The University of Texas School of Public Health at Houston

Non-Degree Research Courses

Non-degree Seeking Students

The non-degree application process is used for students seeking admission into one of the UTHealth School of Public

Health non-degree programs, non-degree graduate certificate programs, or pre-approved re-admission. All non-degree applications, including supporting documentation, are received and processed by SOPHAS Express. Detailed instructions for submission of applications using SOPHAS Express are described on the SOPHAS Express website.

PH 1112L **Community Assessment Methods in Public Health** **3 sem. hrs.**

Prerequisite: PHM 1110L

This course will ground students in key concepts and methodologies related to community assessment, including the meaning of community and methods for assessment that span primary and secondary data collection. The assessment process will be conceptualized as a research methodology and process for development and prioritizing community health programs and policy. The course also introduces new and non-traditional methods and technologies, and covers practical considerations such as assessment scoping, budget, staffing, communications, and supporting the community in action planning and implementation.

PHD 1118L **Qualitative Methods** **3 sem. hrs.**

Prerequisite: None

The course covers the underpinnings of qualitative research, some of the major qualitative research traditions, methods of data collection used in the conduct of qualitative inquiries, and preliminary analysis. Part I provides a broad overview of qualitative research frameworks and techniques. Part II covers the design and practice of fieldwork. Students gain experience with field methods such as observation and mapping. In addition, students develop interview guides and conduct interviews. Part III covers qualitative analysis and students learn preliminary coding techniques for thematic content analysis.

PH 1119L **Qualitative Analysis** **3 sem. hrs.**

Prerequisite: PHD 1118L & [PHM 5015 or consent of instructor]

This course provides the basic skills for analyzing data from different qualitative research paradigms. In part I, students examine several analytical approaches that are appropriate to a particular data project's overarching theoretical approach and the topical focus of the study from which it was produced. In Part II, students learn the basics of a qualitative database software program for coding textual and visual data. In addition, students identify a topic and the data they will use for analysis and write up.

PHD 1121L **Advanced Quantitative Analysis for Behavioral Sciences** **3 sem. hrs.**

Prerequisite: PHD 1120L & PHD 1420L & [PHD 1421L or equivalent] & [Recommended: PHD 1130L]. If required courses were taken elsewhere or in departments other than HPBS, provide syllabi to instructor for approval.

The course will focus on statistical methods for research evaluation that extend basic principles of multiple regression, including limited dependent variables, mediation, moderation, and correlated data models (e.g. multilevel models); missing data models, including multiple imputation; study designs and methods that can enhance the internal validity of an evaluation and compensate for a lack of randomization and selection bias, including propensity scores. Class time will be used for lectures, and a

semester project will provide an opportunity to conduct specific analyses and present findings using real data.

PHD 1123L Community Health Promotion Theory and Practice 3 sem. hrs.

Prerequisite: PHM 1110L or equivalent.

This required course for DrPH students in Health Promotion & Health Education aims to build students' knowledge and skills in community health promotion research and practice via exploration and application of community and environmental-level health promotion theories, community health promotion planning models, and community/environmental-level health promotion change methods that include participatory problem solving, coalition building, and advocacy. Students will engage in diverse learning activities and the development of an NIH community health promotion research funding proposal.

PHW 1124 Introduction to Data Management in Stata 1 sem. hrs.

Prerequisite: None

This short course is designed for masters or doctoral students who have no exposure to any statistical software, and want to gain hands-on familiarity with using statistical software (Stata), prior to taking a semester-long statistical analysis course, such as PHM 1690L or PHD 1421. Students will practice a variety of skills necessary to create a clean and annotated dataset prior to analysis of a specific research question, including reading external data files in Stata, cleaning and creating new variables, conducting preliminary descriptive analyses, and basic regression.

PHD 1130L Applied Measurement Theory 3 sem. hrs.

Prerequisite: PH 1700L or equivalent

This course introduces students to the basic aspects of psychometric theory, with an emphasis on the development of valid and reliable measurement scales. The course covers classical test theory; common scaling methods; analytic methods relevant to scale construction, including exploratory and confirmatory factor analysis; and survey construction, design, and administration. Students have an opportunity to become familiar with various statistical approaches and software used to assess psychometric properties of scales as well as with strategies for survey construction and administration.

PHD 1132 Latent Variable Models and Factor Analysis 3 sem. hrs.

Prerequisite: [PH 1700L & PHD 1421L] or consent of instructor. The completion of an applied multivariate statistics course is strongly recommended.

This course helps students develop the skills and understanding necessary to use and apply several statistical techniques included under the umbrella of Latent Variable Analysis. The course covers Exploratory and Confirmatory Factor Analysis, Path Analysis, Structural Equation Modeling, Assessment of Measurement Invariance, and Latent Growth Curve Modeling. The course focuses on the application of these methods in public health, reading and understanding research studies that use these methods, and developing research reports and presentations from analyses they have conducted.

PH 1237 **Obesity, Nutrition, & Physical Activity** **1 sem. hrs.**

Prerequisite: None

This seminar course provides a forum for students to learn to critically review the research literature in the areas of obesity, nutrition, and physical activity. Topics will vary and will be driven by the current published literature and emerging areas of research. Seminars will be set up in an informal manner, with faculty leading the first session and students assuming the lead later in the semester. Review of papers will be accompanied by in-depth discussions focusing on study design and analysis and interpretation of results, as well as on the relationship of the paper to the existing body of knowledge.

PH 1321L **Social Networks and Health** **3 sem. hrs.**

Prerequisite: [PHM 1690L or PH 1700L] & [PHM 2610 or PHM 2612L or PHD 1420L or PH 1421L] & [Recommended: a basic theoretical statistics or categorical data analysis or generalized linear model course].

This course provides students an opportunity to gain understanding on conducting research that uses social network analysis, including major areas of health research. This course will provide students with practical applications of analytical techniques using appropriate software. Topics include theory, research design, data collection, sampling methods, and quantitative descriptions of networks, statistical modeling of networks, and example interventions relevant to various disciplines in public health.

PH 1324L **Applied Discrete Data Analysis using STATA** **3 sem. hrs.**

Prerequisite: [PH 1700L or PH 1421L or equivalent] & [Recommended: a basic theoretical statistics course].

This course provides students an opportunity to gain practical use and obtain discrete data analytic techniques, including data management and various regression methods for the analysis of categorical outcome variables using Stata 14 statistical software. Topics include the logistic regression model, sampling methods, model building strategies, assessing model fit, multiple logistic regression, and Poisson regression, and some extensions of generalized linear model. This course will provide students with practical applications of these statistical methods using Stata commands.

PHD 1420L Quantitative Research Design for Behavioral Sciences 3 sem. hrs.

