PHEB - PUBLIC HLTH EPIDE BIOST

PHEB 600 Fundamentals of Epidemiology

Credits 3. 3 Lecture Hours. This is the core epidemiology course for non-major students. It is an overview course intended to familiarize students with the basic principles and applications of epidemiological concepts and methods in the study of public health problems in populations. The focus of the course is on the interpretation and assessment of epidemiologic research, both descriptive and analytic, and its application to public health practice and relevance to the key disciplines of public health.

PHEB 602 Biostatistics I

Credits 3. 3 Lecture Hours. An introduction to statistical issues in public health, including basic probability, significance levels and confidence intervals, interpretation of public health data, and specific statistical techniques such as regression, analysis of variance, nonparametric techniques and categorical data.

PHEB 603 Biostatistics II

Credits 3. 3 Lecture Hours. A second course in biostatistical methods that emphasizes linear models and designed experiments. Designed for student wishing a deeper understanding of topics introduced in PHEB 602. **Prerequisite:** PHEB 602.

PHEB 604 R Programming for Public Health Research

Credits 3. 3 Lecture Hours. Focus on basic programming skills that are essential when solving problems requiring more than merely a sequence of simple, discrete statistical and mathematical operations; relevant topics in programming in general, R language is the main vehicle for learning concepts and skills in a tangible way; includes basic data structure, looping, conditional execution, functional programming, computer graphics and use of third party packages. **Prerequisite:** PHEB 602 or equivalent.

PHEB 605 Epidemiologic Methods I

Credits 3. 3 Lecture Hours. This is the core epidemiology course for major students in the Department of Epidemiology and Biostatistics. It is an overview course intended to familiarize students with the basic principles and applications of epidemiological concepts in the study of disease occurrence in populations. The focus of the course is on the interpretation and assessment of epidemiological research, as well as the design and conduct of descriptive and analytic epidemiologic studies.

PHEB 606 Survival Analysis

Credits 3. 3 Lecture Hours. Introduction to statistical methods for survival (time-to-event) data analysis; basic concepts of survival analysis, including hazard functions, survival functions, types of censoring, Kaplan-Meir estimates, logrank tests. May be taken two times for credit. **Prerequisites:** PHEB 602 and PHEB 603.

PHEB 607 Sample Survey Methodology

Credits 3. 3 Lecture Hours. The purpose of this course is to prepare students to examine the unified set of concepts, principles and methodologies that govern sample survey methodology. It is designed to build on a foundation of coherent survey concepts and foster the understanding of the principles and methods of sampling theory, survey design, analysis and interpretation. This course is designed for epidemiology track and other public health students requiring a more thorough knowledge of the concepts and methods used in survey research. This course stresses survey designs, methodological issues and analytic methods as they relate to conduct of surveys. **Prerequisites:** PHEB 602 and PHEB 603.

PHEB 609 Categorical Data Analysis

Credits 3. 3 Lecture Hours. Introduction to the basic theory and applications of methods used to analyze categorical data; theory covered but emphasis on selecting appropriate analysis strategies, analyzing data and interpreting results of those analyses; no background in calculus or matrix algebra required. May be taken two times for credit. **Prerequisites:** PHEB 602 and PHEB 603, or STAT 651 and STAT 652.

PHEB 610 Epidemiologic Methods II

Credits 3. 3 Lecture Hours. An intensive introduction to epidemiological concepts and methods for students in the epidemiology concentration and others who will collaborate in – or be required to – interpret the results of epidemiological studies; emphasis is placed on calculation and interpretation of crude and adjusted data, measures of association, and study design. **Prerequisites:** PHEB students or approval of instructor; PHEB 602 and PHEB 605 or concurrent enrollment in PHEB 603.

PHEB 611 Epidemiologic Methods III

Credits 3. 3 Lecture Hours. In-depth treatment of key methodological and analytic topics in epidemiology; emphasis on study design and implications for data analysis, such as confounding, model selection and effect modification; analytic techniques using logistic regression and stratified analysis. May be taken two times for credit. **Prerequisites:** PHEB students or approval of instructor; PHEB 610 and PHEB 603.

