Epidemiology and Biostatistics (EPBI)

Course information contained within the Bulletin is accurate at the time of publication in August 2023 but is subject to change. For the most up-to-date course information, please refer to the Course Catalog.

EPBI 2219. Biostatistics and Public Health. 3 Credit Hours.
This course is designed to provide students with a solid background in applied biostatistics in the field of public health. Specifically, the course includes an introduction to the application of biostatistics and a discussion of key statistical tests. Appropriate techniques to measure the extent of disease, the development of disease, and comparisons between groups in terms of the extent and development of disease are discussed. Techniques for summarizing data collected in samples are presented along with limited discussion of probability theory. Procedures for estimation and hypothesis testing are presented for means, for proportions, and for comparisons of means and proportions in two or more groups. Multivariable statistical methods are introduced but not covered extensively in this undergraduate course. Public Health majors, minors or students studying in the Public Health concentration must complete this course with a C or better.

Level Registration Restrictions: May not be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EPBI 2301. Public Health Beyond Borders. 3 Credit Hours.
Public Health Beyond Borders is a course that will introduce you to the world of disease detectives to solve public health challenges in glocal (i.e., global and local) communities. You will learn about conducting disease investigations to support public health actions relevant to affected populations. You will discover what it takes to become a field epidemiologist through hands-on activities focused on promoting health and preventing disease in diverse populations across the globe.

Level Registration Restrictions: May not be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EPBI 2361. Epidemiology 360: Determinants, Disease and Health-related Outcomes. 3 Credit Hours.
This course will provide introductions to the major causes of morbidity and mortality in the US and key determinants of those diseases from an epidemiologic perspective. The course will familiarize students with the major sources of data, the basic methods for estimating burden of diseases or prevalence of exposures, the key risk factors for diseases or outcomes of determinants, and the strengths and limitations of surveillance systems and data collection methods, as well as public health efforts to address these issues. This class will encourage students to decide for themselves what the most pressing health issues facing populations today are and think critically about initiatives that are intended to address those issues.

Repeatability: This course may not be repeated for additional credits.

EPBI 3101. Introduction to Epidemiology. 3 Credit Hours.
This course explores the application of epidemiology practices in public health including using and interpreting data, calculating measures of health status, and identifying various research study designs used in epidemiologic studies. Additionally, the course will apply the steps in epidemiological disease investigation in order to become familiar with the methodology used in studying an epidemic outbreak. Public Health majors, minors or students studying in the Public Health concentration must complete this course with a C or better.

Field of Study Restrictions: Must be enrolled in one of the following Fields of study: Public Health.
Level Registration Restrictions: May not be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EPBI 3102. Introduction to Research Methods. 3 Credit Hours.
This course will cover the basic concepts of public health research, including study designs, human subjects protection, quantitative and qualitative research techniques, and data collection. These concepts will be applied to public health settings and topics. Public Health majors, minors or students studying in the Public Health concentration must complete this course with a C or better.

Field of Study Restrictions: Must be enrolled in one of the following Fields of study: Public Health.
Level Registration Restrictions: May not be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EPBI 3203. Applied Survey Methods. 3 Credit Hours.
This course addresses theoretical and practical aspects of conducting survey research in human populations. We will discuss various types of self-report data, including questions to assess knowledge, attitudes, behaviors, and perceived health and well-being. Design issues include wording of items and response scales, sampling, and respondent and interviewer/staff burden. Implementation issues include methods of administration, interviewer training, and participant recruitment. The primary focuses of this course are observational study designs using probability and non-probability sampling.

Field of Study Restrictions: Must be enrolled in one of the following Fields of study: Public Health.
Level Registration Restrictions: May not be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites: Minimum grade of C in (EPBI 3101 or 'Y' in CREP02) and (EPBI 2219 or 'Y' in CREP01)

EPBI 3205. Introduction to Statistical Computing. 3 Credit Hours.
This course is designed to provide students with a solid foundation in statistical computing using SAS and R programming software, which are standard analytic packages in research, business, and public health practice. The course includes an introduction to data management principles and data documentation followed by a series of SAS and R modules. These modules cover syntax and logic for writing SAS and R code to: manipulate datasets, including but not limited to data cleaning and recoding continuous and categorical variables; conduct descriptive analyses; and interpret output for statistical tests for measures of disease frequencies.

