Applied Biostatistics, M.P.H.

COLLEGE OF PUBLIC HEALTH

Learn more about the Master of Public Health in Applied Biostatistics.

About the Program

The Master of Public Health in Applied Biostatistics is a unique and newly developed degree in response to the growing need for master's-trained professionals with expertise in advanced biostatistical methods. The program is designed to train professionals in the field of public health who have a clear understanding of and expertise in the use, statistical application, and interpretation of large and complex data sets; of the critical importance of valid study designs and analytic methods; and of the application of hypothesis-based development and statistical programming and testing. Students complete their studies with an understanding of the fundamental critical thinking skills and statistical/programming competencies necessary for public health practice and Applied Biostatistics in accordance with Council on Education for Public Health (CEPH) standards. Applied Biostatistics courses address topics such as database coding and development; environmental surveillance; multivariate biostatistics, including the use of regression models and multifactorial analysis; research design; and risk assessment and statistical analysis in human disease. Students in the Applied Biostatistics program are trained in the M.P.H. core competencies while gaining skills to use and apply multiple statistical program packages, including SPSS, SAS, STATA, and R; develop appropriate study designs based on appropriate research questions; and interpret and present study results to various audiences. Thus, the M.P.H. in Applied Biostatistics at Temple University is particularly poised to foster interdisciplinary research and train students to work in an interdisciplinary environment.

Time Limit for Degree Completion: 4 years

Campus Location: Main

Full-Time/Part-Time Status: Students can complete the degree program through evening classes and online courses. Full-time students usually complete the program within two academic years. Part-time students usually take three to four years to complete their degree.

Interdisciplinary Study: Interdisciplinary M.P.H. coursework, research, and interactions with students and faculty in other departments are encouraged to give students as broad a perspective as possible to excel in the complex, diverse, and dynamic state of public health. Through associations with the Center for Obesity Research and Education, Center for Women's Health, and others, students have access to over 100 faculty at Temple University and additional regional scholars who are actively involved in programs, research, and teaching in public health. Further, as with the other four M.P.H. degree programs offered by the College of Public Health, the M.P.H. in Applied Biostatistics can be undertaken as part of these dual M.P.H. degree programs:

- D.M.D./M.P.H. with Temple University's Kornberg School of Dentistry
- J.D./M.P.H. with Temple University's Beasley School of Law
- M.D./M.P.H. with the Lewis Katz School of Medicine at Temple University
- M.H.A./M.P.H. with Temple University's Fox School of Business and Management
- M.P.P./M.P.H. with Temple University's College of Liberal Arts
- M.S. Health Informatics/M.P.H. within the Temple University College of Public Health
- M.S.W./M.P.H. with the Temple University School of Social Work

For more information, visit https://www.temple.edu/academics/dual-degree-programs.

Affiliation(s): Locally, the program has long-standing research affiliations with The Food Trust, Fox Chase Cancer Center, Health Federation of Philadelphia, Philadelphia Department of Public Health, Public Health Management Corporation (PHMC), School District of Philadelphia, Temple University Health System, and numerous other community health agencies. These partnerships allow us to offer students a wide range of fieldwork opportunities to translate skills learned in the classroom to actual practice in the community.

Study Abroad: Short-term intensive study abroad courses are offered as part of the M.P.H. program of study. These courses are offered during the Summer and are open to both undergraduate and graduate students.

Accreditation: The M.P.H. is fully accredited by the Council on Education for Public Health (CEPH). Achieving accreditation in 1985, Temple's M.P.H. program is one of the longest established accredited M.P.H. programs in community health in the country.

Areas of Specialization: The M.P.H. degree program is offered in five specialty fields of study:

- Applied Biostatistics (APBIO)
- Environmental Health (EH)
- Epidemiology (EPI)
- Health Policy and Management (HPM)
- Social and Behavioral Sciences (SBS)

In addition, a certificate in Global Health is available to all students in the M.P.H. program. Students in the Applied Biostatistics M.P.H. program may complete the transcripted Global Health concentration by taking their 9 credits of electives in Global Health coursework.

Job Prospects: Graduates with an M.P.H. in Applied Biostatistics are employed in research institutions, such as universities and medical centers; at government agencies at the federal level, such as the Centers for Disease Control and Prevention, as well as local and state governments; and in private industry, including pharmaceutical firms, in positions such as research associates and statisticians.