Prerequisite: consent of instructor

This course equips students with the skills to develop research questions appropriate to the behavioral sciences that can be translated into testable hypotheses and feasible, effective research designs. Students are exposed to a variety of research design elements through published journal articles, and are expected to learn to evaluate and compare the suitability of different study designs to test specific hypotheses. A key aspect of evaluating research design is identifying potential threats to internal and external validity, as well as examining statistically conclusion validity and construct/measurement validity that are present in greater or lesser degree in all research designs, including observational, experimental, and quasi-experimental designs. Assignments and exams will focus on developing the skills to construct valid research designs appropriate to the proposed research question.

PHD 1421L Quantitative Analysis for Behavioral Sciences 3 sem. hrs.

Prerequisite: ([PH 1700L or equivalent] & PHD 1420L) or consent of instructor

This course expands on the material covered in PHD 1420L and focuses on the choice and implementation of statistical analyses that assess differences between groups, relationships among variables, prediction of outcomes, and measurement reliability and validity. This course primarily covers the application of statistical methods that are designed to be used with quantitative dependent variables. Emphasis is placed on reading and understanding scientific journal articles that make use of these methods, appropriate use of statistical software for conducting analyses, interpreting the output from these analyses, and presenting the results of analyses in both oral and written form.

PHD 1431 Tools and Methods for Systematic Reviews and Meta-Analyses 2 sem. hrs.

Prerequisite: [PH 1700L or consent of the instructor] & [PHM 2610 or equivalent]

This intensive short-course is designed to introduce students to best practices, resources, and methods for systematic reviews and meta-analyses, and to guide students through the steps of a systematic review. The course uses examples from a wide variety of completed reviews as well as exercises and readings. The format includes face-to-face (inperson/ITV) and online exercises, readings, and recorded lectures. (A STATA-based lab experience in meta-analysis has been added to the course.) Course resources and materials are available throughout the semester to assist students in applying them to a Integrative Learning experience or dissertation. Students who expect to continue with their own reviews and to receive further support and instruction should enroll in independent study with Dr. Mullen and Ms. Vonville. Students who wish to enroll in the meta-analysis module only should enroll for PHD 1861.

PH 1624L Introduction to SAS Data Management 3 sem. hrs.

Prerequisite: None

This course covers reading ASCII files using various formats qualifiers, using DROP and KEEP statements, merging files, writing subsets of files, sorting, labeling variables, calculating date intervals, and using the LAG function. Minimal statistical processing, such as t tests and chi-squares, will also be introduced. Students are given several small coding assignments that are due approximately one (1) week later. To complete the assignments, students must have access to a computer on which SAS is installed.

PHM 1690L **Introduction to Biostatistics in Public Health** **4 sem. hrs.**

Prerequisite: None

This course is designed as the first biostatistics course for students who have not previously taken a course in biostatistics; it is a designated core course for MPH students. Students will learn how to analyze quantitative data using appropriate biostatistical methods and software and interpret analysis results for a given public health context.

PH 1700L **Intermediate Biostatistics** **3 sem. hrs.**

Prerequisite: PHM 1690L or equivalent knowledge/training

This course is required for students minoring in Biostatistics and for students in Biostatistics who have not previously taken biostatistics courses. This course extends the topics covered in Foundations of Biostatistics to provide a deeper foundation for data analysis, particularly focusing on its application on research problems of public health and the biological sciences. Computer applications are included.

PH 1745L **Sampling Techniques** **3 sem. hrs.**

Prerequisite: PH 1700L or consent of instructor

This course introduces the principles and current practices of survey sampling with health-related applications. Topics include basic concepts and practical issues in statistical sampling; design and analysis for common sample designs, including simple random sampling, stratified random sampling, systematic sampling, cluster sampling, and multistage sampling; and analytic issues concerning the use of complex survey data, such as the National Health and Nutrition Examination Survey.

PH 1820L **Applied Linear Regression** **3 sem. hrs.**

Prerequisite: PH 1700L or consent of instructor

The course emphasizes the design, implementation, analysis, and reporting of research investigations. Topics include two sample inference using t-distributions, robustness and resistance, alternatives to the t-test based analyses, comparisons among several samples, linear combinations and multiple comparisons, simple and multiple linear regression methods, regression diagnostics, variable selection,

and related methods. The course requires intensive computer analyses of case studies, emphasizing graphics and proper use and interpretation of statistical software packages using Stata as a model statistical software package.

PH 1821L **Applied Multivariate Analysis for Biostatistics** **3 sem. hrs.**

Prerequisite: [PH 1820L or consent of instructor] & linear algebra & PH 1911L

This course is a continuation of PH 1820L. Topics include the analysis of variance for two-way classifications, factorial arrangements and blocking designs, analysis of repeated measures and other multivariate responses, exploratory tools for summarizing multivariate responses, logistic methods for binary response variables and binomial counts, and log-linear regression for Poisson counts.

PH 1830L **Categorical Data Analysis** **3 sem. hrs.**

Prerequisite: [PH 1700L & calculus] or consent of instructor

The course emphasizes the design, implementation, analysis, and reporting of research investigations. Topics include two sample inference using t-distributions, robustness and resistance, alternatives to the t-test based analyses, comparisons among several samples, linear combinations and multiple comparisons, simple and multiple linear regression methods, regression diagnostics, variable selection, and related methods. The course requires intensive computer analyses of case studies, emphasizing graphics and proper use and interpretation of statistical software packages using Stata as a model statistical software package.

PH 1831L **Survival Analysis** **3 sem. hrs.**

Prerequisite: (Calculus & [PH 1830L (preferred) or PH 1820L]) or consent of instructor

This course presents the theory and applications of survival analysis. Topics include censoring, parametric and nonparametric models, hypothesis testing, proportional hazards model with fixed and time-varying covariates, model building strategies, and assessing model fit.

PH 1835L **Statistical Methodology in Clinical Trials** **3 sem. hrs.**

Prerequisite: [PH 1700L & calculus] or consent of instructor

This course covers the use of current statistical methodology in the design, execution, and analysis of clinical trials. Some of the topics include basic study design, randomization, sample size issues, data analysis issues, and interim monitoring.

PHD 1838 Communication, Collaboration and Leadership for Biostatisticians and Data Scientists 3 hrs.

Prerequisite: None

The objectives of this course are to enable the students to: 1). Understand the role of statisticians and data scientists in a large multidisciplinary team; 2). Effectively analyze and assess different communication modes for efficient communications; 3). Apply effective presentation and communication skills to communicate statistical concepts and ideas with different types of audiences; 4). Apply scientific writing skills in preparing and writing data analysis plan, data analysis report, grant proposals and manuscripts for publications; 5). Understand the differences and prepare to play a leadership role under different job environments in academia, research institutions, industries and governments.

