STD's) and HIV/AIDS. If not Public Health student permission of instructor is required.

Prerequisites: EPI 610 [Min Grade: C] or EPI 610Q [Min Grade: C]

EPI 622. An Introduction to REDCap (Research Electronic Data Capture). 3 Hours.

The purpose of this course is to introduce students to the principles of database design and management using REDCap. The course will use the University of Alabama at Birmingham's response to the COVID-19 pandemic as a case study. The course will provide students with an overview of the principles of and best practices for data collection and management as well as the skills to develop and maintain a database using REDCap. The specific skills to be acquired include creating database forms and fields, creating field validation rules, creating centralized and distributed data collection systems, creating reports, importing and exporting data, quality assurance and control procedures, among others. SAS will be used to illustrate REDCap's ability to interface with other software packages to facilitate data analysis and report; however, students need not have experience using SAS. The course will also briefly review other database tools include Microsoft Access and Filemaker Pro.

EPI 624. Introduction to Data Analysis with SAS. 2 Hours.

The purpose of this course is to introduce students to the basics of SAS programming. Topics covered will include creation/importation of datasets, working with SAS variables, manipulation of datasets (e.g., combining and subsetting datasets), and SAS syntax to produce descriptive statistics (e.g., frequencies, means) and perform basic statistical procedures (e.g., chi-square, t-test).

Prerequisites: EPI 610 [Min Grade: C] or EPI 610Q [Min Grade: C]

EPI 625. Quantitative Methods in Epidemiology. 3 Hours.

The course will provide students with the knowledge of how to perform basic analyses utilized in epidemiological research. The course will be segmented into four modules, with three modules covering how to properly analyze ecological, cross-sectional, cohort, and case control study designs. The course will focus heavily on performing the analyses in SAS, and will continue to expand upon many of the concepts in SAS programming covered in EPI 624. The statistical methods covered will include, but are not limited to, bivariate analyses such as chi-square, t-test, and ANOVA; correlation; and regression methods such as logistic regression, Poisson regression, and Cox proportional hazards regression.

Prerequisites: BST 611 [Min Grade: C] and BST 612 [Min Grade: C] and (EPI 610 [Min Grade: C] or EPI 610Q [Min Grade: C]) and EPI 624 [Min Grade: C]

EPI 626. Epidemiologic Study Design and Data Analysis. 3 Hours.

The course will provide students with a more in-depth understanding of study design, and data analysis. Epidemiological concepts and methodologies from previous courses will be reinforced, with a focus on designing epidemiological studies, performing detailed statistical analyses, and applying findings to public health settings. Designed to be hands-on, the course will equip students with the skills to critically evaluate epidemiologic research and effectively present findings in public health contexts. It bridges advanced coursework and the capstone or thesis research experiences, ensuring students are well prepared to apply their knowledge in practice and research settings.

Prerequisites: EPI 610 [Min Grade: C] and EPI 624 [Min Grade: C] and EPI 625 [Min Grade: C] and BST 611 [Min Grade: C] and BST 612 [Min Grade: C]

EPI 627. Data Analysis and Presentation of Epidemiologic Studies. 3 Hours.

Analyze data from an epidemiologic study, addressing a specific questions, and prepare a manuscript from the analysis. There are 3 possibilities regarding choice of data: 1) from a list of the instructor's datasets, 2) public use data, 3) from the student's research. Students working on an MSPH or another degree project may use data for that degree-project with approval of their advisor and course master. Upon completion of the course, the student should be able to analyze data from an epidemiologic study and prepare a manuscript.

Prerequisites: BST 611 [Min Grade: C] and BST 612 [Min Grade: C] and EPI 610 [Min Grade: C] and EPI 624 [Min Grade: C] and EPI 625 [Min Grade: C]

EPI 635. Genetics in Public Health. 2 Hours.

This course will provide a topical overview of issues in public health genetics. The purpose of this course is to introduce students to the complex issues involved in applying and integrating genetic technology and information into public health. Must have permission of instructor to register.

EPI 680. Topics in Clinical Research. 2 Hours.

Provide health sciences professionals interested in clinical trials, clinical epidemiology, and other forms of population research with both essential principles and specific technical knowledge in a variety of areas relevant to the conduct of biological and behavioral investigation of human subjects. NOTE: Limited to health professionals planning clinical research careers who have been accepted into the MSPH in Clinical Research. This course begins in the Spring term and extends into the Summer term. Registration for this course is during the Summer semester. Please contact the Program Coordinator for the course syllabus and course schedule.