Licensure: Students who complete an M.P.H. at Temple University are eligible to sit for the Certification in Public Health (CPH) exam and the Certified Health Education Specialist (CHES) exam. For information regarding credentialing in public health, see https://www.nchec.org/.

Non-Matriculated Student Policy: Non-matriculated students are required to speak with an advisor before registering for classes and to obtain the permission of the professor. If accepted to the program, a maximum of three courses (9 credits) may be applied toward the degree program. Exceptions to this policy relate to formal certificate programs.

Financing Opportunities: The Graduate School awards fellowships on a competitive basis only to students with outstanding academic records who are admitted to Temple University for the Fall term. Applicants who wish to be considered for fellowships must apply no later than January 26 for consideration for the Fall term. The department's Admissions Committee nominates outstanding students for these awards, but the Graduate Board's Fellowship Committee makes all award decisions.

Limited Teaching and Research Assistantships are available in the College of Public Health. The Graduate School website details the types of graduate student support. Assistantships are awarded on a term or annual basis. Students whose Fall applications are complete prior to or at the application deadline are reviewed for eligibility for Teaching Assistant (TA) positions. TAs are required to work 20 hours per week in any combination of teaching assignments made by the department and must meet the English Language Proficiency standards set by the University and the College. Students who hold Teaching or Research Assistantships are not permitted to hold other employment without the written prior approval of their advisor, the Director of Graduate Programs, and the Graduate School. To be considered for a Teaching or Research Assistantship, complete an application form that is sent to students upon admission to the M.P.H. program. The completed application must be returned to publichealth@temple.edu to be considered.

The College of Public Health has a limited number of scholarship opportunities available for M.P.H. students, as shown at https://cph.temple.edu/admissions/scholarships. Students may also be eligible for financial support through the Office of Student Financial Services.

Admission Requirements and Deadlines

Application Deadline:

Fall: March 1

All applicants to the M.P.H. program must apply via the Centralized Application Service for Public Health (SOPHAS). The system can be accessed at https://sophas.liaisoncas.com/.

Applicants should check their application status on the SOPHAS portal often and inquire directly of SOPHAS about receipt of materials. For other questions, please contact the CPH Office of Admissions at cph@temple.edu or 215-204-5200 or email Annemarie Szambelak, Assistant Director of Admissions, at annemarie@temple.edu.

Letters of Reference:
Number Required: 3

From Whom: Letters of recommendation, which are completed electronically through the SOPHAS system, should be obtained from college/university faculty members familiar with academic competence. If the applicant has been out of school for more than 5 years, ensure that letters are provided by professional colleagues who can discuss your relevant academic skills, including critical thinking, research, and writing.

Coursework Required for Admission Consideration: Applicants' files are reviewed for undergraduate coursework in mathematics and/or statistics, social sciences, and writing.

Bachelor's Degree in Discipline/Related Discipline: All applicants must present credentials that are the equivalent of an accredited baccalaureate degree. The minimum acceptable undergraduate GPA is 3.0. No prerequisites must be met to apply to the M.P.H. program at Temple University, but strong grades in mathematics and/or statistics, social sciences, and writing are preferred.

A WES evaluation is required for applicants who completed their bachelor's degree outside of the United States. This can be requested at https://www.wes.org/ and submitted through SOPHAS.

Statement of Goals: Write a well-considered 500- to 1,000-word statement of purpose that articulates your interests in public health and our program in particular. Craft your statement to specifically address the following questions:

- Why are you pursuing this M.P.H. program, and what are your particular areas of interest in public health?
- How does the M.P.H. program within Temple's Department of Epidemiology and Biostatistics best fit your public health interests?

- What are your career goals, and how will this degree help you to achieve these goals?
- What are your plans in the first few years after graduation?

Standardized Test Scores:
GRE: Optional and can be waived. While the program takes a portfolio approach to admissions, standardized tests provide important insight into quantitative and verbal abilities. Scores above the 50th percentile on both the verbal and quantitative sections of the test are desired. If the GRE is waived, a minimum GPA of 3.25 in undergraduate mathematics or statistics courses is expected. Official GRE scores should be sent to SOPHAS using code 0151**.**

Standardized tests considered in lieu of the GRE include DAT, GMAT, MCAT, OAT, and PCAT. The LSAT, which is also considered for some M.P.H. specialties, is not accepted when applying for Applied Biostatistics or Epidemiology.

