Epidemiology (EPI)

EPI 801 INTRODUCTION TO CANCER EPIDEMIOLOGY 2 Credit Hours
This course will review the basic concepts of cancer etiology and carcinogenesis. It will provide the background on sociodemographic magnitude of cancer, basic concepts of cancer biology and the causes of cancer. Methods for designing and implementing research studies and evaluating genetic, environmental and lifestyle factors, such as tobacco, alcohol, radiation, chemicals, pharmaceuticals, viruses and nutrition will be reviewed.
Prerequisite: EPI 820 or permission of instructor.
Cross List: CPH 641.
Typically Offered: SPRING

EPI 802 CANCER EPIDEMIOLOGY IN SPECIAL POPULATIONS 1 Credit Hour
The focus of this course will be on epidemiologic, genetic, environmental, and lifestyle risk factors of cancer in international and ethnically-diverse populations. Topics will include in-depth discussion of incidence, mortality, and survival of cancer in special populations, distinct aspects of environmental, genetic, and lifestyle factors, and research methods for conducting epidemiologic studies on cancer in special populations.
Prerequisite: EPI 820 or permission of instructor.
Cross List: CPH 642.
Typically Offered: SPRING

EPI 803 TOPICS IN CANCER PREVENTION I 1 Credit Hour
This seminar provides an overview of the current scientific basis for cancer prevention and control in humans, introduces current methods of determining risk factors along with their subsequent alteration, and suggest future opportunities through integration of selected areas of basic science with classic etiologic research to define and quantify risk factors. Current opportunities for early detection of preclinical cancer will also be presented.
Cross List: CPH 643.
Typically Offered: SPRING

EPI 804 TOPICS IN CANCER PREVENTION II 1 Credit Hour
This seminar provides an overview of the current scientific basis for cancer prevention and control in humans, introduces current methods of determining risk factors along with their subsequent alteration, and suggest future opportunities through integration of basic science with etiologic and prevention research to define and quantify risk factors. Current opportunities for early detection of pre-clinical cancer will also be presented.
Cross List: CPH 644.
Typically Offered: FALL

EPI 805 HUMAN HEALTH AND DISEASE IN PUBLIC HEALTH 3 Credit Hours
This course is designed to provide graduate students and health professionals with the knowledge of the physiology of the human health and the essential concepts of disease processes. It demonstrates the relevance and application of disease biology knowledge to the epidemiological research and practice. Students will learn how the human physiology works and the changes in pathophysiology. Students will learn specific disorders specifically pathophysiology, etiology, clinical signs, symptoms, and outcomes. Understanding pathophysiology will allow students to comprehend variations in disease burden, distribution and natural history at the individual and population levels. Students will learn about major diseases that have global public health importance.
Cross List: CPH 605.
Typically Offered: FALL

EPI 810 EMERGENCY PREPAREDNESS: PREVENTION 3 Credit Hours
An introduction to emergency preparedness concepts such as the Incident Command System, The National Response Framework, agencies, infrastructures, and assets in place to plan for, and respond to emergencies.
Cross List: CPH 550.
Typically Offered: FALL/SPR

EPI 811 EMERGENCY PREPAREDNESS: PROTECTION 3 Credit Hours
An introduction to emergency preparedness concepts, in preparation for naturally occurring disasters, intentional acts of terrorism, and new emerging infectious disease threats. Students will explore Critical Infrastructure protection, agriculture, and food safety, surveillance and detection of biological agents among other topics.
Cross List: CPH 631.
Typically Offered: FALL/SP/SU

EPI 812 CHRONIC DISEASE PREVENTION AND CONTROL 3 Credit Hours
The target audience for this course includes, but is not limited to, student researchers and practitioners in the field of public health. The course will cover risk factors for major chronic diseases such as cancer, diabetes, musculoskeletal disease, and chronic lung disease. Through the course, students will learn advanced concepts and methodology in chronic disease epidemiology research, including disease surveillance and etiologic and outcomes research. Students will also gain experience developing a proposal to conduct an etiologic study of a selected chronic disease.
Prerequisite: EPI 820/EPI 821, BIOS 806/BIOS 816, Also recommended: BIOS 808/BIOS 818.
Cross List: CPH 620.
Typically Offered: FALL