PHEB 612 Data Management / Computing

Credits 3. 3 Lecture Hours. An introduction to the principles of data management, techniques in designing and implementing databases for large data systems, techniques for communicating between computing environments, and introduction to statistical software. May be taken two times for credit.

PHEB 613 Field Epidemiology Methods

Credits 3. 3 Lecture Hours. Introduction to methods used by epidemiologists; conduct outbreak investigations from start to finish; study design; questionnaire development; interviewing techniques and data analysis; practical component; includes service learning component; required to sign up for EPIAssist; participation in activities with health departments local and regional. **Prerequisites:** Public health majors, MPH in Epidemiology and Biostatistics or doctoral students from other disciplines.

PHEB 614 Analysis of Longitudinal and Multilevel Data

Credits 3. 3 Lecture Hours. Modern approaches to the analysis of longitudinal and multilevel data; random effects model and the generalized estimating equations; both continuous and discrete outcome; missing data issue. May be taken two times for credit. **Prerequisites:** PHEB 602, PHEB 603 and PHEB 609.

PHEB 615 Disaster Epidemiology

Credits 3. 3 Lecture Hours. Basic principles, terms and epidemiological tools for use in disasters; public health consequences associated with various types of disasters; rapid health assessment of disaster-affected populations; establishment of emergency surveillance systems in disaster settings; the federal and state disaster response framework; selected case studies of disasters and their effects on populations; topics related to disasters in international health settings; lecture, team exercises, case studies and discussion. **Prerequisite:** PHEB 605.

PHEB 617 Research Integrity, Transparency and Reproducibility

Credits 3. 3 Lecture Hours. Examination of the various threats to the integrity of research, the professional and organizational factors that facilitate produce these threats, and the solutions that have been developed to improve research quality, such as registered reports, open data, and team of rivals; differentiation of research that is conducted with integrity and capable of producing valid and reproducible findings from research that is conducted without integrity; incorporation of practices into research that will increase its transparency and ensure it is conducted with integrity. **Prerequisite:** PHEB 605.

PHEB 618 Spatial Epidemiology

Credits 3. 3 Lecture Hours. Broad introduction to the principles and methods of spatial epidemiology, with particular emphasis on the use and applications of Geographical Information Systems (GIS), and spatial analysis methods in health research and public health practice.

PHEB 619 Infectious Disease Epidemiology

Credits 3. 3 Lecture Hours. Principles and practices of epidemiology appropriate for the study of communicable diseases. Course focuses on methodology, public health concerns, patterns of transmission and newly discovered infectious diseases. **Prerequisite:** PHEB 600 or PHEB 605.

PHEB 620 Cancer Epidemiology

Credits 3. 3 Lecture Hours. A review of the principles and methods used in cancer epidemiology. The course focuses on cancer etiology and control with emphasis on race/ethnicity and urban/rural differences in cancer incidence and mortality. **Prerequisite:** PHEB 600 or PHEB 605.

PHEB 621 Foundations of Maternal and Child Health

Credits 3. 3 Lecture Hours. Determinants, mechanisms systems that maintain health, safety, well-being of children and their families in communities and societies; introduction to maternal and child health populations; conceptual frameworks; health indicators; research issues, program planning and evaluation.

PHEB 622 Reproductive And Perinatal Epidemiology

Credits 3. 3 Lecture Hours. Epidemiology of major reproductive health outcomes, including infertility, fetal loss, birth weight, congenital malformations and infant mortality. Review of current knowledge of determinants of these outcomes. **Prerequisite:** PHEB 600 or PHEB 605.

PHEB 624 Social Epidemiology

Credits 3. 3 Lecture Hours. This course entails an exploration and examination of the social determinants and distribution of physical and mental health outcomes. These determinants include socioeconomic inequalities, stress and social organization. The course focuses on the development and evaluation of testable hypotheses concerning the relationship between social conditions and health. **Prerequisite:** PHEB 600 or PHEB 605.