Repeatability: This course may not be repeated for additional credits.

EPBI 3382. Independent Study in Public Health. 1 to 6 Credit Hour.
Students in this course pursue supervised independent projects on issues related to public health. Public Health majors, minors or students studying in the Public Health concentration must complete this course with a C or better. NOTE: Registration must be preapproved by faculty before registration.

Field of Study Restrictions: Must be enrolled in one of the following Fields of study: Public Health.
Level Registration Restrictions: May not be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EPBI 5001. Biostatistics for Health Professions. 3 Credit Hours.
This course is for graduate students in nursing and other health-related professions and is meant to teach students the common biostatistical tools used to analyze, present and interpret health-related data. The course will cover topics including data summary and visualization, descriptive statistics, sampling and confidence intervals, hypothesis testing, diagnostic tests, and inference related to t-test, ANOVA, simple and multiple regression, nonparametric tests and measurement agreements. Statistical processing through the program SPSS will be integrated into the program and used in tandem with critical principles needed for effective statistical decision making. At the conclusion of the course, students will be able to analyze real data sets and provide quantitative evidence to support scientific conclusions.

Level Registration Restrictions: May not be enrolled in one of the following Levels: Undergraduate.

Repeatability: This course may not be repeated for additional credits.

EPBI 5002. Biostatistics. 3 Credit Hours.
Students will review fundamentals of descriptive statistics, estimation, and hypothesis testing. More advanced influential methods will be introduced, including, but not limited to, regression and correlation and analysis of variance. At the conclusion of the course, students will be able to analyze real data sets and provide quantitative evidence to support scientific conclusions. The emphasis is on "doing" statistics utilizing sound statistical theory and relying on validated statistical software (SAS/SPSS) to produce descriptive statistics and inferential analyses, and interpret the results.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EPBI 5003. Spatial Analysis in Public Health. 3 Credit Hours.
This course will create a methodological framework for approaching public health issues within the context of spatial investigations of health and disease, both internally via perceptual mapping, and externally via geographic information systems (GIS). This integrative discipline provides the opportunity for students to draw upon the concepts and techniques of sound public health and add a spatial perspective to their analysis.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EPBI 5005. Applied Analysis of Health. 1.5 Credit Hour.
This lab course will focus on integrating concepts from biostatistics, epidemiology, environmental health, health policy, and social and behavioral health through hands-on data analysis and presentation techniques using SAS statistical software. Modules will also include SPSS and qualitative software. Labs will immerse students in applied exercises so they more fully understand the statistical principles presented in the co-requisite lecture course (EPBI 5002) as well become comfortable assessing available data and producing data-driven public health materials for various audiences. Each lab session includes exercises to help students more fully understand the statistical and analytic principles. It also re-enforces material covered in EPBI 5101, EPBI 5201, and EPBI 5002.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.
College Restrictions: Must be enrolled in one of the following Colleges: College of Public Health.

Co-requisites: EPBI 5002.

Course Attributes: SI

Repeatability: This course may not be repeated for additional credits.

Pre-requisites: Minimum grade of B- in (EPBI 5101 (may be taken concurrently) or EPBI 5201 (may be taken concurrently))

EPBI 5006. Biostatistics and Applied Analysis of Health. 4.5 Credit Hours.
EPBI 5006 is an integrated course with a lecture component focused on the fundamentals of biostatistics and a lab component where students learn and apply statistical computing skills related to the fundamentals of biostatistics, which are necessary for public health practice and research. Lecture: Students will review descriptive statistics, estimation, and hypothesis testing, as well as regression, correlation, and analysis of variance. At the conclusion of the course, students will be able to analyze real data sets and provide quantitative evidence to support scientific conclusions. The emphasis is on "doing" statistics utilizing sound statistical theory and relying on validated statistical software (SAS) to produce descriptive statistics and inferential analyses, and interpret the results. Lab: The lab will focus on integrating concepts from biostatistics, epidemiology, environmental health, health policy, and social and behavioral health through hands-on data analysis and presentation techniques using SAS statistical software. Modules will also include qualitative software. Labs will immerse students in applied exercises, so they more fully understand the statistical principles presented in the lecture component.
This course does assume an understanding of basic mathematical concepts and terminology. It is expected that students have access to SAS outside of class, either on a laptop or home computer. Non-matriculated and 4+1 students must obtain instructor permission to register.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites: Minimum grade of B- in (EPBI 5101 (may be taken concurrently) or EPBI 5201 (may be taken concurrently))

