Course Offering-Department of Epidemiology

Advanced Epidemiologic Methods ♦ Cancer Prevention & Cancer Epidemiology ♦ Cardiovascular Epidemiology ♦ Clinical Epidemiology ♦ Environmental & Occupational Epidemiology ♦ Epidemiologic Methods ♦ Epidemiology of Aging ♦ Infectious Disease Epidemiology ♦ Genetic Epidemiology & Statistical Genetics ♦ Neuro-Psychiatric Epidemiology ♦ Nutritional Epidemiology ♦ Pharmacoepidemiology ♦ Reproductive, Perinatal, & Pediatric Epidemiology ♦ Research

Course Listing by Term ♦ Course listing by Area of Interest ♦ Course Catalog by Area of Interest

Course Listing by Term

Fall1

EPI 201	Epidemiologic Methods I	2.5 credits
EPI 207	Advanced Epidemiologic Methods	2.5 credits
WGH 211	Gender and Health: Introductory Perspectives	2.5 credits
EPI 215	Advanced Topics Case Control Cohort Study	2.5 credit
EPI 217	Epi of Adult Psych Disorders	2.5 credits
EPI 221	Pharmacoepidemiology	2.5 credits
EPI 249	Molecular Biology for Epidemiologists	2.5 credits
EPI 515	Measure Error & Misclassification in Epi	1.25 credits

Fall2

EPI 202	Epidemiologic Methods II	2.5 credits
EPI 219	Assessment Concepts/Methods in Psych Epi	2.5 credits
EPI 223	Cardiovascular Epidemiology I	2.5 credits
EPI 246 (Even Years)	Applied Biomarkers in Cancer Epi	2.5 credits
EPI 247	Epi Methods Development: Past and Present	2.5 credits
EPI 257 (Even Years)	Advanced Seminar in Cancer Epi	2.5 credits
EPI 269	Epi Research in Ob/Gyn	2.5 credits
EPI 286	Database Analytics in Pharmacoepidemiology	2.5 credits
EPI 507	Genetic Epidemiology	2.5 credits
EPI 519	Evolutionary Epi of Infectious Disease	2.5 credits
EPI 523	Investigating Outbreaks	1.25 credits
ID 510 (Odd Years)	Nutritional Epi of Cancer	2.5 credits
ID 269	Respiratory Epi	1.25 credits

Fall

ID 201	Core Principles of Biostats & Epi for Public Health Practice	7.5 credits
EPI 205	Practice of Epidemiology	2.5 credits
EPI 242-1	Practice and Culminating Experience for Clinical Effectiveness (Academic Year)	1.25 credits
EPI 242-2	Practice and Culminating Experience for Clinical Effectiveness (Academic Year)	1.25 credits
ID 537	Obesity Epidemiology	2.5 credits
EPI 522	Analytics Methods for Epidemiology	5 credits
EPI 526	Analysis of Publicly Available Databases for Epidemiologic and Health Services Research	2.5 credits
EPI 527	Design and Conduct of Trials in Preventive Medicine	2.5 credits
EPI 528	Systematic Review and Meta-Analysis	2.5 credits

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Winter

EPI 209	Epi Methods Patient Safety & Quality	1.25 credits
EPI 230 (Even Years)	Religion and Public Health	1.25 credits
EPI 227	Child Psych Epidemiology	1.25 credits
EPI 271	Propensity Score Analysis	1.25 credits
EPI 293	Analysis of Genetic Association Studies	2.5 credits
EPI 502 (Odd Years)	Bio and Epi of Antibiotic Resist	2.5 credits
EPI 508 (Even Years)	Pathology for Epidemiologists	1.25 credits
EPI 510	Global Cancer Epidemiology	1.25 credits

Spring1

EPI 213	Epidemiology of Cancer	2.5 credits
EPI 235	Epi Methods in Health Services Rsch	2.5 credits
EPI 289	Models for Causal Inference	2.5 credits
EPI 511	Adv Population & Med Genetics	2.5 credits
EPI 517	Issues in Frailty	1.25 credits
ID 206	Scientific Writing in Nutrition and Epi	2.5 credits
ID 271	Advanced Regression: Env Epi	2.5 credits
EPI 524	Confounding Control: A Component for Causal Inference	2.5 credits
ID 542	Methods for Mediation and Interaction	2.5 credits
EPI 284	Epidemiology of Neurologic Diseases	2.5 credits
EPI 501	Dynamics Infectious Disease	2.5 credits
EPI 255 (Even Years)	EPI of HIV, Part I: Etiology, Natural History & Transmission	2.5 credits

Spring2

EPI 224	Cancer Prevention	2.5 credits
EPI 203	Study Design	2.5 credits
EPI 204	Analysis Case Cont. Cohort Epi Data	2.5 credits
EPI 260 (Odd Years)	Math Modeling: Infectious Diseases	2.5 credits
EPI 270 (Odd Years)	Advanced Reproductive Epidemiology	1.25 credits
EPI 222 (Even Years)	Genetic Epi of Diabetes, Obesity, & Their Complications	2.5 credits
EPI 240 (Even Years)	Biomarkers in Epidemiology Research	1.25 credits
EPI 254 (Even Years)	The Epidemiology of Aging	1.25 credits
EPI 256 (Even Years)	Epidemiology of HIV Part II	2.5 credits
NUT 214	Global CVD and Met Health	2..5 credits
EPI 525	Study Designs for Epidemiologists	2.5 credits

Spring

EPI 288	Introduction to Data Mining and Rist Prediction	2.5 credits
EPI 233	Research Synth & Meta-Analysis	2.5 credits
EPI 242-1	Practice and Culminating Experience for Clinical Effectiveness (Academic Year)	1.25 credits
EPI 242-2	Practice and Culminating Experience for Clinical Effectiveness (Academic Year)	1.25 credits
ID 215	Environ & Occ Epidemiology	2.5 credits
ID 214	Nutritional Epi	2.5 credits
EPI 330	Practice & Culminating Experience for Epidemiology - MPH EPI	5 credits/7.5 credits

Summer1

EPI 210	Study Design in Clinical Epi	2.5 credits
EPI 236	Analytical Clinical Epi	5 credits
EPI 500	Fundamentals of Epidemiology	2.5 credits
ID 505	Epi Methods for Global Health	2.5 credits

ID 207	Intro to Epidemiology and Biostats	7.5 credits
ID 215	Environ & Occup Epidemiology	2.5 credits

Summer2

EPI 202	Epidemiologic Methods II	2.5 credits
EPI 253	Effective Research Long. Hlthcare Dbases	2.5 credits

Summer

EPI 208	Intro to Clinical Epidemiology	5 credits
ID 208	Intro to Epi & Bio	1.25-12.5 credits

Course Listing by Area

Advanced Epidemiologic Methods

EPI 207	Advanced Epidemiologic Methods	2.5 credits	Fall 1
EPI 215	Advanced Topics Case Control Cohort Study	2.5 credits	Fall 1
EPI 235	Epi Methods in Hlth Svcs Rsch	2.5 credits	Spring 1
EPI 289	Models for Causal Inference	2.5 credits	Spring 2
EPI 515	Measure Error & Misclassification in Epi	1.25 credits	Fall 1
EPI 524	Confounding Control: A Component for Causal Inference	2.5 credits	Spring 1
ID 542	Methods for Mediation and Interaction	2.5 credits	Spring 1

Cancer Prevention & Cancer Epidemiology

EPI 213	Epidemiology of Cancer	2.5 credits	Spring 1
EPI 224	Cancer Prevention	2.5 credits	Spring 2
EPI 240 (Even Years)	Biomarkers in Epidemiology Rsc	1.25 credits	Spring 2
EPI 246 (Odd Years)	Applied Biomarkers in Cancer Epi	2.5 credits	Fall 2
EPI 257 (Even Years)	Advanced Seminar in Cancer Epi	2.5 credits	Fall 2
ID 510 (Odd Years)	Nutritional Epi of Cancer	2.5 credits	Fall 2
EPI 508 (Even Years)	Pathology for Epidemiologist	1.25 credits	Winter
EPI 510	Global Cancer Epidemiology	1.25 credits	Winter

Cardiovascular Epidemiology

NUT 214	Global CVD and Met. Health	2.5 credits	Spring 2
EPI 223	Cardiovascular Epidemiology I	2.5 credits	Fall 2