PH 1840L **Statistical Methods for Handling Missing Data** **3 sem. hrs.**

Prerequisite: PH 1700L or consent of instructor

This course covers the use of current statistical methodology for handling missing data in health research studies. Primary emphasis will be given to population-based studies using surveys and secondary emphasis will be given to clinical-based studies, e.g. clinical trials, where dropout is commonly present. Some of the topics include missing data patterns, single imputation methods, estimation of imputation uncertainty, likelihood-based methods, multiple imputation, selection models, pattern-mixture models, shared-parameter models, and sensitivity analysis.

PHD 1855L **Distribution-Free Methods** **3 sem. hrs.**

Prerequisite: PH 1700L

This doctoral-level course introduces the theory and applications of distribution-free (non-parametric) statistical methods. Topics include properties of distribution functions, K-S tests, runs tests, rank sum tests, non-parametric analysis of variance, rank correlation, contingency table analysis, and distribution-free confidence intervals.

PHD 1861 **Introduction to Meta-Analysis** **1 sem. hrs.**

Prerequisite: None

This is an intensive introductory course and the 3rd section of PHD 1431. The full 3 credit course is designed to introduce students to best practices, resources, and methods for systematic reviews and meta-analyses, and to guide students through the steps of a systematic review. STATA will be used throughout the meta-analysis course. This course meets on an intensive schedule for 2 weeks of the 6 weeks that is a part of the PHD 1431 course. If you will be taking both courses, you must register for both courses separately.

PH 1910L **Probability and Distribution Theory** **3 sem. hrs.**

Prerequisite: Working knowledge of differential and integral calculus

This course covers probability theory, distributions of discrete and continuous random variables, mathematical expectation, moments and moment generating functions, distribution of transformed variables, limiting distributions, and estimation. Theoretical results are applied to selected research problems in public health and the biomedical sciences.

PH 1911L **Statistical Inference** **3 sem. hrs.**

Prerequisite: PH 1910L or consent of instructor

This course is a continuation of PH 1910L. Topics include statistical hypothesis tests, LR tests, Bayes tests, noncentral distribution and power, selected non-parametric tests, sufficiency, completeness, exponential family, and the multivariate normal distribution. Theoretical results are applied to research problems in public health and biomedical sciences.

PHD 1912L **Large Sample Theory** **3 sem. hrs.**

Prerequisite: Calculus & Linear Algebra & PH 1910L & PH 1911L

Large sample theory constitutes a coherent body of concepts and results that are central to both theoretical and applied statistics and underlies much of the work on fundamental biostatistical topics such as likelihood ratio tests and bootstrapping. The course will start from the introduction to real analysis including limits and order, and basic probabilistic tools. The fundamental large-sample theory most relevant to biostatistical applications will then be taught, including convergence and large sample tests.

PHD 1915L **Linear Models I** **3 sem. hrs.**

Prerequisite: (Calculus & [PH 1830L (preferred) or PH 1820L]) or consent of instructor

This doctoral-level course introduces the fundamentals of linear statistical models for students with preparation in statistical theory and methods. Using matrix algebra, distributions of quadratic forms are presented and used to develop the general linear model for multi-factor data. Topics include estimation and hypothesis testing in the full rank model, estimability, and statistical inference in the less than full rank model. Theory and computation are emphasized.

PH 1916L **Generalized Linear Models** **3 sem. hrs.**

Prerequisite: PH 1910L & PH 1911L

This course focuses on methods for generalized linear models (GLMs), not on the use of software for data analysis with GLMs. Emphasis will be placed on statistical modeling, building from standard normal linear models, extending to and going beyond GLMs, and going beyond GLMs. The main subject areas

are logit models for nominal and ordinal data, loglinear models, models for repeated categorical data, generalized linear mixed models and other mixture models for categorical data. Methods of maximum likelihood, weighted least squares, and generalized estimating equations will be used for estimation and inference. The course focus will be on theory, but examples of application will also be presented.

PHD 1918L Statistical Methods in Correlated Outcome Data 3 sem. hrs.

Prerequisite: PH 1916L or consent of instructor

This doctoral-level course presents extensions of general and generalized linear models to correlated outcome data. Such models arise from hierarchical designs such as longitudinal studies or sample surveys. Major topics include mixed linear models for continuous, binomial, and count data; maximum likelihood estimation; generalized estimating equations; REML, EM algorithm; current general and specialized software applicable to these methods; and readings from current statistical literature. This course is intended for students with a background in linear models.

PH 1920 Advanced Categorical Data Analysis 3 sem. hrs.

Prerequisite: PH 1911L or consent of instructor

This course covers approaches of maximum likelihood, weighted least squares, and generalized estimating equations applied to the analysis of contingency tables and other categorical outcomes. It emphasizes the formulation of hypotheses and hypothesis testing through generalized linear models. Special Topics include the analysis of matched case-control studies, repeated measurements, and clustered categorical data. Computer programs from SAS are used in the analysis of the data.

PHD 1930L Statistical Computing 3 sem. hrs.

Prerequisite: None

This course presents the theory and applications of survival analysis. Topics include censoring, parametric and nonparametric models, hypothesis testing, proportional hazards model with fixed and time-varying covariates, model building strategies, and assessing model fit.

PHD 1950L Stochastic Processes in Biostatistics I 3 sem. hrs.

Prerequisite: PH 1911L and a thorough knowledge of calculus

This doctoral-level course covers the application of stochastic processes to problems in the biological and health sciences. Topics include discrete-time Markov chains; discrete-time branching processes; random walks; estimation of parameters in discrete-time Markov chains with complete or partially observed data; test of the Markov property and test of stationarity; time-reversible Markov chains; basic theory of Markov chains; Monte Carlo methods and its applications; and Poisson processes. Recent developments

in related areas and their applications will be explored. Basic statistical theory, especially the estimation methods and EM algorithm, will be reviewed.

PHD 1960 Time Series Analysis 3 sem. hrs.

Prerequisite: A course in theoretical statistics or consent of instructor

This doctoral-level course covers the uses, descriptions, and analyses of time series models. Methods are developed for fitting models to time series data, and using the fitted models for forecasting future values of the series, as well as for adjusting concomitant variables to control future values of the series. The course also covers spectral and cross spectral methods for analyzing time series data, and sampling distributions of model parameters and of future forecasts. Univariate models are generalized to the case where more than one observation is taken at each time period.

PHD 1965L Bayesian Data Analysis 3 sem. hrs.

Prerequisite: None

This doctoral-level course examines basic aspects of the Bayesian paradigm including Bayes theorem; decision theory; general principles (likelihood, exchangeability, de Finetti's theorem); prior distributions (conjugate, non-conjugate, reference); single-parameter models (binomial, Poisson, normal); multi-parameter models (normal, multinomial, linear regression, general linear model, hierarchical regression); inference (exact, normal approximations, non-normal iterative approximations); computation (Monte Carlo, convergence diagnostics); and model diagnostics (Bayes factors, posterior predictive checks).