Applicants who earned their baccalaureate degree from an institution where the language of instruction was other than English, with the exception of those who subsequently earned a master's degree at a U.S. institution, must report scores for a standardized test of English that meet these minimums:

- TOEFL iBT: 79 (send officially to SOPHAS using the SOPHAS-specific TOEFL code 5688)
- IELTS Academic: 6.5
- PTE Academic: 53
- Duolingo: 110

Clearances: The M.P.H. program requires students to complete fieldwork education. In the M.P.H. program, it is the fieldwork site that determines the clearances, including criminal background check, FBI fingerprinting, and more, needed by a student. The results of these clearances determine whether a student may be onboarded at a respective site.

Resume: Current resume or CV required.

Transfer Credit: Graduate credits from an M.P.H. program accredited by the Council on Education for Public Health (CEPH) may be transferred into the M.P.H. The credits must be equivalent to coursework offered at Temple, and the grade must be a "B" or better in order to transfer. The M.P.H. advisor approves the transfer of credits based on a review of course materials provided by the student. The maximum number of credits a student may transfer is 9.

Test Waivers: Graduates with a terminal degree from a U.S. medical school, foreign-trained physicians who have obtained licensure to practice in the United States, and those with a Ph.D. may have the GRE requirement waived. Applicants who have a minimum GPA of 3.25 on undergraduate mathematics or statistics courses may request that their GRE scores be waived from consideration in their application portfolio. To request a waiver or if you have other questions, contact Annemarie Szambelak, Assistant Director of Admissions, at annemarie@temple.edu or 215-204-5200.

Program Requirements

General Program Requirements:
Number of Credits Required Beyond the Baccalaureate: 42

Required Courses:

Code	Title	Credit Hours
College Core Course		
HRPR 5001	Current and Emerging Issues in Public Health and Health Professions	0
Public Health Core Courses		
ENVH 5004	Environmental Health	1.5
EPBI 5002	Biostatistics	3
EPBI 5005	Applied Analysis of Health	1.5
EPBI 5201	Epidemiological Research Methods I	3
HPM 5006	Political and Economic Aspects of Health	3
SBS 5001	Fundamentals of Public Health	3
SBS 5002	Program Planning, Theory, and Practice	3
Applied Biostatistics Courses		
EPBI 8012	Multivariable Biostatistics	3
EPBI 8204	Multilev Mod in Int Res	3
EPBI 8301	Clinical Research Methods in Public Health	3
Applied Biostatistics Elective		**3**

Select one from the following:		
ENVH 8016	Human Health Risk Analysis	
EPBI 8201	Structural Equation Modeling	
EPBI 8203		
EPBI 8215		
EPBI 8307	Systematic Reviews	
EPBI 9187	Biostat Cnslt Practicum	
Electives		**6**
M.P.H. Fieldwork Experience		
EPBI 9289	MPH Fieldwork I	3
EPBI 9389	MPH Fieldwork II	3
Total Credit Hours		42

Minimum Grade to be Earned for All Required Courses: B-

Culminating Events:
Fieldwork Practicum:
Students are required to synthesize and integrate the knowledge acquired in coursework and other learning experiences and to apply theory and principles in a situation that approximates some aspect of professional practice through an internship or practicum experience with a public health agency, health services organization, or under the supervision of a faculty preceptor. The M.P.H. fieldwork experience serves as the applied practice experience as required by the Council on Education for Public Health (CEPH), the accrediting body for schools and programs of public health, for completion of the Master of Public Health degree. In addition, this applied practice experience provides the student with the opportunity to develop expertise in a topic area and to contribute original and independent observations to a body of knowledge.

Part-time fieldwork experiences are available for students who work full-time.

Evaluative Paper:
For the applied practice experience to fulfill the requirements of EPBI 9289 and EPBI 9389, M.P.H. in Applied Biostatistics students are expected to complete a fieldwork experience. The required deliverable for the M.P.H. fieldwork requirement is a final evaluative paper. Students must demonstrate their proficiency and the application of theory and principles in the paper.