EPI 813 EMERGENCY PREPAREDNESS: RESPONSE 3 Credit Hours
An introduction to disaster response-related concepts such as Responder Safety and Health, Citizen Evacuation, Weapons of Mass Destruction, and Medical Surge among other topics.
Cross List: CPH 553.
Typically Offered: FALL/SPR

EPI 814 EMERGENCY PREPAREDNESS: RESPOND AND RECOVERY 3 Credit Hours
An introduction to emergency preparedness concepts, focusing on disaster response-related concepts such as Medical Surge, Behavioral Health, and Mass Fatalities, in addition to short and long term disaster recovery topics.
Cross List: CPH 554.
Typically Offered: FALL/SPR

EPI 820 EPIDEMIOLOGY IN PUBLIC HEALTH 3 Credit Hours
The objective of the course is to understand the application of survey and research methodology in epidemiology, especially in the community setting. Theoretical aspects will be taught as an integral part of understanding the techniques of study design and community survey. Concepts to be covered include measure of disease occurrence, measures of disease risk, study design, assessment of alternative explanations for data-based findings, and methods of testing or limiting alternatives. Students will be expected to address an epidemiological question of interest to them, first developing the hypothesis and conducting a literature search, then developing a study design and writing, in several stages, a brief proposal for the study.
Cross List: CPH 504.
Typically Offered: FALL/SPR
EPI 821 APPLIED EPIDEMIOLOGY 3 Credit Hours
This course is designed to provide advanced-level graduate students with epidemiologic data analysis, interpretation and presentation skills. The course presents advanced principles and methods of Epidemiology through the use of simulated and actual research data. The course is suitable for both advanced-level master’s students and doctoral students in epidemiology and related fields. The primary goal is to provide working knowledge of the fundamentals of epidemiology to graduate students who wish to further their careers in public health research.
Prerequisite: Epidemiology I (EPI 820/CPH504).
Cross List: CPH 621
Typically Offered: FALL

EPI 822 MICROBIOLOGY & IMMUNOLOGY FOR PUBLIC HEALTH 3 Credit Hours
Microbiology has been the cornerstone for scientific discovery and advancement. This course is designed for graduate students and public health professionals interested in infectious diseases and their control, prevention and eradication. Students will learn to specifically apply the knowledge of microbiology and immunology for the benefit of public health. It is suitable for all graduate students and health professionals who wish to have experience in the planning of public health response in communicable diseases. A variety of methods such as assignments, intensive class discussions, quizzes, and a group presentation focusing on the use of microbiology and immunology in public health response, are incorporated to facilitate student-centered and collaborative learning.
Pre-req: CPH 605/ EPI 605 Human health and disease in public health or Instructor permission.
Cross List: CPH 622
Typically Offered: FALL

EPI 825 INFECTIOUS DISEASE EPIDEMIOLOGY: THEORY AND METHODS 3 Credit Hours
This course is designed to provide graduate students and health professionals with an understanding of the principles and methods of infectious disease epidemiology. Students will conceptualize, critically evaluate, and apply theories or epidemiology to infectious affecting human populations. Students will demonstrate knowledge and critical thinking of infectious diseases, diagnostic techniques, immune responses, and microbial adaptations. Students are expected to actively engage in class discussions as they learn about specific infectious diseases. Students will conceptualize disease transmission dynamics and apply the concepts of disease transmission to understand disease burden and transmission patterns in population. Students will be able to evaluate compartmental models and apply these models to infectious diseases. Students will also learn how to formulate research questions, develop study aims, build research designs, and measure outcomes in Infectious diseases.
Prerequisite: CPH 504/EPI 820, an equivalent epidemiology methods course of permission of instructor.
Cross List: CPH 623.
Typically Offered: SPRING