Clinical Epidemiology

EPI 203	Study Design in Epi Research	2.5 credits	Spring 2
EPI 208	Intro Clinical Epidemiology	5 credits	Summer
EPI 210	Study Design in Clinical Epi	2.5 credits	Summer 1
EPI 236	Analytical Clinical Epi	5 credits	Summer 1
EPI 242-1	Practice and Culminating Experience for Clinical Effectiveness (Academic Year)	1.25 credits	Fall or Spring
EPI 242-2	Practice and Culminating Experience for Clinical	1.25 credits	Fall or Spring

	Effectiveness (Academic Year)		
EPI 253	Eff Rsrch Long Hlthcare Dbases	2.5 credits	Summer 2
EPI 525	Study Designs for Epidemiologists	2.5 credits	Spring 2

Environmental & Occupational Epidemiology

ID 215	Environ & Occup Epidemiology	2.5 credits	Spring
ID 215	Environ & Occup Epidemiology	2.5 credits	Summer 1
ID 269	Respiratory Epi	1.25 credits	Fall 2
ID 271	Advanced Regression:ENV EPI	2.5 credits	Spring 1

Epidemiologic Methods

EPI 201	Epidemiologic Methods I	2.5 credits	Fall 1
ID 201	Core Principles of Biostats & Epi for Public Health Practice	7.5 credits	Fall
EPI 202	Methods 2: Elements of Epidemiologic Research	2.5 credits	Fall 2
EPI 202	Epidemiologic Methods 2	2.5 credits	Summer 2
EPI 204	Analysis Case-Cont Cohrt Epi Data	2.5 credits	Spring 2
ID 207	Intro to Epidemiology and Biostats	7.5 credits	Summer 1
ID 208	Intro to Epidemiology and Biostats	1.25-12.5 credits	Summer
EPI 209	EPI Methods Patient Safety & Quality	1.25 credits	Winter
ID 215	Environ & Occup Epidemiology	2.5 credits	Summer 1
EPI 230 (Even Years)	Religion and Public Health	1.25 credits	Winter
EPI 233	Research Synthesis & Meta-Analysis	2.5 credits	Spring
EPI 235	Epi Methods in Hlth Svcs Rsch	2.5 credits	Spring 1
EPI 247	EPI Methods Development: Past and Present	2.5 credits	Fall 2
EPI 271	Propensity Score Analysis: Theoretical & Practical Considerations	1.25 credits	Winter
EPI 288	Introduction to Data Mining and Risk Prediction	2.5 credits	Spring
EPI 289	Models for Causal Inference	2.5 credits	Spring 2
EPI 500	Fundamentals of Epidemiology	2.5 credits	Summer 1
ID 505	Epi Methods for Global Health	2.5 credits	Summer 1
EPI 515	Measure Error & Misclassification in Epi	1.25 credits	Fall 1
EPI 522	Analytics Methods for Epidemiology	5 credits	Fall
EPI 526	Analysis of Publicly Available Databases for Epidemiologic and Health Services Research	2.5 credits	Fall
EPI 527	Design and Conduct of Trials in Preventive Medicine	2.5 credits	Fall
EPI 528	Systematic Review and Meta-Analysis	2.5 credits	Fall
ID 542	Methods for Mediation and Interaction	2.5 credits	Spring 1

Epidemiology of Aging

EPI 254	Epidemiology of Aging	1.25 credits	Spring 2
EPI 517	Issues of Frailty	1.25 credits	Spring 1

Infectious Disease Epidemiology

EPI 255 (Even Years)	Epi of HIV, Part1: Etiology, Natural History & Transmission	2.5 credits	Spring 1
EPI 256 (Even Years)	Epidemiology of HIV Part II	2.5 credits	Spring 2
EPI 260 (Odd Years)	Math Modeling: Infect Diseases	2.5 credits	Spring 2
EPI 501	Dynamics Infectious Diseases	2.5 credits	Spring 1
EPI 502 (Odd Years)	BIO & EPI of Antibiotic Resist	2.5 credits	Winter
EPI 519	Evolutionary Epi of Infectious Disease	2.5 credits	Fall 2

4

EPI 523	Investigating Outbreaks	1.25 credits	Fall 2

Genetic Epidemiology & Statistical Genetics

EPI 222	Genetic Epi of Diabetes, Obesity, & Their Complications	2.5	Spring 2
EPI 249	Molecular Biology for Epidemiologists	2.5 credits	Fall 1
EPI 293	Analysis of Genetic Association Studies	2.5 credits	Winter
EPI 507	Genetic Epidemiology	2.5 credits	Fall 2
EPI 511	Adv Population & Med Genetics	2.5	Spring 1

Neuro-Psychiatric Epidemiology

EPI 217	Epi of Adlt Psych Disorders	2.5 credits	Fall 1
EPI 219	Assessment Concepts/Methods in Psych Epi	2.5 credits	Fall 2
EPI 227	Child Psych Epidemiology	1.25 credits	Winter
EPI 284 (Even Years)	Epidemiology of Neurologic Diseases	2.5 credits	Spring 2

Nutritional Epidemiology

ID 206	Scientific Writing in Nutrition & Epi	2.5 credits	Spring 1
ID 214	Nutritional Epi	2.5 credits	Spring
NUT 214	Global CVD and Met. Health	2.5 credits	Spring 2
ID 537	Obesity Epi	2.5 credits	Fall

Pharmacoepidemiology

EPI 221	Pharmacoepidemiology	2.5 credits	Fall 1
EPI 286	Advanced Pharmacoepidemiology Database Analytics in Pharmacoepidemiology	2.5 credits	Fall 2

Reproductive, Perinatal, & Pediatric Epidemiology

WGH 211	Women, Gender & Hlth:Intro Perspective	2.5 credits	Fall 1
EPI 269	Epi Research in Ob/Gyn	2.5 credits	Fall 2
EPI 270 (Odd Years)	Advanced Reprod. Epidemiology	1.25 credits	Spring 2

Research

EPI 205	Practice of Epidemiology	2.5 credits	Fall
EPI 242-1	Practice and Culminating Experience for Clinical Effectiveness (Academic Year)	1.25 credits	Fall or Spring
EPI 242-2	Practice and Culminating Experience for Clinical Effectiveness (Academic Year)	1.25 credits	Fall or Spring
EPI 300	Independent Study	Variable	All Terms by Request
EPI 315	Research: Clinical Epidemiology	Variable	All Terms by Request
ID 320	Practice & Culminating Experience for Clinical Effectiveness (Summer-Only)	2.5-7.5 credits	All Terms by Request
EPI 330	Practice & Culminating Experience for Epidemiology - MPH EPI	5 credits/7 credits	Spring
EPI 350	Research	Variable	All Terms by Request

[Advanced Epidemiologic Methods](#) ♦ [Cancer Prevention & Cancer Epidemiology](#) ♦ [Cardiovascular Epidemiology](#) ♦ [Clinical Epidemiology](#) ♦ [Environmental & Occupational Epidemiology](#) ♦ [Epidemiologic Methods](#) ♦ [Epidemiology of Aging](#) ♦ [Infectious Disease Epidemiology](#) ♦ [Genetic Epidemiology & Statistical Genetics](#) ♦ [Neuro-Psychiatric Epidemiology](#) ♦ [Nutritional Epidemiology](#) ♦ [Pharmacoepidemiology](#) ♦ [Reproductive, Perinatal, & Pediatric Epidemiology](#) ♦ [Research](#)

[Course Listing by Term](#) ♦ [Course listing by Area of Interest](#) ♦ [Course Catalog by Area of Interest](#)

Course Listing Detail

Advanced Epidemiologic Methods

EPI 207	Advanced Epidemiologic Methods	2.5 credits	Fall 1
Provides an in-depth investigation of statistical methods for drawing causal inferences from observational studies. Informal epidemiologic concepts such as confounding, selection bias, overall effects, direct effects, and intermediate variables will be formally defined within the context of a counterfactual causal model and with the help of causal diagrams. Methods for the analysis of the causal effects of time-varying exposures in the presence of time dependent covariates that are simultaneously confounders and intermediate variables will be emphasized. These methods include g-computation algorithm estimators, inverse probability weighted estimators of marginal structural models, g-estimation of structural nested models. As a practicum, students will reanalyze data sets using the above methods. **Course Activities**: Class discussion, homework, practicum and final examination.			
Course Notes	Course Prerequisites: EPI 289 and (EPI 204 or BST 210 or BST 223) Familiarity with logistic regression and survival analysis is expected; lab time will be announced at first meeting.		