Contacts

Program Web Address:

https://www.temple.edu/academics/degree-programs/applied-biostatistics-mph-hp-apbs-mph

Department Information:

Dept. of Epidemiology and Biostatistics
Ritter Hall Annex, 9th Floor (004-09)
1301 Cecil B. Moore Avenue
Philadelphia, PA 19122-6005
publichealth@temple.edu
215-204-8726

Submission Address for Application Materials:

https://sophas.liaisoncas.com/

Department Contacts:

Admissions:
Annemarie Szambelak
CPH Office of Admissions
annemarie@temple.edu
215-204-5200

Chairperson:
Resa M. Jones, M.P.H., Ph.D.
Associate Professor
resa.jones@temple.edu
215-204-7881

Graduate Program Director:
Brandie DePaoli Taylor, M.P.H., Ph.D.
b.depaoli-taylor@temple.edu
215-204-2055

Courses

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.

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

Pre-requisites:
EPBI 5101|Minimum Grade of B-|May be taken concurrently
OR EPBI 5201|Minimum Grade of B-|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 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.

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

Pre-requisites:
EPBI 5101|Minimum Grade of B-|May not be taken concurrently
OR PBHL 5101|Minimum Grade of B-|May not be taken concurrently
OR EPBI 5201|Minimum Grade of B-|May not be taken concurrently
OR PBHL 5201|Minimum Grade of B-|May not be taken concurrently.

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:
EPBI 5002|Minimum Grade of B-|May not be taken concurrently
OR PBHL 5002|Minimum Grade of B-|May not be taken concurrently.

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:
EPBI 5201|Minimum Grade of B-|May not be taken concurrently
OR PBHL 5201|Minimum Grade of B-|May not be taken concurrently.

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:
SBS 5102|Minimum Grade of B-|May not be taken concurrently
OR PBHL 5102|Minimum Grade of B-|May not be taken concurrently
OR EPBI 5201|Minimum Grade of B-|May not be taken concurrently
OR PBHL 5201|Minimum Grade of B-|May not be taken concurrently.

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:
SBS 5102|Minimum Grade of B-|May not be taken concurrently
OR PBHL 5102|Minimum Grade of B-|May not be taken concurrently
OR EPBI 5201|Minimum Grade of B-|May not be taken concurrently
OR PBHL 5201|Minimum Grade of B-|May not be taken concurrently.

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:
EPBI 5101|Minimum Grade of B-|May not be taken concurrently
OR EPBI 5201|Minimum Grade of B-|May not be taken concurrently.

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:
EPBI 5002|Minimum Grade of B-|May not be taken concurrently
OR EPBI 8012|Minimum Grade of B-|May not be taken concurrently.

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:
EPBI 5101|Minimum Grade of B-|May not be taken concurrently
OR PBHL 5101|Minimum Grade of B-|May not be taken concurrently
OR EPBI 5201|Minimum Grade of B-|May not be taken concurrently
OR PBHL 5201|Minimum Grade of B-|May not be taken concurrently.

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:
(EPBI 5002|Minimum Grade of B-|May not be taken concurrently)
AND (EPBI 5101|Minimum Grade of B-|May not be taken concurrently
OR EPBI 5201|Minimum Grade of B-|May not be taken concurrently)

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:
EPBI 5002|Minimum Grade of B-|May not be taken concurrently.

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:
EPBI 5002|Minimum Grade of B-|May not be taken concurrently
OR EPBI 8012|Minimum Grade of B-|May not be taken concurrently.

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:
(EPBI 5101|Minimum Grade of B-|May not be taken concurrently
OR EPBI 5201|Minimum Grade of B-|May not be taken concurrently)
AND (SBS 5002|Minimum Grade of B-|May not be taken concurrently)
AND (EPBI 5002|Minimum Grade of B-|May not be taken concurrently)

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:
EPBI 8401|Minimum Grade of B-|May not be taken concurrently
OR EPBI 8202|Minimum Grade of B-|May not be taken concurrently.

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.
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 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:
(EPBI 5201|Minimum Grade of B-|May not be taken concurrently)
AND (EPBI 5002|Minimum Grade of B-|May not be taken concurrently)
AND (EPBI 5005|Minimum Grade of B-|May not be taken concurrently)
AND (HPM 5006|Minimum Grade of B-|May not be taken concurrently)
AND (SBS 5001|Minimum Grade of B-|May not be taken concurrently)
AND (EPBI 8012|Minimum Grade of B-|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.

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:
EPBI 9994|Minimum Grade of P|May not be taken concurrently.

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.