

EPI-Epidemiology

EPI 600. Introduction to Epidemiology. 3 Hours.

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

EPI 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 fied trips and independent study. Course is held in during the Spring Term in in Lima, Peru. NOTE:9 hours (3 or Course can be taken for 3, 6 hours are also accepted with or 9 hours; however, evaluation will be restricted to selected sections of the course). course. Spring (Freedman).

EPI 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