EPBI 5101. Fundamentals of Epidemiology. 3 Credit Hours.
The main purpose of this course is to provide an understanding of the basic methods and tools used by epidemiologists to study the health of populations. This course provides a graduate-level introduction to the fundamental concepts and methods used in epidemiology, the basic science of public health and prevention. This course covers terminology used in epidemiology; basic measures of frequency of disease occurrence; concepts of exposure, outcome, and association; epidemiologic study designs; epidemiologic criteria for causality; potential sources of bias and controlling for bias; and the role of epidemiology in public health policy. Applications related to a broad range of current epidemiologic studies are discussed. Students will calculate basic statistics used in epidemiologic studies.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EPBI 5201. Epidemiological Research Methods I. 3 Credit Hours.
This course provides an introduction to the fundamentals of conducting epidemiologic research and protocol development. It covers definitions of epidemiology; measures of disease frequency and risk assessment; measures of effect and association; epidemiologic study designs, including randomized clinical trials, cohort, case-control studies, and cross-sectional surveys; assessment of screening programs; an overview of the role of bias and confounding in epidemiologic study results; and analytic techniques, including modeling using multiple variables, survival analysis, and issues related to quality assurance. Note: This course is the introductory epidemiology course for students in the M.S. in Epidemiology or related Public Health degree programs that require advanced quantitative methods. May be taken in place of EPBI/PBHL 5101 for students in the M.P.H., M.S. in Environmental Health and Ph.D. programs.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EPBI 5204. Mental Health Epidemiology. 3 Credit Hours.
Epidemiology of psychiatric disturbances is explored, including alcohol and other drug dependencies, psychosocial aspects of health and illness. The emphasis is on epidemiologic methods and theories in psychosocial and mental health research.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.
College Restrictions: Must be enrolled in one of the following Colleges: College of Public Health, Social Work.

Repeatability: This course may not be repeated for additional credits.

EPBI 5205. Surveillance, Epidemics and Outbreaks. 3 Credit Hours.
This course will introduce the tools used by infectious disease epidemiologists to monitor disease trends and will cover the methods used to detect, investigate, and respond to outbreaks and epidemics. We will also look more closely at a few recent outbreaks both in the US and across the globe. Issues relating to ethics and health disparities will be interwoven throughout the course.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EPBI 5206. Risk Assessment and Preparedness Decision Making. 3 Credit Hours.
In the US and abroad, we are faced with public health challenges and emergencies that require data-driven, creative approaches for planning. This course will use an interdisciplinary case-study approach of risk-based public health issues and assist students with developing practical response competencies. Students will apply their skills in the risk sciences (risk assessment, risk management, and risk communication) to evaluate information and make decisions for preparedness and response in the face of imperfect and incomplete information and limited resources. Lastly, students will understand the importance of working with various agencies and community partners for emergency planning and response.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EPBI 5208. Data Management and Analysis. 3 Credit Hours.
In this course, students will develop their R and SAS programming skills relevant to public health, with an emphasis on procedures and functions relevant to data management and analysis. Basic statistical procedures as well as data management and manipulation techniques will be covered. Additionally, students will be exposed to advanced data visualization techniques and logic underlying the relevant programming codes. Topics will be covered through a mixture of a lecture, demonstrations, and hands-on R and SAS programming exercises.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EPBI 5500. Seminar in Current Issues in Public Health. 3 Credit Hours.
Seminar topics rotate to address current issues in public health research, policy and practice.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.
College Restrictions: Must be enrolled in one of the following Colleges: College of Public Health, Social Work.

Repeatability: This course may be repeated for additional credit.

EPBI 8002. Research Seminar in Public Health. 3 Credit Hours.
This is a research seminar on linkages between theory and research in social and behavioral health studies. It is required for Ph.D. students prior to taking the preliminary examinations.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EPBI 8011. Social Epidemiology. 3 Credit Hours.
The purpose of this course is to provide an introduction for graduate students to the key social factors that are thought to influence health. These social factors include constructs such as gender, race, socioeconomic status, and social support. Understanding these social factors is important for public health research and practice. These factors can be considered "fundamental causes" of health outcomes insofar as they may cause or modify other factors that are known to influence health, such as individual behaviors or genetics. The course will focus on the conceptual and theoretical basis of these social factors, how these social factors are measured in epidemiologic research, and the mechanisms by which these social factors are thought to affect health. Students will have the opportunity to improve their skills in critically evaluating empirical data about the association between these social factors and health.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.
College Restrictions: Must be enrolled in one of the following Colleges: College of Public Health, Social Work.