EPI 681. Special Topics in Epidemiology Research. 1-3 Hour.

To engage infectious disease research practice encompassing design, conduct, analysis, and interpretation. Students participate in supervised research and/or in research design. Doctoral students are expected to engage in supervised research. NOTE: Permission of instructor.

EPI 682. Gorgas Course in Tropical Med. 3-9 Hours.

Hands-on exposure to tropical diseases and emerging pathogens in various teaching formats: didactic lectures, roundtables, laboratory work, clinical and hospital rounds, case conferences, computer training, field trips and independent study. Course is held in during the Spring Term in Lima, Peru. NOTE: 9 hours (3 or Course can be taken for 3, 6 hours are also accepted with or 9 hours; however, evaluation will be restricted to selected sections of the course). course. Spring (Freedman).

EPI 689. Epidemiology Integrative Learning Experience. 3 Hours.

The EPI ILE or capstone course represents a culminating experience that allows students to demonstrate synthesis of MPH foundational and epidemiology concentration competencies. Students will apply their epidemiology and biostatistics skills by designing, analyzing, and disseminating findings of a research project in the form of a high-quality written product. All MPH Epidemiology students must complete this course to graduate in the final term of the MPH program.

Prerequisites: EPI 625 [Min Grade: C] and PUH 688 [Min Grade: C]

EPI 690. Population and Health Outcomes Research Seminar Series. 1 Hour.

The purpose of this class is to provide an opportunity for students interested in population and health outcomes research to participate in seminars related to methodology and career development and to present their work.

EPI 691. Data Analysis and Presentation of Epidemiologic Studies. 2 Hours.

In this course, students will apply their epidemiology and biostatistics skills by designing and analyzing an epidemiologic research question from start to finish and present their data in written and oral formats.

Prerequisites: BST 611 [Min Grade: C] and BST 612 [Min Grade: C] and EPI 610 [Min Grade: C] and EPI 624 [Min Grade: C]

EPI 695. Epidemiology Seminar. 1 Hour.

The purpose of the epidemiology seminar series is to provide a venue for faculty and students of epidemiology to participate in the presentation of a variety of topics and concepts related to the field of epidemiology, biostatistics and public health.

EPI 698. Master's Level Directed Research Epidemiology. 1-9 Hour.

Independent study with guidance of appropriate public health faculty.

EPI 699. Master's Level Project Research Epidemiology. 1-9 Hour.

Research for project under direction of research committee.

Prerequisites: GAC M

EPI 703. Grant Proposal Writing. 3 Hours.

To provide the student with information about grant writing and practice in preparing a grant proposal for submission. The proposal must relate to an epidemiologic topic. Human subjects issues are discussed. NOTE: Must be a doctoral student or obtain permission of instructor to enroll.

EPI 704. Advanced Epidemiologic Methods. 3 Hours.

This course provides an advanced introduction to fundamental epidemiologic concepts and methods, including causal inference, bias, and study design. This course is the first course in the sequence of the three required core epidemiology courses for doctoral students in epidemiology.

EPI 706. The Epidemiology of Cardiovascular Disease. 2 Hours.

The purpose of this course is to provide exposure to the epidemiology of cardiovascular disease.

EPI 710. Analysis of Case Control Studies. 3 Hours.

This course is designed to provide doctoral students in epidemiology with practical experience in the analysis and interpretation of data from case-control studies. Specific aims are: To outline a strategy for data analysis and review relevant methodologic issues and to apply stratified analysis methods and regression models in the study of diseases of multifactorial etiology. Preq: Requires permission of instructor.

Prerequisites: EPI 704 [Min Grade: C]

EPI 712. Nutritional Epidemiology. 3 Hours.

Nutritional epidemiology will cover core concepts in human nutrition including nutrient classification, nutrient sources, nutritional deficiencies, nutritional excesses, recommended daily allowances, basic anthropometry, dietary assessment methods in free-living populations, validation of dietary assessment methods, identification of biomarkers of dietary intake, study designs used in nutritional epidemiology, issues in the analysis and presentation of dietary data, diet-disease associations, gene-diet associations and special topics in nutrition (e.g., folic acid and neural tube defects, fatty acids and the metabolic syndrome, diet and obesity, vitamin A and immune function, vitamins and mother-to-child transmission of HIV, etc).

EPI 713. Cancer Epidemiology and Control. 3 Hours.