EPI 829 MICROBIOLOGY AND IMMUNOLOGY (ON CAMPUS) 3 Credit Hours
Microbiology has been the cornerstone for scientific discovery and advancement. This course is designed for graduate students and public health professionals interested in infectious diseases and their control, prevention and eradication. Students will learn to specifically apply the knowledge of microbiology and immunology for the benefit of public health. It is suitable for all graduate students and health professionals who wish to have experience in the planning of public health response in communicable diseases. A variety of methods such as assignments, intensive class discussions, quizzes, and a group presentation focusing on the use of microbiology and immunology in public health response, are incorporated to facilitate student-centered and collaborative learning.
Pre-req: Human health disease in public health or instructor permission.
Cross-listed: CPH 629
Typically Offered: FALL

EPI 835 HEALTH INFORMATION AND SURVEILLANCE FOR PUBLIC HEALTH PRACTICE 3 Credit Hours
This course focuses on the role of health information and health information systems for the practice of national, state- and community-level public health.
Prerequisite: BIOS 806/BIOS 816 or a similar graduate-level public health research methodology course, EPI 820/EPI 821.
Cross List: CPH 626.
Typically Offered: FALL/SPR

EPI 837 SOCIAL EPIDEMIOLOGY 3 Credit Hours
The purpose of this course is to introduce students to the major social variables relevant to public health and health outcomes typical of the field of Social Epidemiology. Anticipated topics include: social class, poverty, education and occupation, gender, race, social networks/ support, and work neighborhood environments.
Pre-req: CPH 504/EPI 820
Epidemiology in Public Health, Cross-listed: CPH 637
Typically Offered: SPRING

EPI 840 EPIDEMIOLOGICAL MEASUREMENTS AND RESEARCH IN MATERNAL AND CHILD HEALTH 2 Credit Hours
This course focuses on methodological tools for Maternal and Child Health (MCH) research and practice. It introduces key theoretical frameworks for understanding health problems, then addresses indicators and measurements of health and disease, types of studies needed or used in this field, then applies these to topical issues from fertility through quality of care.
Prerequisite: EPI 820/EPI 821, BIOS 806/BIOS 816, HPRO 880.
Cross List: CPH 627.
Typically Offered: SPRING

EPI 845 EPIDEMIOLOGIC METHODS 3 Credit Hours
This course is primarily designed for graduate students and health professionals interested in learning in-depth epidemiologic concept and methods. Methods covered in this course include approaches to minimize random and systematic error, advanced screening methods, systematic reviews and meta-analyses, nested case-control and case-cohort studies, matched case-control and cohort studies, clinical trials, longitudinal epidemiologic studies, and analyses of national surveys with multistage complex sampling. Students will practice their skills using SAS and RevMan on simulated and actual research data.
Prerequisite: BIOS 806, EPI 820, BIOS 810 is strongly recommended. Students should consult their academic advisor to determine if other coursework or experience qualifies as a prerequisite.
Typically Offered: FALL
EPI 846 MENTAL HEALTH EPIDEMIOLOGY 3 Credit Hours
The course will give an overview of epidemiology of mental disorders and discuss epidemiologic research methods used to study mental disorders. Students will gain experience in conceptualizing and preparing a research proposal in psychiatric epidemiology. The target audience for this course includes students, researchers, and practitioners in the fields of public health, medicine, nursing and other health science disciplines.
Prerequisite: EPI 820/CPH 504 or equivalent.
Cross List: CPH 646.
Typically Offered: FALL

EPI 896 RESEARCH OTHER THAN THESIS IN EPIDEMIOLOGY 1-4 Credit Hours
This course is for more advanced students who wish to pursue their research interests.
Cross List: CPH 647.
Typically Offered: FALL/SP/SU