PH 1975L Introduction to Data Science 3 sem. hrs.

Prerequisite: None

This course will cover data structure, foundations of algorithms, object-oriented programming in R and Python, research design, question formulation, data collection, relational database, graph database, data storage, data management, data processing, data query and retrieval, data visualization, report preparation, and exploratory analysis techniques.

PH 1976L Fundamentals of Data Analytics and Predictions 3 sem. hrs.

Prerequisite: [PH 1700L or the equivalent] & PH 1975L & [calculus, linear algebra, basic statistical theory and convex optimization methods at the introductory level]

This course introduces modern statistical methods and computational algorithms and tools for big data analysis including descriptive statistics, sampling technique, regression learning, clustering, and classification (e.g., support vector machine, 59 tree-based methods). Students will be introduced to the

basic concepts behind data science. Hands-on sessions will familiarize students with the details and use of the most commonly used online tools and resources.

PH 1978L **Machine Learning in Practice** **3 sem. hrs.**

Prerequisite: PH 1976L & Python programming skills

This course is covers advanced data analysis and prediction techniques and tools with applications.

PH 1986L **Introduction to Statistical Genetics** **3 sem. hrs.**

Prerequisite: Consent of instructor

This course is designed to help the student understand various situations in which significant interplay between statistics and genetics is fundamental. Specifically, at the end of the course, students should be able to: (1) describe the fundamental principles and theory in some areas of genetics/biomedical science in which statistics plays important roles; (2) apply some widely used statistical methods and approaches for answering specific genetic questions; and (3) be ready for more advanced courses in the area of statistical genetics. [Cross-listed with GSBS GS11 1113]

PH 1988 **Biostatistics Seminar** **1 sem. hrs.**

Prerequisite: (Calculus & [PH 1830L (preferred) or PH 1820L]) or consent of instructor

The seminar in biostatistics consists of presentations from guest speakers and some students who are working on doctoral dissertation research. It will provide an overview of various topics of current importance in the field of biostatistics and public health while emphasizing the mathematical and statistical tools needed to address these issues.

PH 1992 **Big Data in Practice – EHR Data Processing and Analytics** **3 sem. hrs.**

Prerequisite: (Calculus & [PH 1830L (preferred) or PH 1820L]) or consent of instructor

In this Big Data era, it is necessary to train our students to have creative thinking and problem-solving skills in dealing with complex real-world Big Data, in addition to solid statistical foundations. In this course, will provide a new perspective for Big Data issues and potential solutions to Big Data problems. In addition to Big Data analytic methods, we also introduce soft skills such as communication and collaboration skills in a multidisciplinary Big Data team environment. Electronic Health Record (EHR) Big Data projects will be used as examples for hands-on practice.

PH 1998 **Special Topics in Biostatistics** **Credits Vary**

Prerequisite: None

Special Topics courses vary each semester and provide coverage of biostatistical theory and applications.

PHD 2105L Environmental and Occupational Health Sciences Doctoral Seminar 1 sem. hrs.

Prerequisite: (Calculus & [PH 1830L (preferred) or PH 1820L]) or consent of instructor

This seminar course is designed for doctoral students and post-doctoral fellows in EOHS. Doctoral students in other departments and programs may enroll with the consent of the instructors. The course combines research seminar presentations with specific assignments to provide students an opportunity to improve their knowledge of the latest EOHS topics, their presentation skills, and their scientific productivity in the formulation of research proposals and journal publications and presentations at scientific meetings. The seminar provides opportunities to involve mentors (advisors, dissertation supervisors, committee members) and to practice mentoring and teaching with other class members.

PHWD 2106L Introduction to Doctoral Research Methods in Environmental and Occupational Health Sciences 2 sem. hrs.

Prerequisite: None

This course provides doctoral students with a background in the perspectives, key concepts, and methods involved in conducting research and evaluating scientific claims in the EOHS context, part of the necessary training to undertake a future research project. The course considers basic aspects and challenges of the philosophy of science and the inference of causality; ethical issues on conducting research; study design and sampling methods; the role of statistics; and the appropriateness of the measures of association, including hypothesis formulation and testing; and presentation of findings. Students are also introduced to the scientific production process.

PHWD 2108L Applied Epidemiological Analysis 3 sem. hrs.

Prerequisite: None

The course gives doctoral students experience in developing skills and designing strategies to plan the analysis of and critically evaluate epidemiological data from occupational and environmental settings. The goal of the course is to prepare students to integrate their knowledge of epidemiology and biostatistics through applied data analysis in the context of occupational and environmental problems.

PHD 2155 Environmental Sampling and Analysis 4 sem. hrs.

Prerequisite: [Undergraduate chemistry & undergraduate mathematics] or consent of instructor

This course covers the theoretical bases and practical applications of sampling techniques and analytical methods used in the quantitative determination of chemical air and liquid contaminants, ionizing radiation in the workplace and community environments. Emphasis will be on spectroscopic, chromatographic, and other modern instrumental methods. Laboratory exercises will be included.

Students will plan environmental sampling design, develop sampling strategies, analyze physical and chemical pollutants in the environments, interpret and communicate the results, and criticize the data related to environmental studies.

PHM 2612L **Epidemiology I** **3 sem. hrs.**

Prerequisite: None

This course provides a strong foundation in concepts, principles, and methods specific to epidemiology. By the end of this course, students should be able to apply these skills to (a) assess the health of a population; (b) describe the natural history, distribution, and determinants of health-related states and events; and (c) evaluate programs designed to improve public health. To accomplish this, the course considers epidemiology in the context of core public health functions and services.

PH 2615L **Epidemiology II** **3 sem. hrs.**

Prerequisite: [PHM 2612L or PHM 2610 or equivalent] & [PH 1700L or PHM 1690L]

This course focuses on the principles and activities necessary to carry out information collection that is implemented and managed in an ethical manner consistent with the principles of the scientific method. This course addresses practical aspects of epidemiologic research. Systems theory, epidemiologic methods, principles of survey research, operations research methods, and computer uses in research are covered. The final product from the class is the development of an epidemiologic field "Manual of Procedures" for a study. PH 2615L Epidemiology II and PH 2710L Epidemiology III can be taken interchangeably.

PH 2710L **Epidemiology III** **3 sem. hrs.**

Prerequisite: [PHM 2612L or PHM 2610] & [PHM 1690L & (PH 1700L or equivalent)]

This course covers advanced concepts in epidemiologic methods with an emphasis on observational studies. Topics include causal inference, measures of disease frequency, measures of association, study design, precision and validity in epidemiologic studies, introduction to stratified and logistic regression analysis, concepts assessing effect modification and confounding, interpretation of epidemiologic study results, and manuscript development. PH 2615L Epidemiology II and PH 2710L Epidemiology III can be taken interchangeably.