Course Attributes: SF

Repeatability: This course may not be repeated for additional credits.

Pre-requisites: Minimum grade of B- in (EPBI 5101, PBHL 5101, EPBI 5201, or PBHL 5201)

EPBI 8012. Multivariable Biostatistics. 3 Credit Hours.
The objective of the course is to provide basic theory and application of regression models, analysis of variance, nonparametric statistics, and survival analysis applied to the analysis of population-based data. The emphasis will be on generating and interpreting results and health related applications rather than on statistical theory. The course is designed for graduate students in public health who are already familiar with basic statistical concepts, including descriptive statistics, the components of statistical inference (p-values, hypothesis tests, confidence intervals, etc.), as well as concepts of confounding and effect modification.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites: Minimum grade of B- in (EPBI 5006, EPBI 5002, or PBHL 5002)

EPBI 8201. Structural Equation Modeling. 3 Credit Hours.
An extremely rapid pace of change in statistics and methodology in the field of developmental processes and family systems requires that graduate students (and newly minted PhDs in academic and applied settings) be well versed in current data analytic techniques and able to keep abreast of emergent techniques by being aware of contemporary methodological literature. This course will illustrate the uses of structural equation models for cross-sectional, longitudinal, and family data analysis. The course is organized to take participants through each of the cumulative steps in the analysis: deciding which type of model is appropriate, setting up the data file and coding variables, interpreting and displaying empirical findings, and presenting results in both verbal and written form. Class time will be devoted primarily to lectures, examples, group discussions, and hands-on application of course material.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EPBI 8202. Epidemiological Research Methods II. 3 Credit Hours.
The content of this course illustrates statistical concepts, methods, and strategies used in epidemiologic studies, beyond the principles discussed in EPBI/PBHL 5201 (Epidemiological Research Methods 1). Topics include a review of basic study designs, analysis of prospective and retrospective data, assessment of bias, confounding, effect modification/interaction, statistical methods of stratification and adjustment, sample size/power calculations, importance of quality control and data monitoring in randomized clinical trials, critical determination of causality, and the comprehensive analyses, reporting and presentation of epidemiologic results.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites: Minimum grade of B- in (EPBI 5201 or PBHL 5201)

EPBI 8204. Multilev Mod in Int Res. 3 Credit Hours.
Interdisciplinary research nearly always involves data with a nested, hierarchical, or multilevel structure. Such data violate the standard statistical assumption of independence of observations. As well, the most important interdisciplinary research questions often involve understanding effects of one level of this structure on characteristics of another level of structure. Within the intervention contexts, individuals often serve as their own context as events unfold over chronological time. This course provides a broad and comprehensive introduction to analysis of multilevel data with an emphasis on questions which bridge disciplines. Participants should be familiar with the general linear model (analysis of variance, regression) prior to enrolling in this course, but no previous familiarity with mixed models (other than repeated measures ANOVA) is assumed.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EPBI 8205. Chronic Disease Epidemiology. 3 Credit Hours.
This intermediate course will cover selected topics in chronic disease epidemiology through critical examination of the current literature. Students will have the opportunity to study methodological issues, strategies for prevention, and contemporary issues in research. Coronary heart disease, cancer, diabetes, musculoskeletal disorders, chronic lung diseases and others will be addressed.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites: Minimum grade of B- in (SBS 5102, PBHL 5102, EPBI 5101, EPBI 5201, or PBHL 5201)

EPBI 8206. Infectious Disease Epidemiology. 3 Credit Hours.
This course provides the basis for understanding infectious diseases, disease transmission, risk factors, outbreak investigation and study designs, surveillance methods, and current infection-control strategies and mechanisms. The purpose of this course is to expose students to the principles and practices of infectious disease epidemiology and how communicable diseases and their control affect public health locally, nationally, and internationally.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites: Minimum grade of B- in (EPBI 5101, PBHL 5101, EPBI 5201, or PBHL 5201)