EPI 215	Advanced Topics Case Control Cohort Study	2.5 credits	Fall 1
This course primarily extends the applications of parametric regression models covered in EPI204 to address additional and related analytic issues encountered in epidemiologic research. Topics include techniques for modeling continuous and polytomous exposures, methods to account for missing data, doubly-robust modeling, and issues involved in high dimensional data analysis, building and assessing risk prediction models, and sample size calculations. Emphasis is on applications of interpretations of results with limited introduction to theory that underlies these techniques. Familiarity with SAS is desirable.			
Course Notes	Course Prerequisites: EPI 204		

EPI 235	Epi Methods in Hlth Svcs Rsch	2.5 credits	Spring 1
This course is designed to introduce students to the application of standard and advanced epidemiologic methods to health services research (HSR), comparative effectiveness research (CER), and patient-centered outcomes research (PCOR). Students will learn to recognize the principles of epidemiology in HSR, CER, and PCOR and understand the terminology and methods specific to the field. Threats to validity including confounding, selection bias, information bias, and methods for their control will be discussed in a variety of settings, especially in studies that analyze electronic healthcare databases. Topics include health policy and program evaluation, risk adjustment, benchmarking, patient-reported outcomes, evaluation of cost outcomes, designed delay and pragmatic randomized trials, and research embedded within health care systems. The clinical, economic, policy and public health impact of HSR, CER, and PCOR will be discussed.			
Course Notes	(ID200 or BIO200 or ID201 or BIO201 or BIO202&203 or BIO206&207/8/9 or PHS2000A) AND (ID200 or EPI200 or EPI201 or EPI208 or EPI500 or ID201 or EPI505); may not be taken concurrently.		

EPI 289	Models for Causal Inference	2.5 credits	Spring 2
Causal Inference is a fundamental component of epidemiologic research. EPI289 describes models for causal inference, their application to epidemiologic data, and the assumptions required to endow the parameter estimates with a causal interpretation. The course introduces outcome regression, propensity score methods, the parametric g-formula, inverse probability weighting of marginal structural models, g-estimation of nested			

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Course Listing by Term ♦ Course listing by Area of Interest ♦ Course Catalog by Area of Interest

structural models, and instrumental variable methods. Each week students are asked to analyze the same data using a different method. EPI289 is designed to be taken after EPI201/EPI202 and before EPI204 and EPI207. The epidemiologic concepts and methods studied in EPI201/202 will be reformulated within a modeling framework in EPI289. This is the first course in the sequence of EPI core courses on modeling (EPI 289. EPI 204, EPI 207). EPI 289 focuses on time-fixed continuous exposures and failure time outcomes (survival analysis) will be discussed in EPI204, and to time-varying exposures in EPI207.EPI289 is the first course in the sequence of EPI core courses on modeling (EPI289, EPI204, EPI207). Familiarity with the SAS language is strongly recommended for all courses in the sequence.

Course Notes	EPI201 and EPI202; may not be taken concurrently.

EPI 515	Measure Error & Misclassification in Epi	1.25 credits	Fall 1
This course focuses on methods for the analysis of data when covariates are misclassified or measured with error. It will cover theory for valid estimation and inference in this setting, as well as application of the theory to current epidemiologic studies using computer software developed for this purpose. Methods for contingency tables and generalized linear models will be addressed. Topics include likelihood-based methods, regression calibration and optimal study design. Examples from the Nurses' Health Study and other epidemiologic studies will be used to motivate the lectures and provide compelling and realistic examples.			
Course Notes	Course Prerequisite(s): Requires EPI202 and EPI204 (BST222 is recommended) Course is mutually exclusive with BIO515. You may not take both this course and BIO515.		

EPI 524	Confounding Control: A Component of Causal Inference	2.5 credits	Spring 1
Controlling for confounding is a fundamental component of epidemiologic research. EPI524 describes models for confounding control (or adjustment), their application to epidemiologic data and the assumptions required to endow the parameter estimates with a causal interpretation. The course introduces students to two broad sets of methods for confounding control: methods that require measuring and appropriately adjusting for confounders, and methods that do not require measuring the confounders. Specifically, the course introduces outcome regression, propensity scores methods, the parametric g-formula, inverse probability weighting of marginal structural models, and instrumental variable methods as means for confounding control. EPI524 is designed to be taken after EPI522. The models described in EPI524 are for time-fixed dichotomous exposures and dichotomous, continuous, and failure time (e.g., survival) outcomes.			
Course Notes	This course is for MPH-EPI students only, no exceptions Prerequisites: EPI522 and MPH-EPI only. Concurrent enrollment allowed.		

ID 542	Methods for Mediation and Interaction	2.5 credits	Spring 1
The course will approach concepts and methods for mediation and interaction from the perspective of the counterfactual framework. The first part of the course will be concerned with mediation analysis, that is assessing the extent to which the effect of an exposure on some outcome is mediated through a particular intermediate and the extent to which it is direct or through other pathways. Definitions, theoretical identification results and statistical techniques related to mediation analysis will be covered. The material in this part of the course will clarify the assumptions required for the estimation of direct and indirect effect and will extend the approach to mediation typically employed in epidemiology and the social sciences to settings with interactions, non-linearities and time-varying exposures. The second part of the course will cover concepts and methods for interaction. Conceptual issues concerning interaction, effect modification and the relation and non-correspondence of statistical and mechanistic notions of interaction will be discussed. Empirical tests for biologic synergism and			

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Course Listing by Term ♦ Course listing by Area of Interest ♦ Course Catalog by Area of Interest

genetic epistasis will be discussed along with practical methods to implement such tests. Attention will be given to power and sample size calculations for interaction analyses and to assessing interaction in a variety of study designs including cohort, case-control, case-only, family-based and GWAS designs. If time permits, the course will conclude by offering an introduction to casual inference methods for addressing problems of social interaction, interference and spillover effects which arise in settings in which the exposure of one individual may affect the outcomes of other individuals. Prerequisites can be waived at the instructor's discretion.			
Course Notes	Course Prerequisite(s): EPI289 or EPI207 or BIO291		

Cancer Prevention & Cancer Epidemiology

EPI 213	Epidemiology of Cancer	2.5 credits	Spring 1
The aim of this course is to present an overview of the basic concepts and issues central to cancer epidemiology. We consider the descriptive epidemiology of cancer with a focus on patterns of cancer across the world. We discuss a range of risk factors for cancer, taking into account the underlying biology and pathology of disease. We present topics both with respect to key cancer exposures, including smoking, radiation, nutrition, and hormones, and also highlight selected malignancies.			
Course Notes			

EPI 224	Cancer Prevention	2.5 credits	Spring 2
The course will help students develop a framework for analyzing and designing cancer prevention interventions to reduce the burden of cancer. Approaches to cancer prevention will be reviewed with the principal emphasis on primary prevention. The lectures and readings will examine different theoretical and practical issues around effectiveness, feasibility, and sustainability of interventions, including theories of behavior change, population vs. high-risk approaches, risk perception and communication, and barriers to implementation. Through problem-based learning exercises, students will review the strategies for cancer prevention in the areas of tobacco control, physical activity and obesity, and screening and vaccines, in addition to other topics. We will emphasize the timing of prevention in the context of the natural history of disease etiology (e.g. breast cancer) and consider population-based approaches to prevention (e.g. skin cancer). Strategies for prevention on multiple levels will also be examined. Levels of intervention from action by health care providers (e.g., counseling and screening), regulatory policy, social structural changes, and individual behavior changes will be emphasized. Key components necessary for prevention policy will include an adequate knowledge base, social strategies, and political will. Students will have homework assignments to collect and summarize information based on case studies, which will be used to develop a cancer prevention intervention as a final project. Grades will be based on class participation, short homework assignments and a final project paper and presentation. Course Note: Requirement in the Cancer Education Program.			
Course Notes	EPI202 or ID201; may not be taken concurrently.		

EPI 240 (Even Years)	Biomarkers in Epidemiology Rsc	1.25 credits	Spring 2
The purpose of this course is to provide students with an overview of the issues pertinent to the collection, measurement, and statistical analysis of biomarker data. The course aims to address general principles within the context of relevant examples. Topics to be covered include study-design considerations, sample storage, sources of laboratory variability, assay evolution and use of pooled samples, among others.			
Course Notes	EPI200 or EPI201 or EPI208 or EPI505 or ID201; may not be taken concurrently.		