EPI 898 SPECIAL TOPICS IN EPIDEMIOLOGY 1-4 Credit Hours
A course designed for Masters students that focuses on selected topics or problems in Epidemiology.
Cross List: CPH 649
Typically Offered: FALL/SPR

EPI 899 MASTERS THESIS 1-9 Credit Hours
Independent student research related to the masters thesis.
Typically Offered: FALL/SP/SU

EPI 900 EPIDEMIOLOGIC ANALYSIS OF BINARY AND INCIDENCE-RATE DATA 3 Credit Hours
Analysis of data from common epidemiological study designs using logistic, proportional hazards, and Poisson regression models. Covers model building, estimation, assessment of confounding and modification and threats to validity.
Prerequisite: EPI 845, BIOS 818; BIOS 810 or equivalent experience in statistical programming.
Typically Offered: FALL

EPI 910 RESEARCH GRANT PROPOSAL DEVELOPMENT 3 Credit Hours
This course offers graduate students and health professionals a practical experience writing a research grant proposal for submission to the National Institutes of Health (NIH). Students will learn how to formulate research questions, develop study aims, and build research designs closely tied to analysis plans and research outcomes. Students will learn how to find and respond to various federal and non-federal funding mechanism opportunities. Students will participate in a mock NIH study section, during which they will learn the NIH peer review process and they will critique research grant proposals. Throughout the course, students will work interactively with faculty members who have successfully served as principal investigators and co-investigators of multiple federally-funded research proposals or contracts in different disciplines.
Prerequisite: EPI 820 or equivalent introductory epidemiology course, BIOS 806 or equivalent introductory biostatistics course. Crosslisted: CPH 710.
Typically Offered: SPRING

EPI 923 EPIDEMIOLOGICAL METHODS IN INFECTIOUS DISEASE OUTBREAK INVESTIGATIONS 3 Credit Hours
What happens when a public health professional receives the first phone call about a potential outbreak? It triggers a chain of events and activities focused on identifying and containing the outbreak in a timely manner. In this course, students will learn about the different components of an outbreak investigation. Each outbreak is a unique event that requires the expertise in field epidemiology methods. This course is designed for graduate students and health professionals to learn these skills through in-class lectures, readings, class discussions and simulations. Faculty from the Department of Epidemiology will teach this course in cooperation with professionals from State and County Health Departments to offer an authentic learning experience. Real world examples will help in translating the theoretical principles into field procedures and protocols followed during outbreak investigations.
Prerequisite: EPI 820. Crosslisted: CPH 723.
Typically Offered: FALL

EPI 924 INFECTIOUS DISEASE MODELING 3 Credit Hours
This course is designed for graduate students and health professionals interested in utilizing mathematical models to predict communicable disease transmission and epidemic dynamics. The knowledge and skills acquired in this course will help students in designing strategies to mitigate infectious disease epidemics. Pre-reqs: CPH 623/ EPI 825 or equivalent infectious disease methods courses. Cross-listed: CPH 724
Typically Offered: FALL
EPI 925 THE PRACTICE OF INFECTIOUS DISEASE EPIDEMIOLOGY 3
Credit Hours
This course is designed to provide practical experience to students obtaining a PhD degree in Epidemiology with a concentration in Infectious Diseases (it may, however, be taken as an elective by doctoral-level students in other areas of concentration within the College of Public Health). As such, it covers practical problems which might arise in the practice of infectious disease epidemiology and is designed to prepare students about to embark on “real-world” careers with local and state health departments, clinical institutions, NGOs, and industry. These problems include (but are not limited to): bioterrorism preparation and response; planning for and managing patients with highly hazardous communicable diseases; implementing immunization programs; instituting and managing infection control and antibiotic stewardship programs; implementing isolation and quarantine orders; crafting patient safety initiatives; and overseeing quality assurance and laboratory management programs.
Prerequisite: CPH 504/ EPI 820 or instructor permission. Crosslisted: CPH 725.
Typically Offered: FALL