PHD 2711L **Epidemiology IV** **3 sem. hrs.**

Prerequisite: [PH 2615L & PH 2710L & PH 1700L] or consent of Instructor

This course prepares students to use and make reasonable inferences regarding causality from epidemiologic data analyses. Students address research questions using data from a variety of study

designs. Students acquire hands-on experience with stratified analysis, logistic regression, and survival analysis. Other learning activities cover meta-analysis, advanced issues in assessment of confounding and effect measure modification, strategies for building multivariable models, and sensitivity analysis.

PHD 2712L **Experimental Methods in Epidemiology** **3 sem. hrs.**

Prerequisite: PH 2710L or consent of instructor

This course equips students to evaluate and interpret evidence concerning preventive or therapeutic measures, especially those recommended for public health application. It concerns principles and methods of experimental studies in epidemiology and public health, from simple clinical trials to prevention trials in multiple communities. Applications span diverse areas, including cardiovascular diseases, cancer, and infectious diseases. Students participate actively in a seminar format, critique published reports, and undertake a collaborative project to develop a research protocol for an experimental study.

PH 2725L **Neuroepidemiology** **2 sem. hrs.**

Prerequisite: (Calculus & [PH 1830L (preferred) or PH 1820L]) or consent of instructor

This course provides an overview of the risk factors for a variety of neurologic and neuropsychiatric diseases, including stroke, Alzheimer's disease and other dementias, Parkinson's Disease, mental retardation, autism, and affective disorders. Areas covered include a description of the prevalence, incidence, mortality, risk factors, and etiologic mechanisms of these diseases and conditions. Students will gain an understanding of the impact of these diseases on public health; of the unique methodological issues associated with epidemiologic and genetic studies of these diseases; and of the basic pathobiology and clinical aspects of these disorders. The course aims to aid students' comprehension of published literature in neuroepidemiology and neurogenetics.

PH 2730 **Epidemiology and Control of Infectious Diseases** **3 sem. hrs.**

Prerequisite: [PHM 2612L or PHM 2610] or consent of instructor

This course introduces epidemiologic aspects of infectious diseases and provides information regarding prevention and control of these diseases. At the end of the course, students have an understanding of the epidemiologic aspects of infectious diseases including incidence, distribution, and pattern of disease occurrence as well as different modes of transmission and associated risk factors. They should understand the importance of surveillance systems in detecting epidemics, the application of epidemiological methods to determine the risk and associated factors, and the significance of prevention and control programs for infectious diseases. Students gain knowledge and skills in carrying out epidemic investigations through a series of case study assignments.

PH 2731 **Genetic Epidemiology and Infectious Disease** **3 sem. hrs.**

Prerequisite: None

This course is intended for students who have not had significant training in genetics. It will cover basic genetics, medical genetic terminology, and the associated scientific and medical literature. At the end of the course, students will have an understanding of the genetic aspects of infectious diseases, including the contribution of host genetics and genes influencing susceptibility to infectious diseases. They will understand the importance of environment, host and pathogens genetic factors and their mutual interactions influence on the ratio between clinical and subclinical disease. Evaluations will be based on examinations given in the class and attendance.

PH 2735L Physical Activity and Health: Epidemiology and Mechanisms 3 sem. hrs.

Prerequisite: None

This course presents evidence that exercise training and physical activity can prevent disease and increase the quality of life. The course covers heart disease, hypertension, diabetes, obesity, osteoporosis, eating disorders, cancers, immune system, and aging, as well as inter-relationships among and between these conditions. Each section starts with the physiology basis for the disease, and the epidemiologic evidence that exercise training and physical activity will reduce the risk of developing the disease. Then, cross-sectional and longitudinal studies are presented supporting the epidemiological data. Finally, studies 67 are presented that focus on the mechanisms by which exercise and physical activity prevents the development of the disease, and, in some cases, how it can improve the disease state.

PHW 2740L Cardiovascular Disease Epidemiology and Prevention 3 sem. hrs.

Prerequisite: [PHM 2612L or PHM 2610] or consent of instructor

This course provides an overview of the field of cardiovascular disease (CVD) epidemiology. Topics include the pathophysiology of CVD, CVD survey methods, trends in CVD mortality and morbidity, CVD risk factors, major strategies for CVD prevention, and a summary of major CVD clinical trials. Students will gain an understanding of the impact of CVD on public health.

PH 2742L Epidemiology of Mental Health 3 sem. hrs.

Prerequisite: [PHM 2610 or PHM 2612L or PHD 1420L or PHD 1421L or PHW 3660] or consent of instructor.

This course reviews descriptive and analytic epidemiology for major mental health symptoms and conditions worldwide. Course topics include understanding: functional and societal burden of mental health conditions, psychiatric epidemiology research designs, causality in mental health, cross-societal comparisons, risk factors and protective factors, plus an overview of treatment, health systems, and prevention.

PH 2745 **Cancer Epidemiology** **3 sem. hrs.**

Prerequisite: None

This primarily introductory-level course reviews the causes of cancer and the epidemiology of cancer by anatomical site. The course will introduce seminal studies and current issues in cancer epidemiology, and will cover basic concepts pertinent to cancer epidemiology research including biology, pathology, statistics, classic and novel risk factors, prevention, and genetics. Selected publications from epidemiologic literature provide opportunity for student-faculty discussion.

PH 2755L **Nutrition Research Methods** **2 sem. hrs.**

Prerequisite: (Calculus & [PH 1830L (preferred) or PH 1820L]) or consent of instructor

This course teaches basic epidemiologic research skills applied to nutrition. Students complete training for UTHealth School of Public Health on-line library databases and the Academy of Nutrition and Dietetics (AND) Evidence Analyses Process (EAP). Students learn to create and score evidence tables using the EAP. Students develop a brief nutrition research proposal with an objective, literature review, methods section, and dummy tables and graphs. Students learn techniques for effective PowerPoint presentations and deliver an oral presentation of their individual project.

PHWD 2760L **Occupational Epidemiology** **3 sem. hrs.**

Prerequisite: [PH 1700L or PHM 1690L] & [PHM 2612L or PHM 2610]

This course describes the types and magnitude of workplace injuries and illnesses, which exact a large human and economic toll on adult and child workers in the United States and worldwide (many, if not most, of these adverse health outcomes are preventable); examines the epidemiologic methods used to identify risk factors for these events; and examines the role of academia, industry and public health practice in understanding and controlling these conditions from an epidemiologic perspective. The course is especially targeted as a Special Topics course for epidemiology majors and to provide 68 an epidemiologic and public health perspective to occupational health for occupational health, environmental science and other interested students. Doctoral students will have additional projects.