EPI 246 (Odd Years)	Applied Biomarkers in Cancer Epi	2.5 credits	Fall 2
Course Notes			

EPI 257 (Even Years)	Advanced Seminar in Cancer Epi	2.5 credits	Fall 2
This course is an advanced seminar in current cancer research. The goal of this course is to present an integrated view of current issues central to cancer epidemiology. We will build on knowledge gained in other courses and cover cancer sites not typically discussed in other courses. The course will take a global perspective on cancer epidemiology, and will emphasize the integration of knowledge from other courses. The course is intended for graduate students who have a research focus in, or a strong interest in cancer epidemiology and cancer prevention. Meetings are expected to be participatory discussions about the current status and future directions for research in the selected areas. Previous enrollment in EPI213 Cancer Epidemiology is recommended.			
Course Notes	Previous enrollment in EPI213 Cancer Epidemiology is recommended.		

ID 510 (Odd Years)	Nutritional Epi of Cancer	2.5 credits	Fall 2
This course will examine several current nutrition and cancer research areas with a focus on critical evaluation of recent publication, discussion of methodologic issues, and mechanistic studies. The different components of putting together a research grant will also be discussion. Course activates: Class participation, oral presentation, final projects that is a grant proposal on a specific nutrition and cancer association.			
Course Notes			

EPI 508 (Even Years)	Pathology for Epidemiologist	1.25 credits	Winter
This course provides student an introduction to pathology as a tool to understand the pathogenesis of disease, with a focus on pathology of cancer and pre-neoplastic conditions. Students will be exposed to the systems of classification of tumors and other processes through review of histology slides. In addition, they will be introduced to immunohistochemistry and other molecular pathology techniques used in epidemiology research.			
Course Notes			

EPI 510	Global Cancer Epidemiology	1.25 credits	Winter
This course provides students an introduction to the global epidemiology of cancer as a tool to understand the worldwide pattern of cancer, the main risk factors operating in different regions, and the main approaches for cancer prevention and control. Emphasis is given to cancer in low- and medium-resource countries, including cancers of the liver, esophagus, cervix, and stomach. Class Notes: Course meeting dates: 1/9 - 1/13			
Course Notes			

Cardiovascular Epidemiology

NUT 214	Global CVD and Met. Health	2.5 credits	Spring 2
Reviews methods for assessing the dietary intake of populations and individuals. Students gain experience in the actual collection, analysis and interpretation of dietary intake. The course also reviews several specific diet/disease			

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Course Listing by Term ♦ Course listing by Area of Interest ♦ Course Catalog by Area of Interest

relationships, integrating information from international studies, secular trends, clinical trials, analytical epidemiology, and animal experiments.	
Course Notes	ID538 or [(BIO200 or ID200 or BIO201 or ID201 or BIO202&203 or BIO206&207/8/9) and (EPI200 or EPI201 or EPI208 or EPI505)]

EPI 223	Cardiovascular Epidemiology I	2.5 credits	Fall 2
This course reviews the epidemiology of cardiovascular disease, including the major cardiovascular diseases, related conditions, emerging risk factors, and current controversies. The principal methods used, and their limitation, will also be discussed. Both historically important and current research will be presented. Grades are based on participation in class discussions, brief written paper critiques, and an in-class presentation. There is no midterm or final exam.			
Course Notes			

Clinical Epidemiology

EPI 203	Study Design in Epi Research	2.5 credits	Spring 2
Beginning with the randomized clinical trial as a paradigm, this course examines common problems in the design, analysis, and interpretation of observational studies. Cohort and case-control studies are the focus of the discussion, but not to the exclusion of other designs. Problems of exposure and disease definitions, time-dependent effects, confounding, and misclassification are considered in the light of data sources typically available. Relevant statistical methods are introduced but not developed in detail.			
Course Notes	EPI202 and (BIO200 or ID200 or BIO201 or BIO202&203 or BIO206&207/8/9 or PHS 2000A). May not be taken concurrently.		
EPI 210	Study Design in Clinical Epi	2.5 credits	Summer 1
The purpose of this class is to discuss the principles and methods of epidemiology for quantitative clinical research, i.e. clinical epidemiology; to demonstrate their applicability in research in clinical medicine; and to demonstrate their relations with public health research. At the end of the course the student will be able to do the following: Critically interpret the literature in the field of clinical epidemiology. Evaluate critically major clinical epidemiologic issues concerning diagnosis, prognosis and treatment. Design and analyze a treatment efficacy study. Design and analyze a treatment safety study. The course includes both didactic lectures and small group exercises and workshops. The exercises will provide the opportunity to discuss, in greater depth, the principles covered in the lectures.			
Course Notes	Course Prerequisites: EPI208 or EPI500 or ID201 or EPI201 or ID207 or EPI505 or ID200. This course is intended to be a bridging course between introductory courses in epidemiology and clinical effectiveness and advanced specialized courses in specific topics in clinical epidemiology and clinical research.		

EPI 208	Intro Clinical Epidemiology	5 credits	Summer
This course is an introductory-level course and covers the principles and methods used in traditional and clinical epidemiologic research through a series of lectures, exercises, seminars, workshops and presentations. This course is targeted at individuals planning to conduct clinical research. Course Activities: Written assignments, computer exercises, seminar discussion; each student is required to develop a study proposal that addresses a specific clinical problem and to formally present this proposal to the class. These proposals are then written in grant application format as the final paper for the course. Seminars are held during scheduled class time.			
Course Notes	Course is mutually exclusive with EPI200, EPI201, EPI500, EPI505, ID200, and ID538. You may		

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Course Listing by Term ♦ Course listing by Area of Interest ♦ Course Catalog by Area of Interest

	not take both this course and any of those courses. Course Restricted: Program in Clinical Effectiveness participants only (or instructor permission)		

EPI 236	Analytical Clinical Epi	5 credits	Summer 1
This course examines some features of study design, but is primarily focused on analytic issues encountered in clinical research. These include techniques for stratified analysis, regression modeling, propensity scores, matching and recursive partitioning. Emphasis is placed on the use of these techniques for the control of confounding and the development of clinical prediction rules. The focus of this course is on applications and interpretations of results with limited introduction to theory that underlies these techniques. Course Activities: Seminars are scheduled during regular class time. Students must develop a written summary of the analysis of a clinical data set based on the results of daily computer exercises. All no degree students must request permission from instructor.			
Course Notes	Course requires basic BIO and EPI requirements: (ID200 or EPI201 or EPI208 or EPI500 or EPI505) AND (BIO200 or ID200 or BIO201 or BIO202&203 or BIO206&207 or BIO206&208) Open exclusively to second year degree students in the following programs: Summer only MPH in CLE Summer only MPH in QM Summer only MS1 in EPI Academic year MPH in CLE Academic year MS1 in EPI		

EPI 242-1	Practice and Culminating Experience for Clinical Effectiveness (Academic Year)	1.25 credits	Fall/Spring
This seminar serves as a forum for students' clinical epidemiologic research. In the process, students are exposed to a variety of research designs, analytic strategies, and content areas. There is active class discussion. Faculty emphasize methodologic issues pertinent to the class research presentation. Course Activities: Student presentations or written assignment			
Course Notes	Must register in each appropriate semester; separate grade given at the end of each semester. Instructor approval required for all NON-MPH CLE students.		

EPI 242-2	Practice and Culminating Experience for Clinical Effectiveness (Academic Year)	1.25 credits	Fall/Spring
EPI242, SECTION 1 Daniel Singer (Primary Instructor) This seminar serves as a forum for students' clinical epidemiologic research. In the process, students are exposed to a variety of research designs, analytic strategies, and content areas. There is active class discussion. Faculty emphasizes methodologic issues pertinent to the class research presentation. Course Activities: Student presentations or written assignment Course Note: Must register in each appropriate semester; separate grade given at the end of each semester. Instructor approval required for all NON-MPH CLE students.EPI242, SECTION 2 Heather Baer (Primary Instructor) This seminar is an alternative to the EPI242 Section 1 seminar on Friday mornings. This section is reserved for MPH-CLE students who are unable to attend the Friday morning EPI242 seminar on a regular basis, due to clinical responsibilities or other unavoidable conflicts. Students in Section 2 must attend another works-in-progress research seminar in their department or division on a weekly basis (subject to approval by the Instructor), and they must present their own work and get			

11

Advanced Epidemiologic Methods ♦ Cancer Prevention & Cancer Epidemiology ♦ Cardiovascular Epidemiology ♦ Clinical Epidemiology ♦ Environmental & Occupational Epidemiology ♦ Epidemiologic Methods ♦ Epidemiology of Aging ♦ Infectious Disease Epidemiology ♦ Genetic Epidemiology & Statistical Genetics ♦ Neuro-Psychiatric Epidemiology ♦ Nutritional Epidemiology ♦ Pharmacoepidemiology ♦ Reproductive, Perinatal, & Pediatric Epidemiology ♦ Research

Course Listing by Term ♦ Course listing by Area of Interest ♦ Course Catalog by Area of Interest

feedback from faculty and colleagues. The goal is to expose students to a variety of research designs, analytic strategies, and content areas. Course Activities: Students must participate in regular research seminars, work on their own research projects, and present their work. Course Note: You must register in each appropriate semester (need 2 semesters total); separate grade given at the end of each semester. Instructor approval required. Please contact the Instructor at hbaer@partners.org for details about how to request approval.			
Course Notes	You must register in each appropriate semester (need 2 semesters total); separate grade given at the end of each semester. Instructor approval required.		