EPBI 8207. Reproductive and Perinatal Epidemiology. 3 Credit Hours.
This course presents the epidemiology of major reproductive and perinatal outcomes and offers an overview of human reproduction. The course will be divided into two parts. Part one covers the basic principles of reproductive biology and physiology. The second part will focus on outcomes in reproductive and perinatal research including fertility and fecundity, reproductive disorders, birth defects, preterm birth, fetal growth, miscarriage, stillbirth, and preeclampsia. The course will discuss unique methodological issues and novel study designs in reproductive and perinatal epidemiology. An emphasis of the course will be the evaluation of the current literature related to reproductive and perinatal complications as well as the design of a reproductive or perinatal epidemiologic study.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites: Minimum grade of B- in (EPBI 5101 or EPBI 5201)

EPBI 8208. Data Management and Analysis. 3 Credit Hours.
The content of this course will illustrate practical concepts, methods, and strategies used in the development, management and analysis of large data sets through in-class and homework exercises, quizzes, and a final project. Each class session will be a mixture of a lecture, demonstration and hands-on SAS programming exercises.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites: Minimum grade of B- in (EPBI 5002 or EPBI 8012)

EPBI 8209. Epidemiology of HIV/AIDS. 3 Credit Hours.
The epidemiology of HIV/AIDS is the subject of this course. Application of epidemiological principles and concepts in infectious disease epidemiology with emphasis on surveillance, research, prevention, and control are covered.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites: Minimum grade of B- in (EPBI 5101, PBHL 5101, EPBI 5201, or PBHL 5201)

EPBI 8212. Grantsmanship in Health Research. 3 Credit Hours.
This course will provide students with applied advanced epidemiologic research methods to critically assess gaps in current knowledge and to develop a competitive grant proposal application. Students will apply the epidemiologic methods and knowledge from prior courses and gain expertise in assessing gaps in knowledge, innovative thinking, grant conception, development and writing, study implementation and approach, budget preparation, and grant critiques. In the first half of the course, students will be introduced to the concepts of significance and innovation, identifying gaps in knowledge, choosing an epidemiologic research topic, identifying a funding agency and developing a set of specific aims, significance and innovation statements. In the second half of the course, the grant proposal will be written in the format of an NIH pre-doctoral epidemiology research grant following NIH grant application guidelines including a developed research plan, identified research team, and NIH biosketch and human subject protection plans. Students will be introduced to the concepts of power, sample size and effect size and will calculate necessary power and sample size requirements in the finalized grant proposal. Students will also participate in a mock grant review session. Students will use this opportunity to develop and submit an application for an NIH or foundation pre-doctoral award to support their dissertation work.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EPBI 8213. Cancer Epidemiology. 3 Credit Hours.
This course covers general principles of carcinogenesis and genetics of cancer, domestic and international patterns in cancer incidence and mortality, cancer surveillance and screening, cancer prevention and control, as well as epidemiologic characteristics and risk factors for most prevalent cancers among adults, children/young adults, and public health implications of cancer. In addition, there is a focus throughout the course on critical evaluation of different methodological approaches used in cancer research, potential biases inherent given study designs, and practical solutions.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites: Minimum grade of B- in EPBI 5002 and (EPBI 5101 or EPBI 5201)

EPBI 8301. Clinical Research Methods in Public Health. 3 Credit Hours.
This course provides an introduction to the core topics in clinical research. Beginning with practical issues in starting and advancing in a career in clinical investigation, the course proceeds to cover diagnosis and treatment studies, research on prognostic and casual risk factors, special types of study design and analyses, principles of measurement in human subjects, studies using secondary databases, and outcomes research. This course will be an elective class for all students enrolled in the Master of Science in Epidemiology, Clinical Research and Translational Medicine, as well as the Doctor of Philosophy in Epidemiology programs. This graduate level course is principally aimed at health care professionals, not limited to the field of public health, usually with graduate courses relevant to their clinical discipline, who desire advanced knowledge and skills in evaluating, designing and implementing clinical research studies.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites: Minimum grade of B- in (EPBI 5002 or EPBI 5006)

EPBI 8302. Behavioral Measurement. 3 Credit Hours.
This course will cover the classical and modern test theories and their applications to solve measurement problems in practice. This course will educate students on measurement concepts including test standardization, validity, reliability, operational definitions, scaling and latent variables in social and behavioral sciences. Issues surrounding validity and reliability of measures will be discussed in detail. Students will be given an opportunity to critically evaluate existing measures and to propose how a new measure can be developed and evaluated.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites: Minimum grade of B- in (EPBI 5006, EPBI 5002, or EPBI 8012)