PHD 2762L **Environmental Epidemiology** **3 sem. hrs.**

Prerequisite: [PH 2610 or PHM 2612L] & PHM 1690L

This course is designed to introduce students to specific research areas within the field of environmental epidemiology as well as to epidemiologic and exposure assessment methodologies commonly used in the field. The course provides an introduction to selected topics and concepts in environmental epidemiology and will prepare students to critically appraise the environmental epidemiologic literature. Topical areas may include (but are not limited to) air pollutants, persistent organic pollutants, pesticides, metals, environmental disasters, and environmental justice.

PHW 2765L **Pediatric Epidemiology** **3 sem. hrs.**

Prerequisite: PHM 2612L

This course describes the public health impact of pediatric conditions and introduces special considerations in the design and conduct of epidemiological studies of pediatric conditions. Resources for pediatric epidemiology and the epidemiology of common chronic pediatric conditions are also covered.

PHW 2767 Epidemiology and Health Promotion of Child and Adolescent Health 3 sem. hrs.

Prerequisite: PHM 2612L & PHM 1110L

Course covers 2 public health areas: (A) Epidemiology of 6 leading causes of acute and chronic diseases, including: 1) Tobacco; 2) Alcohol/other drugs; 3 Nutrition; 4) Physical activity; 5) Intentional and unintentional injuries; and 6) HIV, STD, pregnancy. (B) Health promotion strategies to prevent acute and chronic disease. These include methods to increase health-enhancing and decrease health compromising behaviors. Other topics include: 1) Physical, social, cognitive development; 2) Health disparities; 3) Sleep, social media and video games; 4) Effects of climate change on health; and 5) Mental health.

PHW 2775 Epidemiologic Methods in Racial and Ethnic Disparities 3 sem. hrs.

Prerequisite: PHM 2612L or PHM 2610

This course provides an overview of health issues related to race and health in modern U.S. society. Special emphasis is given to epidemiologic methods and perspectives in research studies using race/ethnicity; demographic trends; mortality and life expectancy; and social, etiology, biological, and genetic factors associated with health disparities by racial and ethnic group in the United States. This course builds on the previous knowledge on the methodology of analytical and descriptive study designs to understand the advantages and shortcomings of race/ethnicity in epidemiological studies.

PHW 2780L **Genetic Epidemiology** **3 sem. hrs.**

Prerequisite: None

This course introduces statistical methods and software for analyzing measured genetic variation in human studies. The primary focus will be on analytic methods with hands-on use of sample datasets and available software. Students will be refreshed on the genetic and statistical theory underlying current methodologies. Students are recommended to have previous exposure to the principles of genetics and biostatistics.

PHW 2781L Practical Python Programming and Algorithms for Data Analysis 3 sem. hrs.

Prerequisite: None

This course is intended for students who are focused on big data analysis in the Python programming language from large scale epidemiologic datasets, electronic medical records, or next generation sequence data. It will cover basic programming including strings, array, dictionaries, conditional statements, data visualization, external data sources, and algorithms with a focus on using programming to solve challenges within the students' own research projects.

PHW 2782L Practical Computational Genetics and Bioinformatics 3 sem. hrs.

Prerequisite: Basic knowledge of genetics and DNA sequence

This course is designed as a training of necessary computational and bioinformatics skills used in everyday analysis of biological data, especially DNA sequence and polymorphism data. Topics include basic Unix/Linux command line, programming (Python), human sequence/polymorphism databases, and DNA analysis.

PHW 2783 Introduction to R Programming and Data Management 3 sem. hrs.

Prerequisite: None

This course aims to provide students with hands-on experience in R programming and data management. The students should be familiar with basic concepts in epidemiology and biostatistics. Previous experience in using SAS, STATA or SPSS is helpful, but not required. Topics include downloading and installing R, basic programming concepts, basic programming best practices, R packages and environments, R data structures, data transfer, creating and manipulating data, visualizing data, conditional operations, working with multiple data frames, restructuring data frames, repeated/iterative operations, writing functions, basic analyses used in epidemiology, and techniques for presenting results to various audiences. Special emphasis will be given to using the Tidyverse family of R packages.

PH 2784L Introduction to R Analysis for Epidemiologic Research 3 sem. hrs.

Prerequisite: PHM 1690L & PHM 2612L

This course aims to provide students with hands-on experience in R analysis for epidemiologic research. The students should be familiar with basic concepts in epidemiology and biostatistics. Previous experience in using SAS, STATA or SPSS is helpful, but not required. Topics include R data structure, data management and visualization, loops and conditions, classical statistical tests, functions, packages and environments, sample size and power calculation.

PHW 2785L Laboratory Methods: Applications and Implications to Public Health 3 sem. hrs.

Prerequisite: None

This introductory course provides an overview of various methods and techniques utilized in laboratory settings and epidemiologic investigations. Emphasis is placed on laboratory methods that are relevant to the study of public health, such as the techniques utilized in investigating disease outbreaks. This course addresses a unique need and the necessity for public health students to know the basic laboratory methods used in epidemiologic studies. An understanding of the basic concepts of immunology, molecular biology, and/or genetics would be helpful, but is not a prerequisite.

PH 2797 Shoeleather Epidemiology: Essential Skills of Applied Epidemiology 2 sem. hrs.

Prerequisite: PHM 2612L or equivalent

This applied epidemiology seminar brings in speakers from different areas of public health practice to discuss current public health practices.

PH 2830L Clinical Genetics in Epidemiology 3 sem. hrs.

Prerequisite: Recent course in college biology or equivalent

This course teaches the role clinical genetics plays in the practice of epidemiology, and the relationship between epidemiology and medical genetics. Emphasis will be on the practice of medical genetics as it may be encountered by professionals in public health. The subject material covers basic biology of clinical genetics, genetic diseases and birth defects as seen in a medical genetics clinic, the provision of genetic services in Texas, and public policy issues relating to the practice of medical genetics.

PHWD 2835 Injury Epidemiology 3 sem. hrs.

Prerequisite: None

This course provides overview of the leading types of injury in the United States, as well as the epidemiologic methods employed in conducting injury research. Students will learn about injury surveillance methodology employed to foster the reporting and capturing of injury events. Students will learn to systematically critique the injury literature by applying epidemiologic methodology. Students will have the opportunity to engage in online discussion about motor vehicle 71 accidents, violence, drowning, nail gun injury, needle stick injury, musculoskeletal, and farm-related injuries, to name a few topics.

PHD 2845L Nutritional Epidemiology 3 sem. hrs.