EPI 253	Eff Rsrch Long Hlthcare Dbases	2.5 credits	Summer 2
Large longitudinal healthcare databases have become important tools for studying the utilization patterns and clinical effectiveness of medical products and interventions in a wide variety of care settings and for evaluating the impact of clinical programs or policy changes. This course will prepare students to identify and use longitudinal databases in their own research. Strengths and limitations of large longitudinal healthcare databases that are commonly used for research will be considered. Special attention will be devoted to nationally representative databases that are critical for comparative effectiveness research and local electronic medical record data sources that are readily available to new investigators. Practical issues in obtaining, linking and analyzing large databases will be emphasized throughout the course, and key analytic issues will be addressed, including design considerations and multivariate risk-adjustment. Students will evaluate published database studies, complete programming exercises with statistical software and hands-on access to a large longitudinal database, and prepare a proposal for analyzing a specific research question using a large healthcare database. The course focuses on analytic principles and their application to database research. It requires an understanding of epidemiologic study designs (cohort, case-control) and typical analysis strategies (logistic regression, Cox regression, propensity score analysis)			
Course Notes			

EPI 525	Study Designs for Epidemiologists	2.5 credits	Spring 2
This course reviews the main study designs currently used to describe, predict, and investigate the causes of adverse health outcomes in humans. We will examine general principles, interpretation, strengths, and limitations of the study designs that are commonly used for population research. The course covers ecological, cross-sectional, cohort, case-control, and case-only designs in a number of different settings. Issues related to study population identification; exposure and disease definition and ascertainment, misclassification, confounding, and generalizability are considered in the light of typically available data sources. Idiosyncrasies of several fields, from infectious disease to occupational epidemiology, and their relevance to the selection of an optimal study design are discussed. This course fulfills a core course requirement for the MPH in Epidemiology.			
Course Notes	Pre-requisites: ID200 and EPI522; may be taken concurrently.		

Environmental & Occupational Epidemiology

ID 215	Environ & Occup Epidemiology	2.5 credits	Spring
This course examines application of epidemiologic methods to environmental and occupational health problems. Objectives are to review methods used in evaluating the health effects of physical and chemical agents in the			

environment, to review available evidence on the health effects of such exposures, and to consider policy questions raised by the scientific evidence. Topics include lectures on methodology, seminars on the review and criticism of current literature, and presentations by outside experts on specific environmental and occupational health issues of current interest.	
Course Notes	D538 or [(ID201 or ID200 or BIO201 or BIO202&203 or BIO206&207/8/9) and (EPI201 or EPI208 or EPI505)]

ID 269	Respiratory Epi	1.25 credits	Fall 2
Reviews the epidemiology of respiratory diseases, including chronic obstructive pulmonary disease, asthma, respiratory cancer, and infectious respiratory disease. Demographic distribution, time trends and risk factors of these diseases are discussed.			
Course Notes	ID201 or ID200 or EPI201 or EPI208 or EPI505 or ID538 (all courses may be taken concurrently)		

ID 271	Advanced Regression:ENV EPI	2.5 credits	Spring 1
This course covers applied advanced regression analysis. Its focus is on relaxing classical assumptions in regression analysis to better match what epidemiological data really looks like. Specifically, the course will cover nonlinear exposure-response relationships and repeated measure designs, including non-parametric and semi-parametric smoothing techniques, generalized additive models, quantile regression, and time series models. In addition to the theoretical material, students will apply these techniques using R to actual datasets including modeling the effects of environmental exposures on health outcomes. These techniques also are widely applicable to problems in infectious disease, psychiatric, nutritional, occupational, and cancer epidemiology. Course Activities: Lectures and structured workshops in the instructional computer facility.			
Course Notes	Basic biostatistics and a course in regression analysis recommended		

Epidemiologic Methods

EPI 201	Epidemiologic Methods I	2.5 credits	Fall 1
EPI201 introduces the principles and methods used in epidemiologic research. The course discusses the conceptual and practical issues encountered in the design and analysis of epidemiologic studies for description and causal inference. EPI201 is the first course in the series of methods courses designed for students majoring in Epidemiology, Biostatistics and related fields, and those interested in a detailed introduction to the design and conduct of epidemiologic studies. Students who take EPI201 are expected to take EPI202 (Methods II). Course Note: Thursday or Friday lab required.			
Course Notes	Course is mutually exclusive with EPI200, EPI208, EPI500, and ID200. You may not take both this course and any of those courses		

ID 201	Core Principles of Biostats & Epi for Public Health Practice	7.5 credits	Fall
This course will provide an introduction to the methods of biostatistics and epidemiology in the context of public health and clinical research. The focus will be on applications, providing students with the skills necessary to critically interpret issues related to study design and data analysis in the public health literature. The computer is used throughout the course. Lectures are complemented by seminars and weekly lab sessions. Topics include measures of frequency and association, study designs, bias, confounding, screening tests, probability distributions, estimation and statistical inference, sample size estimation, and regression methods.			
Course Notes			

EPI 202	Methods 2: Elements of Epidemiologic Research	2.5 credits	Fall 2
Introduces elements of study design, data analysis and inference in epidemiologic research. Principles and methods are illustrated with examples, and reviewed through homework and in-class exercises. May serve as an introduction to more advanced study or as a concluding course for those desiring a working knowledge of epidemiologic methods. EPI 202 extends the concepts of study design, data analysis, and inference introduced in EPI201.Course Note: Thursday or Friday lab required.			
Course Notes	Course Prerequisites: (EPI201 or EPI208 or EPI500 or ID200 or ID207) and (BIO200 or BIO201 or ID200 or ID207 or BIO202&203 or BIO206&207/8/9 or PHS2000A) (all courses may be taken concurrently)		

EPI 202	Epidemiologic Methods 2	2.5 credits	Summer 2
Methods 2: Elements of Epidemiologic research Introduces elements of study design, data analysis and inference in epidemiologic research. Principles and methods are illustrated with examples, and reviewed through homework and in-class exercises. May serve as an introduction to more advanced study or as a concluding course for those desiring a working knowledge of epidemiologic methods. EPI 202 extends the concepts of study design, data analysis, and inference introduced in the introductory epidemiology courses.			
Course Notes	(EPI201 or EPI500 or EPI208 or ID201 or ID207 or permission of the instructor) and (BIO200 or BIO201 or ID201 or ID207 or BIO202 & BIO203 or BIO206 & BIO207/208/209) All courses can be taken concurrently.		

EPI 204	Analysis Case-Cont. Cohrt Epi Data	2.5 credits	Spring 2
This course will examine, through practical examples, the use of regression methods for analyses of epidemiologic data, primarily case-control and cohort studies. Methods used will include linear, logistic, Poisson, conditional logistic and Cox regression models. The lectures will focus on the principle ideas and issues underlying the regression analyses, and the computer labs will provide practical experience applying those methods, using SAS software. Issues to be dealt with include dose-response, confounding, influence, and interaction. It will emphasize analysis and interpretation of results in the context of the study design. Familiarity with basic SAS is required, as this will be used in the labs. This can be met through BIO 113 (Introduction to Data Management and Programming in SAS) or other significant SAS experience. Course Activities: Written group projects, class discussion, quizzes, homework. Course Note: Computer lab is required; please sign up for one lab session when registering.			
Course Notes	(BIO210 (concurrent enrollment allowed) or BIO213 or PHS2000A) and EPI202) and (EPI200 or EPI201 or EPI208 or EPI505) Computer lab is required; please sign up for one lab session when registering.		