EPI 936 INFECTIOUS DISEASE AND CANCER 3 Credit Hours
The objective of this course is to adapt infectious diseases epidemiology theories and methods to current relevant problems in infectious disease and cancer. The course has a focus on emerging infectious agents and health problems and also applies them to the study of infectious agents that are related to cancers. The course is designed to prepare participants to conduct research and practice infectious disease epidemiology.
Prerequisite: EPI 820.
Typically Offered: FALL

EPI 941 EPIDEMIOLOGIC METHODS IN APPLIED CLINICAL GENETICS I 3
Credit Hours
This course is designed to prepare the graduate student on the theory and methods of genetic epidemiology of complex diseases using association studies. Major topics including: Mendelian inheritance, design strategies for genetic association studies, bias in genetic studies and population stratification, SNP selection, genotype diplotype and haplotype analyses, linkage disequilibrium, Hardy-Weinberg equilibrium (HWE), gene by environment interactions, power analysis, clinical review of genetic association manuscripts, and hands-on analysis using statistical and specialized genetics software.
Prerequisite: EPI 820, BIOS 806 and knowledge of a statistical package (SAS or SPSS) or instructor permission.
Typically Offered: SUMMER

EPI 945 ANALYTICAL EPIDEMIOLOGIC METHODS II 3 Credit Hours
This course is designed primarily for graduate and professional students interested in performing analyses of epidemiologic data. Topics include analyses of multinomial and longitudinal data, multiple imputation, Poisson regression, Geographic Information System (GIS) and genetic analyses. Students will practice their skills by performing SAS analyses of simulated and actual research data.
Prerequisite: Analytic Epidemiologic Methods I (EPI 821); Biostatistics I (BIOS 806), and Introduction to SAS Programming (BIOS 810). Students should consult their academic advisor if other coursework or experience qualifies as a prerequisite.
Typically Offered: FALL

EPI 946 EPIDEMIOLOGY IN PUBLIC HEALTH PRACTICE 3 Credit Hours
This course provides students the opportunity to explore public health problems and issues - such as infectious diseases, chronic diseases and preparedness - through the lens of epidemiology. By applying the concepts learned throughout their program coursework to current public health problems and issues, students will understand the practice of epidemiology as it relates to real life and informs public health programs and policies. This course is intended primarily for doctoral students in epidemiology and public health to apply their training to public health practice and research.
Prerequisite: EPI 845 (Epidemiologic Methods) or equivalent epidemiologic methods courses
Typically Offered: SPRING

EPI 952 MENTAL HEALTH EPIDEMIOLOGY 3 Credit Hours
In this on-campus course, students will learn about epidemiology of major mental and substance use disorders, critically review the published epidemiology studies on mental and substance use disorders, and develop a proposal to evaluate a population-based intervention program to prevent and control a mental or substance use disorder. The course will promote active learning and prepare students for real-world experience. This is an advanced-level epidemiology class for students, researchers, and practitioners in public health, medicine, nursing and other health science disciplines who completed EPI 810 (or equivalent) and EPI 845 (or equivalent).
Prerequisite: EPI 820 and EPI 845.
Cross List: CPH 752
Typically Offered: SPRING

EPI 953 CANCER EPIDEMIOLOGY 3 Credit Hours
The course covers the main concepts in cancer epidemiology, such as cancer incidence and mortality trends, cancer etiological factors, cancer prevention and control. Students will apply epidemiology research methods to the field of cancer and will learn how to identify research gaps and address them using epidemiology methods. In addition, the students will understand how cancer epidemiology contributes to policies that ultimately contribute to cancer prevention.
Prerequisite: EPI 820 or equivalent course or instructor permission.
Typically Offered: SPRING