Prerequisite: [PHM 2612L or PHM 2610] & [PHM 1690L or PH 1700L or equivalent] or consent of instructor

This course teaches how to describe the methods and evaluate the issues associated with nutritional assessment of populations using dietary, biochemical, and anthropometric data. A combination of

lecture, seminar, and hands-on activities are incorporated to examine the strengths and weaknesses of nutritional assessment methodologies used with epidemiologic study designs. Students are provided data and guided to explore methodologies of statistical analysis and interpretation of nutritional data.

PHD 2846 Rapid Assessment Methods in Public Health 3 sem. hrs.

Prerequisite: None

This course presents several rapid assessment methods, both qualitative and quantitative, developed for gathering public health data in national and international arenas, as public health professionals, and epidemiologists in particular, are called upon to accurately assess community health needs and assets both during regular times and after disasters, to do surveillance of health events and monitor them, and to evaluate whether and how needs are being met. This course will help students to gain competence with both quantitative sampling methods and with qualitative data gathering methods.

PH 2858 Quantitative Analysis for Public Health Research and Practice 3 sem. hrs.

Prerequisite: [PHM 2612L or PHM 2610] & [PHM 1690L or PH 1700L]

This course bridges epidemiological and biostatistical skillsets. The overall objective is to provide students with the tools and hands-on experience of analyzing datasets guided by research questions. Students will learn how to conduct a research project from conceptualization to dissemination, including: development of research questions and analytic plans; cleaning and coding data; assessing the degree of missingness; evaluating and interpreting univariate, bivariate, and multivariate analyses and building models; analyzing and conceptualizing interaction; analyzing complex survey data; and appropriate research dissemination techniques.

PH 2860 Advanced Design Analysis Methods in Epidemiology 3 sem. hrs.

Prerequisite: PH 2710L & PH 1830L

This course primarily covers topics related to study design and appropriate data analysis using advanced techniques. At the core, the faculty will discuss basic and generalized regression models for binary (logistic), continuous (linear), and count (Poisson) outcomes; multivariate data reduction techniques, such as factors analysis and Principal Component Analysis; longitudinal models; analysis of clustered data; and select data mining methods. Whenever possible, the faculty will illustrate how to carry out data analyses in SAS or STATA or other suitable statistical packages.

PHM 2950L Genetic Epidemiology of Chronic Disease 2 sem. hrs.

Prerequisite: None

This course exposes students to the evidence and logic involved in inferring the contribution of genetic mechanisms to those diseases of public health importance. Emphasis will be on developing a framework for assessing the impact of genes on common disease, but will not include detailed methodological developments or statistical techniques. The format will be a weekly two-hour session during which a single disease will be examined. In this way, students will be introduced to a broad spectrum of diseases and learn to recognize the similarities and the uniqueness inherent to each. Sessions will be comprised of lectures and discussions. [Cross-listed with GSBS GS110092].

PH 2960 Seminar in Genetics and Population Biology 1 sem. hrs.

Prerequisite: Consent of instructor

Students analyze and present individual topics or research.

PHD 2990 Epidemiology Seminar 1 sem. hrs.

Prerequisite: None

The Epidemiology Seminar and Journal Club is open to all students, but is mandatory for epidemiology doctoral students who have not yet taken their preliminary examination. The seminar is intended to hone research and presentation skills, and to provide students an opportunity to present data, a research proposal, or an epidemiology-related topic to an audience of their peers and mentors. The seminar will provide students an opportunity to receive critical feedback on their research and develop professional interactions between faculty and other students.

PH 2998 Special Topics in Epidemiology Credits Vary

Prerequisite: None

Special Topics in Epidemiology vary each semester.

PHD 3631L Community Engagement/ Community-based Participatory Research 3 sem. hrs.

Prerequisite: None

This course is designed to provide students with essential concepts of both Community Based Participatory Research (CBPR) principles as well as overall guidance in Community Engagement (CE) practices with public health research. CBPR and CE is a partnership approach to research that equitably involves community members and researches in all aspects of the research process. This engagement allows all partners to contribute their own expertise and share in the decision making process and overall ownership of the research. This course is intended for doctoral students interested in using CBPR approaches.

PHD 3731L Healthcare Management and Policy Research 3 sem. hrs.

Prerequisite: PH 1700L & PHM 3744L & PHD 3930

This course prepares students to conduct research with academic rigor. Students are exposed to different research methods prevalent in healthcare management and policy disciplines through assigned readings (research articles and unpublished dissertations). In addition, the course emphasis is on manuscript writing, designing a feasible study grounded in theory or conceptual framework and based on publicly available data sources, comprehensive literature review, selection of appropriate research methods, and identification of potential analytical issues and methodological solutions.

PHD 3801L **Community-based Grant Writing Workshop** **1 sem. hrs.**

Prerequisite: None

The goal of this introductory-level doctoral course is to provide students with the knowledge and tolls necessary to write a community-based grant proposal. This course covers the complete process of grant proposal development: legal and policy background of funding organizations; theory and culture of philanthropy; funder relations; research and identification of an achievable and fundable project; logistical concerns when preparing a proposal; proposal writing; budget development; preparation of a full proposal package for submission; and post award or rejection follow-up with funders. Students gain an understanding of community based organizations and become familiar with tools and resources available to assist them as they seek funds for their projects, institutions, or causes.

PH 3815 **Health Policy Analysis** **3 sem. hrs.**

Prerequisite: None

This course examines the process of policy development and the role of research and analysis in the process. A framework is introduced for selecting the type of research and analysis needed to address different policy questions. Key concepts and methods of policy research and analysis are introduced and applied to real-world policy problems in public health. Upon completion of the course, students should have an understanding of the role of policy analysis in the policy development process, be able to frame policy issues for research and analysis, and be able to identify and appropriately apply research methods and analysis to policy questions.

PHD 3926L **Health Survey Research Design** **3 sem. hrs.**

Prerequisite: PHM 1690L & [PHM 2610 or PHM 2612L] or equivalents

This course presents the methods for designing and conducting health surveys. Emphasis will be placed on problem conceptualization, measurements, and questionnaire design in the context of a total survey design framework. Examples of face-to-face, telephone, mail, and Internet surveys will be presented.

PHD 3930 **Econometrics in Public Health** **3 sem. hrs.**

Prerequisite: PH 1700L or equivalent that demonstrates some knowledge of regression

This course has two learning objectives: developing skills in quantitative methods for the analysis of complex data, and understanding and critically evaluating public health research using econometric methods. This course consists of 11 units, including linear regression, non-linear regression, analyzing cost as dependent variable, panel data methods, random and fixed effect models, specification tests, endogeneity, instrumental variables, and selection models.