ID 207	Intro to Epidemiology and Biostats	7.5 credits	Summer 1
At the conclusion of this course, students will have gained a solid understanding of basic principles and methods of epidemiology and biostatistics; learned how to apply these principles and methods to the evaluation of relevant public health questions; and developed the ability to critical analyze the epidemiologic and public health literature.			

Advanced Epidemiologic Methods ♦ Cancer Prevention & Cancer Epidemiology ♦ Cardiovascular Epidemiology ♦ Clinical Epidemiology ♦ Environmental & Occupational Epidemiology ♦ Epidemiologic Methods ♦ Epidemiology of Aging ♦ Infectious Disease Epidemiology ♦ Genetic Epidemiology & Statistical Genetics ♦ Neuro-Psychiatric Epidemiology ♦ Nutritional Epidemiology ♦ Pharmacoepidemiology ♦ Reproductive, Perinatal, & Pediatric Epidemiology ♦ Research

Course Listing by Term ♦ Course listing by Area of Interest ♦ Course Catalog by Area of Interest

Methods of instruction will include lectures, videos, seminars, exercises, and a group project. This is part of a 10 credit intensive course, and has two components: 3-weeks on campus in June, and a 6-week online component in July and August. Both ID207 and ID 208 are required to fulfill this course.	
Course Notes	Course Restricted: Blended MPH - Epidemiology students only

ID 208	Intro to Epidemiology and Biostats	1.25-12.5 credits	Summer
At the conclusion of this course, students will have gained a solid understanding of basic principles and methods of epidemiology and biostatistics; learned how to apply these principles and methods to the evaluation of relevant public health questions; and developed the ability to critical analyze the epidemiologic and public health literature. Methods of instruction will include lectures, videos, seminars, exercises, and a group project. This is part of a 10 credit intensive course, and has two components: 3-weeks on campus in June, and a 6-week online component in July and August. Both ID207 and ID 208 are required to fulfill this course.			
Course Notes	Course Restricted: Blended MPH - Epidemiology students only		

ID 215	Environ & Occup Epidemiology	2.5 credits	Summer 1
This course examines application of epidemiologic methods to environmental and occupational health problems. Objectives are to review methods used in evaluating the health effects of physical and chemical agents in the environment, to review available evidence on the health effects of such exposures, and to consider policy questions raised by the scientific evidence. Topics include lectures on methodology, seminars on the review and criticism of current literature, and presentations by outside experts on specific environmental and occupational health issues of current interest.			
Course Notes	Course Prerequisites: ID538 or [(ID201 or ID200 or BIO201 or BIO202&203 or BIO206&207/8/9) and (EPI201 or EPI208 or EPI505)]		

EPI 233	Research Synthesis & Meta-Analysis	2.5 credits	Spring
Concerned with the explosion of biological data for etiologic inquiry and the use of existing data to inform public health decision making, the course focuses on research synthesis and meta-analysis. We will review the principles and methods for combining epidemiology studies and introduce how other types of scientific evidence, such as toxicology or mode-of-action data, can be incorporated using weight of- evidence analyses. This course will emphasize the use of critical reviews and meta-analysis to explore data and identify sources of variation among studies. Course Activities: Students will learn the principles of a systematic review, to use existing meta-analysis software to apply principles outlined in the course on example data sets, and, on a topic of their choice, to conduct a critical review or meta-analysis that appropriately weights effect estimates in each study, assesses uncertainty, and incorporates other kinds of scientific data in the overall analysis.			
Course Notes	ID538 or [(BIO200 or ID201 or ID200 or BIO201 or BIO202&203 or BIO206&207/8/9) and (EPI200 or EPI201 or EPI208 or EPI500 or ID201 or EPI505)]; may not be taken concurrently. Course is mutually exclusive with BIO234. You may not take both this course and BIO234.No auditing. This course may only be taken for credit.		

EPI 235	Epi Methods in Hlth Svcs Rsch	2.5 credits	Spring 1
This course is designed to introduce students to the application of standard and advanced epidemiologic methods to health services research (HSR), comparative effectiveness research (CER), and patient-centered outcomes			

Advanced Epidemiologic Methods ♦ Cancer Prevention & Cancer Epidemiology ♦ Cardiovascular Epidemiology ♦ Clinical Epidemiology ♦ Environmental & Occupational Epidemiology ♦ Epidemiologic Methods ♦ Epidemiology of Aging ♦ Infectious Disease Epidemiology ♦ Genetic Epidemiology & Statistical Genetics ♦ Neuro-Psychiatric Epidemiology ♦ Nutritional Epidemiology ♦ Pharmacoepidemiology ♦ Reproductive, Perinatal, & Pediatric Epidemiology ♦ Research

Course Listing by Term ♦ Course listing by Area of Interest ♦ Course Catalog by Area of Interest

research (PCOR). Students will learn to recognize the principles of epidemiology in HSR, CER, and PCOR and understand the terminology and methods specific to the field. Threats to validity including confounding, selection bias, information bias, and methods for their control will be discussed in a variety of settings, especially in studies that analyze electronic healthcare databases. Topics include health policy and program evaluation, risk adjustment, benchmarking, patient-reported outcomes, evaluation of cost outcomes, designed delay and pragmatic randomized trials, and research embedded within health care systems. The clinical, economic, policy and public health impact of HSR, CER, and PCOR will be discussed.

Course Notes	(ID200 or BIO200 or ID201 or BIO201 or BIO202&203 or BIO206&207/8/9 or PHS2000A) AND (ID200 or EPI200 or EPI201 or EPI208 or EPI500 or ID201 or EPI505) ; may not be taken concurrently.

EPI 247	EPI Methods Development: Past and Present	2.5 credits	Fall 2
This course aims to provide students with a strong foundation in understanding the theoretical basis of currently used epidemiologic methods and also to help students acquire an understanding of the process of developing new approaches. The course will review the theoretical basis of modern epidemiology by reviewing landmark papers in the development of epidemiologic methods. Students will review classic papers that introduced important theoretical and methodological advances in the field.			
Course Notes	Course Prerequisites EPI 289		

EPI 271	Propensity Score Analysis: Theoretical & Practical Considerations	1.25 credits	Winter
This course introduces basic and advanced theory underlying propensity score analyses and provides practical insights into the conduct of studies employing the method. Course readings will include propensity score theory as well as applications. Lectures are complemented by computer lab sessions devoted to the mechanics of estimating and using the propensity score as a tool to control for confounding in observational research. Students should have knowledge in multivariable modeling approaches. A course project will involve the application of propensity scores to a data set or the review of a related, published paper. Course Activities: Lectures, readings, homework, computer labs, participation, project. Course Prerequisite(s): EPI204 or EPI236 or BIO210 or BIO213; may not be taken concurrently.			
Course Notes	Course Meeting Days TBD		

EPI 288	Introduction to Data Mining and Risk Prediction	2.5 credits	Spring
This course will present an introduction to the methods of data mining and predictive modeling, with applications to both genetic and clinical data. Basic concepts and philosophy of supervised and unsupervised data mining as well as appropriate applications will be discussed. Topics covered will include multiple comparisons adjustment, cluster analysis, principal component analysis, and predictive model building through logistic regression, classification and regression trees (CART), multivariate adaptive splines (MARS), neural networks, random forests, and bagging and boosting. Prerequisite: EPI 522 or EPI 236 or permission of the instructor

Course Restricted: To students in the MPH-EPI program or a summer-only degree program. Preference is given to students in the MPH-EPI program. | | | |
| **Course Notes** | EPI 522 or EPI 236 or permission of the instructor
Student must be in the MPH-EPI program or a summer-only degree program; Other students require instructor permission. | | |

EPI 289	Models for Causal Inference	2.5 credits	Spring 2

Causal Inference is a fundamental component of epidemiologic research. EPI289 describes models for causal inference, their application to epidemiologic data, and the assumptions required to endow the parameter estimates with a causal interpretation. The course introduces outcome regression, propensity score methods, the parametric g-formula, inverse probability weighting of marginal structural models, g-estimation of nested structural models, and instrumental variable methods. Each week students are asked to analyze the same data using a different method. EPI289 is designed to be taken after EPI201/EPI202 and before EPI204 and EPI207. The epidemiologic concepts and methods studied in EPI201/202 will be reformulated within a modeling framework in EPI289. This is the first course in the sequence of EPI core courses on modeling (EPI 289. EPI 204, EPI 207). EPI 289 focuses on time-fixed continuous exposures and failure time outcomes (survival analysis) will be discussed in EPI204, and to time-varying exposures in EPI207.EPI289 is the first course in the sequence of EPI core courses on modeling (EPI289, EPI204, EPI207). Familiarity with the SAS language is strongly recommended for all courses in the sequence.