In this course students will learn what is known about the causes of cancer and the control measures used to decrease cancer incidence, decrease cancer mortality, extend cancer survival, and improve quality of life for cancer patients.

EPI 720. Analysis of Follow-Up Studies. 3 Hours.

This course is designed to provide doctoral students in epidemiology with practical experience in the analysis and interpretation of data from follow-up studies. Specific aims are: to outline a strategy for data analysis and review relevant methodologic issues and to apply stratified analysis methods and regression models in the study of diseases of multifactorial etiology.

Prerequisites: EPI 710 [Min Grade: C]

EPI 721. HIV/AIDS and STDs. 3 Hours.

The course will cover the epidemiology, prevention and control of Sexually Transmitted Diseases (STDs) including the human immune deficiency virus (HIV) infection in both the domestic and international settings. EPI 621 is intended as an elective for second year students and students who have a graduate degree in the Medical Health Professions who are enrolled in any degree track in the School of Public Health. It is considered an elective for the MPH and MSPH programs in Epidemiology. EPI 721 is intended only for doctoral students in the School of Public Health.

Prerequisites: EPI 610 [Min Grade: C] or EPI 610Q [Min Grade: C]

EPI 724. Foundations of Implementation and Dissemination Science. 3 Hours.

The basic concepts and process taught in this course will provide the building blocks for learners to apply IS theory and frameworks to their own practice and grant writing. In addition, learners will be exposed to short presentations by IS researchers on campus, to provide an appreciation of real-life applications of the theories as they learn them. The course will also provide practical guidance on grant writing and advice on how to get implementation science grant applications funded.

Prerequisites: EPI 704 [Min Grade: C] and EPI 710 [Min Grade: C] and EPI 720 [Min Grade: C] and BST 621 [Min Grade: C] and BST 622 [Min Grade: C]

EPI 731. Genetic Epidemiology. 4 Hours.

This course will cover core concepts of designs, methods and statistical tools in genetic epidemiology studies for determining the contribution of genes to disease risk. Methods for incorporating genetic markers into conventional epidemiologic study designs as risk factors including genetic risk models, familial correlations, migration and admixture, quantitative and qualitative traits, association and linkage analyses in family based designs, allele/haplotype frequency estimation, Hardy Weinberg Equilibrium and linkage disequilibrium and application in both family and population based studies will be discussed. Methods for gene-gene and gene-environment interaction assessment, genome wide association studies are also presented. Students not meeting the prerequisites must get permission from the instructor.

Prerequisites: EPI 610 [Min Grade: C] and BST 611 [Min Grade: C] or BST 621 [Min Grade: C]

EPI 781. Special Topics in Epidemiology Research. 1-3 Hour.

To engage infectious disease research practice, encompassing design, conduct, analysis, and interpretation. Students participate in supervised research and/or in research design. NOTE: Doctoral students are expected to engage in supervised research and must obtain permission of instructor.

EPI 790. Doctoral Seminar in Epidemiology. 2 Hours.

In depth study of several areas of epidemiologic methodology not covered in other courses. Students responsible for selecting and presenting topics. Considerable reading and outside preparation required. NOTE: Requires permission of instructor.

EPI 791. Doctoral Seminar in Epidemiology: Scientific Writing. 2 Hours.

Doctoral Seminar is an upper-level doctoral course. The course will be used to promote the acquisition of new knowledge and skills pertaining to scientific manuscript writing processes specific to epidemiology. Students in this course will work on drafting a new manuscript throughout the semester. Students will become familiar with the process of hypothesis generation, dataset acquisition, writing of sections in scientific manuscripts, setting up an analysis plan and formatting manuscripts for submission to scientific journals. Lectures will be supplemented with group discussions intended to give students the opportunity to learn relevant hands-on techniques to validate what they know and to ask questions about material they don't understand. Students will present their research in written and oral formats.

Prerequisites: EPI 704 [Min Grade: C]

EPI 795. Epidemiology Seminar. 1 Hour.

The purpose of the epidemiology seminar series is to provide a venue for faculty and students of epidemiology to participate in the presentation of a variety of topics and concepts related to the field of epidemiology, biostatistics and public health.

EPI 798. Doctoral Level Directed Research Epidemiology. 1-9 Hour.

Independent study with guidance of appropriate faculty.

EPI 799. Dissertation Research. 1-9 Hour.

Research for dissertation under direction of dissertation committee.

Prerequisites: GAC Z