EPBI 8303. Behavioral Epidemiology. 3 Credit Hours.
This course covers behavioral epidemiology and its role in public health. Students will be able to identify and explain the appropriate methods for measuring health-related behaviors/outcomes and related psychosocial constructs; critically analyze the appropriateness of methods used within published studies on health-related behaviors as well as determine appropriate methods for behavior-related research questions. In addition, students will use a behavioral theory/model as a framework and apply their skills in the development and assessment of a behavioral intervention to address a current public health problem of their choice including, but not limited to, intervention development, implementation planning, and evaluation/analyses.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites: Minimum grade of B- in (EPBI 5006 or EPBI 5002), (EPBI 5101 or EPBI 5201), and SBS 5002.

EPBI 8304. Applied Statistical Methods for Incomplete Data Analysis. 3 Credit Hours.
Inevitable existence of missing data is often a complicating factor in statistical analyses as most standard statistical methods are not designed to handle missing values. Given that almost all data have missingness, advanced statistical computation techniques and methods for analyzing incomplete data have developed tremendously since the 1980s. These methods have been increasingly applied in many settings including highly relevant survey data in public health (e.g., National Health and Nutrition Examination Survey) as well as in many other settings including clinical trials, administrative datasets (e.g., cancer registries) and observational studies. Statistical literature has repeatedly shown that if no action is taken about the missing data, all inferences can be grossly misleading. This course aims to teach and employ principled methods of incomplete data analysis to arrive at objective inferences using highly accessible software tools in SAS as well as R.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites: Minimum grade of B- in EPBI 8012.

EPBI 8307. Systematic Reviews. 3 Credit Hours.
Systematic reviews are essential tools for health care workers, researchers, consumers, and policymakers who need to keep abreast of the accumulation of knowledge within their field. Systematic reviews provide more objective evaluation of the evidence than has been possible with traditional narrative reviews, and so can help resolve uncertainty and point toward promising future directions in research and practice. When appropriate, meta-analyses can help increase the precision of estimates regarding treatment effects and way to improve treatments. For example, identification of subgroups of individuals most (or least) likely to benefit from treatment can generate new questions to be addressed.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EPBI 8401. Concepts and Methods in Epidemiologic Research. 3 Credit Hours.
The doctoral course is designed to be the first in a series of doctoral level epidemiologic research courses and will focus on providing an in-depth conceptual framework of key research concepts and techniques. The course will enhance knowledge of research methods and encourage critical thinking to successfully develop research questions and design research studies. Students will demonstrate mastery in the fundamental skills that enable them to apply epidemiologic research methods to the design, analysis and interpretation of public health data. Specifically, the course will provide didactic and hands-on training in causality and association, study design, bias, error, confounding, causal diagrams, interaction, and effect modification. By the end of this course, students will have the foundational knowledge to begin to apply these methods to their own research. The course is intended for doctoral students in epidemiology or related fields. Students must be enrolled in a doctoral program in the College of Public Health or by permission from instructor.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.
Degree Restrictions: Must be enrolled in one of the following Degrees: Doctor of Philosophy.
College Restrictions: Must be enrolled in one of the following Colleges: College of Public Health.

Repeatability: This course may not be repeated for additional credits.

EPBI 8402. Intermediate Concepts and Methods in Health Research. 3 Credit Hours.
This intermediate level research methods course will solidify student competencies in modern design of population health studies and provide methodological training beyond traditional approaches. This course is designed for doctoral students who have completed EPBI 8401 or a similar graduate level research methods course (as approved by Instructor) that provided a foundation for the understanding of epidemiologic concepts in population based studies. The course will include in-depth instruction through hands-on learning and didactic training that will develop the skills needed for students to design studies that preemptively address threats to validity and data analysis plans for both traditional and novel complex study designs. In addition to focus on the core concepts of study design, students will focus on understanding advanced topics such as causal inference and bias analysis. Students will also understand commonly encountered study issues such as competing risks, confounding, error, bias, and missing data. By the end of this course, students will move beyond understanding conceptual methods learned in entry-level research methods courses and will advance to applying traditional and advanced concepts to study design and data analysis planning.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.
Degree Restrictions: Must be enrolled in one of the following Degrees: Doctor of Philosophy.
College Restrictions: Must be enrolled in one of the following Colleges: College of Public Health.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites: Minimum grade of B- in (EPBI 8401 or EPBI 8202)