Course Notes	EPI201 and EPI202; may not be taken concurrently.

EPI 500	Fundamentals of Epidemiology	2.5 credits	Summer 1

This course will provide an orientation to epidemiology as a basic science for public health and clinical medicine. It will address the principles of the quantitative approach to clinical and public health problems. The course will discuss measures of frequency and association, introduce the design and validity of epidemiologic research, and give an overview of data analysis. This course is an introduction to the skills needed by public health professionals and clinicians to interpret critically the epidemiologic literature. It will provide students with the principles and practical experience needed to initiate the development of these skills. Lectures are complemented by weekly 2-hour seminars held on Thursday or Friday, and devoted to case studies, exercises, or critique of current examples of epidemiologic studies.

Course Notes	Course is mutually exclusive with EPI200, EPI201, EPI208, EPI505, ID200, and ID538. You may not take both this course and any of those courses.

ID 505	Epidemiologic and Biostatistical Methods for Global Health	2.5 credits	Summer 1

The course will cover introductory level epidemiology and related biostatistical principles and methods, with a specific focus on problems related to global health. Instruction will also be offered in using the statistical software package Stata for calculating descriptive statistics, generating epidemiologic measures of association, and analyzing data at a basic level for monitoring and evaluation of global health programs. A key difference in this course compared with other introductory level courses in epidemiology and biostatistics is that it offers examples from global health to illustrate epidemiologic methods and statistical approaches.

In addition, the development of a project proposal that runs parallel to the basic foundation of epidemiology and biostatistics will be conducted to allow for immediate practical application of the concepts learned. At the conclusion of the course, students will have learned how to apply basic epidemiologic methods to evaluate global health programs and to critically analyze literature focused on global health problems for the purpose of advancing program design and service provision that is evidence-based. Although there are no formal prerequisites, this course is intended for students with some prior experience in international or global health.

Course Notes	

EPI 515	Measure Error & Misclassification in Epi	1.25 credits	Fall 1

This course focuses on methods for the analysis of data when covariates are misclassified or measured with error. It will cover theory for valid estimation and inference in this setting, as well as application of the theory to current

Advanced Epidemiologic Methods ♦ Cancer Prevention & Cancer Epidemiology ♦ Cardiovascular Epidemiology ♦ Clinical Epidemiology ♦ Environmental & Occupational Epidemiology ♦ Epidemiologic Methods ♦ Epidemiology of Aging ♦ Infectious Disease Epidemiology ♦ Genetic Epidemiology & Statistical Genetics ♦ Neuro-Psychiatric Epidemiology ♦ Nutritional Epidemiology ♦ Pharmacoepidemiology ♦ Reproductive, Perinatal, & Pediatric Epidemiology ♦ Research

Course Listing by Term ♦ Course listing by Area of Interest ♦ Course Catalog by Area of Interest

epidemiologic studies using computer software developed for this purpose. Methods for contingency tables and generalized linear models will be addressed. Topics include likelihood-based methods, regression calibration and optimal study design. Examples from the Nurses' Health Study and other epidemiologic studies will be used to motivate the lectures and provide compelling and realistic examples.			
Course Notes	Course Prerequisite(s): Requires EPI202 and EPI204 (BST222 is recommended) Course is mutually exclusive with BIO515. You may not take both this course and BIO515.		

EPI 522	Analytic Methods for Epidemiology	5 credits	Fall
The goal of this course is to familiarize you with many of the common analytic methods used by epidemiologists to obtain valid measures of the effect of a risk factor on an outcome. It will cover the basic principles of causal inference and confounding and review stratification as a method to control for confounding. This will provide a basis for introducing regression-based methods to control for confounding, including logistic regression and its extensions (ordinal logistic regression, multinomial logistic regression, and conditional logistic regression), as well as propensity score analysis. The course also will cover survival analysis and Cox proportional hazards regression for time-to-event data. Finally, the course will discuss methods for handling missing data. You will learn to implement these analytic methods using the Stata statistical software package. Course Prerequisites: ID 207 (Concurrent enrollment permitted) Course Restricted: to MPH-EPI students			
Course Notes	MPH EPI Students only		

EPI 526	Analysis of Publicly Available Databases for Epidemiologic and Health Services Research	2.5 credits	Fall
This course addresses the use of existing public use databases to study important questions related to clinical risk factors, treatment, outcomes, and health policy. The course is designed to bridge coursework in epidemiologic methods and biostatistics by providing practical experience manipulating and analyzing publicly available databases and complex surveys. Special attention will be devoted to publicly available U.S. databases that are commonly used for epidemiologic and health services research and are readily available to new investigators. Such databases offer several advantages including their representative sampling time frames allowing generalizability to larger populations, timeliness, and ability to evaluate trends, geographic variation, or rare conditions. Strengths and limitations of data sources will be considered. Practical issues in obtaining, linking, and analyzing larges databases will be emphasized throughout the course, and key statistical issues will be addressed, including survey sampling and risk-adjustment. Students will complete programming exercises with STATA statistical software, prepare a proposal to analyze a specific research question using a public use database, and conduct analyses to address their research questions			
Course Notes	Prerequisites: [ID207 & ID208] OR [BST202 & BST203 & EPI500 & EPI202] OR [EPI208 & BST206 & (BST207 OR BST208)] OR ID207 (if taken during 2012-2014). Working knowledge of STATA, basic programming skills, and STATA IC Software. Must also be one of the following: MPH-EPI or S.O MPH-QM or S.O. MPH-CLE or S.O. SM1-EPI		

EPI 527	Design and Conduct of Trials in Preventive Medicine	2.5 credits	Fall
This course is designed for students interested in the design, conduct, analysis, and interpretation of trials in preventative medicine. This course will balance current knowledge and concepts in clinical trial methodology			

Advanced Epidemiologic Methods ♦ Cancer Prevention & Cancer Epidemiology ♦ Cardiovascular Epidemiology ♦ Clinical Epidemiology ♦ Environmental & Occupational Epidemiology ♦ Epidemiologic Methods ♦ Epidemiology of Aging ♦ Infectious Disease Epidemiology ♦ Genetic Epidemiology & Statistical Genetics ♦ Neuro-Psychiatric Epidemiology ♦ Nutritional Epidemiology ♦ Pharmacoepidemiology ♦ Reproductive, Perinatal, & Pediatric Epidemiology ♦ Research

Course Listing by Term ♦ Course listing by Area of Interest ♦ Course Catalog by Area of Interest

alongside the operationalization of how to effectively conduct a trial. Students will learn the components of a trial protocol and manual of operations, and gain insights on the pragmatic aspects of trial design, management, analysis, and interpretation. We will also have students gain first-hand experience both in the design and conduct of a small-scale, short-term clinical trial, and perspective as a participant in a trial. This course will enable students to apply their knowledge to published trial findings to understand their place in clinical practice and guidelines.