PHEB 626 Occupational And Environmental Epidemiology

Credits 3. 3 Lecture Hours. This course involves the examination of occupational and environmental exposures related to disease and injury. Topics covered include general methods used in occupational and environmental epidemiology, exposure assessment, surveillance, and the relation of occupational and environmental exposure to adverse reproductive outcomes, cancer, diseases and the ergonomic-related outcomes. **Prerequisite:** PHEB 600 or PHEB 605.

PHEB 627 Chronic Disease Epidemiology

Credits 3. 3 Lecture Hours. This course will provide insight into the epidemiologic concepts and research needed in the study of chronic disease and its associated risk factors. This course is intended to provide students with an appreciation of the major trends in the incidence and prevalence of specific chronic diseases. The focus will be from a U.S. and international perspective. Methodological challenges relevant to chronic disease epidemiologic research will be addressed in lectures, readings, student discussions, presentations and assignments. **Prerequisite:** PHEB 605.

PHEB 631 SAS Programming for Epidemiological Research

Credits 3. 3 Lecture Hours. SAS programming language, data import and export, data cleaning, data query and graphics making data analysis. **Prerequisite:** Graduate classification; approval of academic advisor.

PHEB 632 Global Health Epidemiology

Credits 3. 3 Lecture Hours. Overview of global health as a field of research and practice, with a focus on epidemiologic research and methods to understand determinants of health, critically evaluate epidemiological research on determinants of health-related events, develop strategies to evaluate the impact of evidence-based interventions, and foster the application of epidemiologic methods to global health, based on recent literature; focus on diverse issues as case examples of global health research and intervention strategies to illustrate the principles and methodologies of epidemiological approaches; application of skills and a greater understanding of epidemiological aspects of public health research and practice that apply to global health. **Prerequisites:** Graduate classification.

PHEB 634 Environmental Epidemiology

Credits 3. 3 Lecture Hours. Principles and methods of environmental epidemiology; emphasis on the use of epidemiologic and exposure assessment methods and practice applied to the issues of environmental public health and epidemiology of environmentally-related diseases and injuries. **Prerequisite:** PHEB 605 or instructor approval.

PHEB 681 Seminar

Credit 1. 1 Lecture Hour. Series of presentations by students, faculty, national and international guest speakers; presentations on various maternal and child (MCH) topics; experience in presenting research and improving presentation skills; introduction to research topics of faculty and external MCH experts; increase knowledge of the MCH field.

PHEB 684 Practicum

Credits 1 to 15. 1 to 15 Other Hours. Field placement experience in which students work closely with a departmental faculty member and (an) appropriate field professional(s) applying skills and techniques acquired through coursework. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. **Prerequisite:** Approval of student's academic advisor.

PHEB 685 Directed Study

Credits 1 to 6. 0 Lecture Hours. 1 to 6 Other Hours. Student investigation of a topic not covered by other formal courses. May be repeated for credit. **Prerequisite:** Approval of student's academic advisor.

PHEB 686 Directed Research

Credits 1 to 3. 0 Lecture Hours. 1 to 3 Other Hours. Student research initiative not within the scope of a thesis or dissertation. May be repeated for credit. **Prerequisite:** Approval of student's academic advisor.

PHEB 689 Special Topics

Credits 1 to 3. 1 to 3 Lecture Hours. Revolving topics seminar in an area of specialization within the department. May be repeated for credit.

PHEB 691 Research

Credits 1 to 23. 0 Lecture Hours. 1 to 23 Other Hours. Research for thesis or project. May be repeated for credit. Must be taken on a satisfactory/ unsatisfactory basis. Must be taken on a satisfactory/unsatisfactory basis. **Prerequisite:** Graduate classification; School of Public Health major.

PHEB 791 Doctoral Capstone

Credits 1 to 23. 0 Lecture Hours. 1 to 23 Other Hours. Doctoral dissertation or equivalent project(s). May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. **Prerequisites:** Graduate classification; School of Public Health major.