EPBI 8403. Applied Concepts and Methods in Health Research. 3 Credit Hours.
This laboratory-based class will focus on analytic exercises to analyze and interpret data from cross-sectional, case-control, cohort, longitudinal and nested studies. Concepts will include traditional regression modeling as well as multilevel/hierarchical modeling, bias analysis, and Bayesian statistics. Students will learn how to apply key epidemiologic concepts to the analysis of data. By the end of this course, students will have developed the practical skills needed to analyze and interpret epidemiologic data.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.
Degree Restrictions: Must be enrolled in one of the following Degrees: Doctor of Philosophy.

Repeatability: This course may not be repeated for additional credits.

EPBI 9083. Readings and Conference in Public Health. 1 to 3 Credit Hour.
This is an advanced tutorial in public health with an appropriate faculty member. Note: Registration requires a written contract with the supervising faculty member and approval of the student's advisor and of the Director of Graduate Programs.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EPBI 9187. Biostat Cnslt Practicum. 3 Credit Hours.
The objective of this course is to prepare students to collaborate effectively as biostatistics support consultants in the health professions. The emphasis will be to refresh statistical techniques and develop communication and problem solving skills. This course is designed for graduate students in public health who can use well-validated commercial statistical software, such as SAS, for the analyses of data from observational and/or interventional research studies.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EPBI 9289. MPH Fieldwork I. 3 Credit Hours.
This course entails a fieldwork project or internship in a public health agency. It includes seminars, oral and written reports of progress, and joint supervision by a preceptor and faculty member.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites: Minimum grade of B- in EPBI 5201, ((EPBI 5002 and EPBI 5005) or EPBI 5006), HPM 5006, SBS 5001, and EPBI 8012 (may be taken concurrently)

EPBI 9389. MPH Fieldwork II. 3 Credit Hours.
This course is an evaluation of the fieldwork project or internship using a full range of research methodologies. Data are collected, analyzed, and reported in a comprehensive final report. Oral and/or poster presentations are presented to public health organizations. The course includes a final oral defense of the project or internship.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites: Minimum grade of B- in EPBI 9289, EPBI 8012, and EPBI 8202 (may be taken concurrently)

EPBI 9991. Public Health Research Project. 1 to 3 Credit Hour.
Under the direction of an appropriate graduate faculty member, students tie together their coursework in a project that poses a problem, gathers data to help analyze the problem, and provides a solution. Note: Enrollment must be approved by the student's advisor and the Director of Graduate Programs.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EPBI 9994. Preliminary Examinations. 1 Credit Hour.
This course supports preparation for taking the preliminary examinations in the Health Policy and Social and Behavioral Sciences Ph.D. programs. To enroll, students must have completed all required coursework for the Ph.D. and obtain the approval of the Ph.D. Program Director. Students must be enrolled to take the required preliminary examinations.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.
Degree Restrictions: Must be enrolled in one of the following Degrees: Doctor of Philosophy.

Repeatability: This course may be repeated for additional credit.

EPBI 9996. Masters Res in Pub Hlth. 3 Credit Hours.
This course is limited to students who have chosen to fulfill the master's degree by writing a thesis.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EPBI 9998. Dissertation Proposal Research. 1 to 2 Credit Hour.
This course supports preparation of the dissertation proposal. The course is required for students who have passed the preliminary examinations for their PhD program and who have not yet defended the dissertation proposal.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.
Degree Restrictions: Must be enrolled in one of the following Degrees: Doctor of Philosophy.

Repeatability: This course may be repeated for additional credit.

Pre-requisites: Minimum grade of P in EPBI 9994.

EPBI 9999. Dissertation Research. 1 to 6 Credit Hour.
This course is limited to Ph.D. candidates who have completed and defended a dissertation proposal that is filed with the Graduate School by the last day to add a course in the semester. Continuous registration in 9999 fall and spring is required until the dissertation is successfully defended.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.
Student Attribute Restrictions: Must be enrolled in one of the following Student Attributes: Dissertation Writing Student.

Repeatability: This course may be repeated for additional credit.