PHD 3931 **Advanced Econometrics** **3 sem. hrs.**

Prerequisite: PHD 3930 or equivalent

This course introduces advanced techniques in statistics and econometrics for conducting successful health outcomes and policy research. Students are expected to have an understanding of basic statistical concepts, such as discrete and continuous random variables, probability distributions, joint distributions, conditional distributions, independence, statistical inferences and estimations, properties of estimators, hypothesis testing, ordinary least square regression, logistic regression, one-way ANOVA, contingency tables, and $\chi 2$ (chi-square) analyses. Topics covered will include Causal Inference, Causal Graphs, Treatment Effect Identification, Models of Causal Exposure, Linear regression, Panel Data methods including Fixed and Random Effects estimation, Limited Dependent Variable Models like - Logistic regression, Probit, Tobit, Heckman, 2-Part and 2-Step models, Interpreting Marginal Effects and Interactions for Limited Dependent Variable models, Modeling cost data especially using log transforms, Simultaneous Equations and Instrumental Variable Analysis, and Use of Specification Tests like Hausman, Breusch-Pagan, White, Park, Glejser and Box-Cox. The course will 79 emphasize practical applications of statistical methods to real world problems of public health and health outcomes research.

PH 3940 **Healthcare Outcomes and Quality Research** **3 sem. hrs.**

Prerequisite: None

This course introduces students to measurement and evaluation issues associated with patient-centered outcomes and quality of care studies, an increasingly important component of present-day health services research. The focus will be on the application, rather than development, of measurements. Topics that will be covered include development of the outcomes framework, outcomes measures, risk adjustment of health outcomes, technical and practical issues with measurement and estimation, and empirical examples of healthcare outcomes research. Outcome and quality measures that will be covered include generic and condition-specific health status measures, satisfaction, patient trust, and patient adherence

PH 3941 **Claims Data in Healthcare Research** **3 sem. hrs.**

Prerequisite: Familiarity with SAS or Stata

This course provides an overview of the elements of administrative claims data. This information will be crucial to any student interested in utilizing claims data for research purposes. The course will focus on the various data fields in enrollment, and medical claims, and pharmacy claims. Strategies for effectively

querying claims datasets will be provided. Multiple data sets include commercial claims, Medicare claims, and Medicaid claims.

PHD 3945 Advanced Health Services Research Methods 3 sem. hrs.

Prerequisite: None

This course introduces students to the application of quantitative methods in health services research. The major elements of designing and conducting an empirical study will be covered, with emphasis on specification of research questions and design, measures, use of primary and secondary data sources, and issues in bivariate and multivariate analysis. Examples of the use of different methods in the literature will be reviewed.

PHD 3950 Applied Leadership Studies in Public Health 3 sem. hrs.

Prerequisite: None

This course is designed for doctoral students in all disciplines who have had previous leadership courses or leadership training. It focuses on synthesizing, applying, and evaluating leadership theories, concepts, and emerging perspectives; analyzing personal, professional, organizational, and system leadership dynamics in a rapidly changing and complex world; and discerning the implications of leadership research on the practice of leadership in public health research and practice settings. Three themes of reflection, critical thinking, and communication support the examination of leadership dilemmas, patterns, behaviors, and outcomes. Other topics to be addressed include leadership studies research; complex adaptive systems and sustainability; culture and change; ethics; power influence and politics; and creating and sharing a vision.

PHM 5015L Introduction to Qualitative Research in Public Health 3 sem. hrs.

Prerequisite: None

This course will provide an overview of qualitative research in public health. Students will be introduced to qualitative research methods and analysis. This introductory course will help students understand the core ideas, processes, and activities underpinning qualitative research. Students will be able to develop interview guides, focus group guides, and codebooks and have the opportunity to practice qualitative methodological and analytical techniques. This knowledge will allow the student to use qualitative research in public health practice and provides preparation for further study of qualitative research methods and analysis.

PH 5098 Foundations of Scientific Writing in Public Health 3 sem. hrs.

Prerequisite: None

This course provides students with the basic writing skills critical for scientific writing. Writing is a learned skill that develops with practice coupled with feedback and more practice. Good writing takes more than simply translating ideas onto the page. Good writing includes knowledge of grammar, crafting arguments, and careful revision and editing. This course provides a platform for students to revisit the rules of grammar, practice crafting and structuring arguments, translate ideas onto paper, and write a scientific proposal or manuscript. Students will have the opportunity to read good writing as well as enhance their writing skill through weekly writing assignments and receiving regular feedback.

PH 5098 Special Topics in Interdepartmental Courses: The History and Culture of Disease and Healing 3 sem. hrs.

Prerequisite: None

This course is presented in collaboration with the schools of The University of Texas Health Science Center at Houston (UTHealth), Rice University and the University of Houston. It is a humanities course with a series of lectures on Tuesday 82 evenings that have been chosen for their relevance to the relationships between human history and culture and the epidemiology and impact of disease and the arts of healing. Each lecture is followed by a discussion session on Thursdays at 4-5:30 p.m. The unique collaborative format of this seminar demonstrates shared values between institutions of higher learning and the professional/academic training offered to various specialties.

PH 5200 Foundations of Leadership in Public Health 3 sem. hrs.

Prerequisite: None

This is an introductory course in public health leadership for students in all academic programs. This course introduces students to the theories and principles of effective leadership, presents leadership challenges, and discovers personal attributes of leadership in public health practice and research. Students will begin to develop life-long learning skills through self-development, experiential learning, and discussion of leadership approaches. Content areas will include complexity theory, change management, ethics, collaboration, effective communication, team-building, dialogue, decision-making, conflict management, leadership evaluation, advocacy, and strategic planning.

PH 5400 Physical Activity Assessment and Surveillance 3 sem. hrs.

Prerequisite: None

This course provides students with an in-depth understanding of the various methods used to measure physical activity and related constructs (e.g., energy expenditure and physical fitness) in individuals and populations. This understanding will be achieved through a review of the current research literature related to measurement methods and hands-on practice experiences with various physical activity measurement methods (i.e., data collection to interpretation). Behavioral, environmental, and policy-related correlates and determinants of physical activity will also be discussed.

PH 5401L **Physical Activity and Public Health Practice** **3 sem. hrs.**

Prerequisite: None

This course provides a forum that promotes an understanding of effective practice strategies for implementation of public health programming related to physical activity. This understanding will be approached through review of the current research literature with a focus on the "Guide to Community Preventive Services" recommendations for physical activity. Topics in the course will focus on evidence-based strategies, as well as effective approaches to program development, implementation, and evaluation.

PH 5613 **Critical Cinema for Public Health** **3 sem. hrs.**

Prerequisite: None

This course presents a series of documentaries and Big Screen movies revolving around public health topics. The range of topics will include health disparities; health systems; culture, behavior, and health; environmental health themes; globalization; addictions; mental health; food production; research ethics and methods; violence; and surveillance and control of epidemics. All movie presentations will be followed by a class discussion.