EPI 955 ENVIRONMENTAL EPIDEMIOLOGY 3 Credit Hours
The course is designed to provide an advanced discussion of the epidemiology of environmentally-related disease and the application of epidemiologic concepts and methods to protecting public health from environmental hazards. Substantive topics include important environmental exposures; these are used to illustrate exposure assessment methodology, the dynamic nature of environments, the strengths and limitations of epidemiologic designs and the impact of regulation of environmental hazards in public health.
Prerequisite: EPI 821, BIOS 806 and ENV 816, or instructor permission.
Cross-listed: CPH 755.
Typically Offered: SUMMER
EPI 957 SURVEY RESEARCH METHODS 3 Credit Hours
This course is designed to prepare the graduate students and working professionals with a strong foundation in survey research methodology. This is a comprehensive course covering the design, implementation, analysis, interpretation, and reporting of epidemiologic survey results. The course includes hands-on experience with data analysis using SAS. In this course, students will also learn to search, access and analyze data from national surveys to conduct epidemiologic studies. Upon completion of the course, students are expected to be able to design and analyze surveys to address particular research questions or evaluate public health policy.
Prerequisite: Epidemiologic Methods (EPI 845), Biostatistics (CPH 506/BIOS 806) and Introduction to SAS Programming (CPH 651/BIOS 810). Students should consult with their advisor if other coursework or experience qualifies as prerequisite. Crosslisted: CPH 757
Typically Offered: FALL

EPI 958 EPIDEMIOLOGIC ANALYSIS OF HEALTHCARE DATA 3 Credit Hours
This course is designed for graduate and health professions students interested in analyzing healthcare data for epidemiologic and clinical research. Students will learn the unique challenges and opportunities of working with insurance claims data, electronic health records, national surveys and national registries. Students will also learn to use Geographic Information System (GIS) approaches to link social determinants of health and clinical outcomes. Students will practice their skills by performing hands-on analyses of simulated and actual research data. Upon completion of this course, students should be equipped with the tools necessary to analyze healthcare data and apply the results to address health care and public health challenges.
Prerequisite: CPH 621, CPH 506, CPH 651. Crosslisted: CPH 758
Typically Offered: FALL

EPI 960 TEACHING PRACTICUM 1 Credit Hour
The teaching practicum is designed to give doctoral students an opportunity to apply teaching theory, best practices and learning methods covered through epidemiology seminar series into teaching experience in a traditional classroom. Students will work with an epidemiology faculty member to design, develop and implement presentation plans, assessment to teach in a live classroom environment. Prerequisite: EPI 820 or instructor permission. Crosslisted: CPH 760
Typically Offered: FALL

EPI 970 SEMINAR 1 Credit Hour
A series of scientific sessions on current topics exploring advanced concepts and methods in epidemiology. The course will promote the development of knowledge of epidemiologic methods, analytic approaches, disease etiology, natural history, and current issues related to the application of these concepts for conducting epidemiologic research and practice.
Prerequisite: Standing as a doctoral student in epidemiology.
Typically Offered: FALL/SPR

EPI 996 DIRECTED READINGS AND RESEARCH 1-9 Credit Hours
This course is specific to doctoral level work in the College of Public Health. Content of this independent study may include research other than dissertation, directed readings, and other study of a doctoral level all under the supervision of a graduate faculty member.
Prerequisite: Doctoral student status and program permission.
Typically Offered: FALL/SP/SU

EPI 998 DOCTORAL SPECIAL TOPICS 1-4 Credit Hours
A course designed for Epidemiology PhD students and other graduate students that focuses on selected topics or problems in Epidemiology.
Prerequisite: Permission of instructor.
Typically Offered: FALL/SP/SU

EPI 999 DOCTORAL DISSERTATION 1-15 Credit Hours
The dissertation represents original and significant research on a defined epidemiological problem. This research is the culmination of a training process designed to ready the student to do independent research including development of a research question, data collection, analysis and interpretation.
Prerequisite: Permission of instructor.
Typically Offered: FALL/SP/SU