Course Notes	Prerequisites: [ID207 & ID208] OR [BST202 & BST203 & EPI500 & EPI202] OR [EPI208 & BST206 & (BST207 OR BST208)] OR old ID207 (if taken during 2012-2014)] Must also be one of the following: MPH-EPI or S.O MPH-QM or S.O. MPH-CLE or S.O. SM1-EPI

EPI 528	Systematic Review and Meta-Analysis	2.5 credits	Fall
This course provides and introduction to the rationale, methods, and implications for conducting a synthesis of research findings. You will receive step-by-step guidance on how to conduct and evaluate systematic reviews that may also include a meta-analysis. The course will introduce research databases, reference management software, pooled estimates and sources of heterogeneity, bias, and practical applications.			
Course Notes	Prerequisites: [ID207 & ID208] OR [BST202 & BST203 & EPI500 & EPI202] OR [EPI208 & BST206 & (BST207 OR BST208)] OR old ID207 (if taken during 2012-2014)] Must also be one of the following: MPH-EPI or S.O MPH-QM or S.O. MPH-CLE or S.O. SM1-EPI		

ID 542	Methods for Mediation and Interaction	2.5 credits	Spring 1
The course will approach concepts and methods for mediation and interaction from the perspective of the counterfactual framework. The first part of the course will be concerned with mediation analysis, that is assessing the extent to which the effect of an exposure on some outcome is mediated through a particular intermediate and the extent to which it is direct or through other pathways. Definitions, theoretical identification results and statistical techniques related to mediation analysis will be covered. The material in this part of the course will clarify the assumptions required for the estimation of direct and indirect effect and will extend the approach to mediation typically employed in epidemiology and the social sciences to settings with interactions, non-linearities and time-varying exposures. The second part of the course will cover concepts and methods for interaction. Conceptual issues concerning interaction, effect modification and the relation and non-correspondence of statistical and mechanistic notions of interaction will be discussed. Empirical tests for biologic synergism and genetic epistasis will be discussed along with practical methods to implement such tests. Attention will be given to power and sample size calculations for interaction analyses and to assessing interaction in a variety of study designs including cohort, case-control, case-only, family-based and GWAS designs. If time permits, the course will conclude by offering an introduction to casual inference methods for addressing problems of social interaction, interference and spillover effects which arise in settings in which the exposure of one individual may affect the outcomes of other individuals. Prerequisites can be waived at the instructor's discretion.			
Course Notes	Course Prerequisite(s): EPI289 or EPI207 or BIO291		

EPI 209	EPI Methods Patient Safety & Quality	1.25 credits	Winter
This course aims to prepare the student to design and conduct analyses of individual incidents and other n-of-1 studies, statistical process control and time series, designed delays in quality improvements, case-crossover studies and self-controlled case series. A case study will help to integrate topics: Surgical Quality Outcome Reports -- low-cost evaluation and spread of a quality improvement program. Patient safety officers are needed in every healthcare facility, and these people need basic skills in epidemiologic methods. Students in this course will be equipped to be facilitators of collaborative self-instruction in epidemiologic methods suited for local investigations,			

Advanced Epidemiologic Methods ♦ Cancer Prevention & Cancer Epidemiology ♦ Cardiovascular Epidemiology ♦ Clinical Epidemiology ♦ Environmental & Occupational Epidemiology ♦ Epidemiologic Methods ♦ Epidemiology of Aging ♦ Infectious Disease Epidemiology ♦ Genetic Epidemiology & Statistical Genetics ♦ Neuro-Psychiatric Epidemiology ♦ Nutritional Epidemiology ♦ Pharmacoepidemiology ♦ Reproductive, Perinatal, & Pediatric Epidemiology ♦ Research

Course Listing by Term ♦ Course listing by Area of Interest ♦ Course Catalog by Area of Interest

as well as to be competitive researchers who conduct crossover studies. They will acquire skills to evaluate studies by other people constructively while being emotionally supportive. While comparisons among individual patients, practitioners and institutions are influential in patient safety epidemiology, the primary emphasis is on improvements: changes in outcomes over time. This involves a slight shift in paradigms from traditional emphasis in epidemiology on between-person comparisons in cohort and case-control studies to within-person comparisons, as in crossover experiments and case-crossover studies. Class Notes: Course meets 1/16 - 1/20

Course Notes	

EPI 230 (Even Years)	Religion and Public Health	1.25 credits	Winter
The course will give an overview of the current state of research on the relationship between religion and health. Over the past three decades, the research literature documenting this relationship has grown dramatically. Religious participation has been shown to have protective effects on all-cause mortality, mental health, cardiovascular health, cancer survival, and many other health outcomes. The course will review the research that has been done in this area, discuss some of the measurement and methodological challenges faced by this research, and explore future research directions in religion and health as well as questions of relevance to public health. Specific topics will include religion participation and longevity, religion and mental health, religious communities and health, and religion and spirituality in end of life care. Attention will be given throughout to questions of measurement, study design, and methodology, and the challenges in conducting rigorous research in this area.			
Course Notes	ID538 or ID200 or [(BIO200 or BIO201 or BIO202&203 or BIO206&207/8/9 or PHS2000A) and (EPI201 or EPI208 or EPI500 or EPI505)]; may not be taken concurrently		

Epidemiology of Aging

EPI 254	Epidemiology of Aging	1.25 credits	Spring 2
This course will cover epidemiologic concepts and methods related to diseases of aging as well as general health issues in older persons. Topics will include the epidemiology of Alzheimer's Disease; Pharmacoepidemiology in the older persons; methodologic dilemmas in such research; as well as others.			
Course Notes			

EPI 517	Issues of Frailty	1.25 credits	Spring 1
While frailty is not a medical diagnosis and has no accepted definition, it is a key and growing concern in geriatric care and research in older adults. This course will examine the thematic issues related to frailty, including the idea of frailty as the consequence of failure to compensate for physiological stress in aging adults. The sessions will start with theme of failure to compensate and how this results in frailty as an outcome and quality of life, with a focus on methodological issues. The following sessions will present geriatric syndromes thought to derive from failure to compensate for physiological stress including delirium, sarcopenia or loss of muscle, fractures and falls, and failure in the musculoskeletal system. The impact of methodological issues, and interpretation and conclusions drawn from research in geriatric epidemiology will be emphasized. This 7-week survey course has no formal prerequisites, but some epidemiologic background or an understanding of basic epidemiologic principals is strongly recommended.			
Course Notes			

Advanced Epidemiologic Methods ♦ Cancer Prevention & Cancer Epidemiology ♦ Cardiovascular Epidemiology ♦ Clinical Epidemiology ♦ Environmental & Occupational Epidemiology ♦ Epidemiologic Methods ♦ Epidemiology of Aging ♦ Infectious Disease Epidemiology ♦ Genetic Epidemiology & Statistical Genetics ♦ Neuro-Psychiatric Epidemiology ♦ Nutritional Epidemiology ♦ Pharmacoepidemiology ♦ Reproductive, Perinatal, & Pediatric Epidemiology ♦ Research

Course Listing by Term ♦ Course listing by Area of Interest ♦ Course Catalog by Area of Interest

Infectious Disease Epidemiology

EPI 255 (Even Years)	Epi of HIV, Part1: Etiology, Natural History & Transmission	2.5 credits	Spring 1
This course is designed to introduce students to the epidemiology of HIV infection. It is designed for those students with a keen interest in both HIV/AIDS and epidemiologic methods. This course will survey state-of-the-art knowledge of the epidemiology of HIV infection and will emphasize epidemiologic principles and methods; including studies of the etiology of AIDS, estimation of the incidence and prevalence of HIV and AIDS, natural history and survival. The use of appropriate study designs and potential sources of bias will be discussed, with a focus on observational designs. This course will provide the student with experience in the critical review of epidemiologic studies in this area. Course Activities: Homework assignments will consist of study questions, study critiques, and an in-class exam. These assignments constitute 100% of the grade and are due on the day of the discussions.			
Course Notes	ID200 or EPI200 or EPI201 or EPI208 or EPI500 or EPI505 or ID538; may not be taken concurrently.		

EPI 256 (Even Years)	Epidemiology of HIV Part II	2.5 credits	Spring 2
This course is designed to introduce students to the design and conduct of HIV therapeutic and prevention interventions. It is designed for those students with a keen interest in both HIV/AIDS and epidemiologic methods. This course will survey state-of-the-art knowledge of the epidemiology of HIV infection and will emphasize epidemiologic principles and methods including the design and conduct of ethical HIV intervention trials. The use of appropriate study designs and potential sources of bias will be discussed. This course will provide the student with experience in the development of a research proposal. Course Activities: Grades will be based on a research proposal describing a therapeutic or prevention trial.			
Course Notes	EPI255; may not be taken concurrently.		

EPI 260 (Odd Years)	Math Modeling: Infect Diseases	2.5 credits	Spring 2
This course will cover selected topics and techniques in the use of dynamical models to study the transmission dynamics of infectious diseases. Class sessions will primarily consist of lectures and demonstrations of modeling techniques. Techniques will include design and construction of appropriate differential equation models, equilibrium and stability analysis, parameter estimation from epidemiological data, determination and interpretation of the basic reproductive number of an infection, techniques for sensitivity analysis, and critique of model assumptions. Specific topics will include the use of age-seroprevalence data, the effects of population heterogeneity on transmission, stochastic models and the use of models for pathogens with multiple strains. This course is designed for students with a basic understanding of mathematical modeling concepts who want to develop models for their own work. Course Note: Previous course in calculus is required			
Course Notes	Previous course in calculus is required Course Prerequisite(s): EPI501; may be taken concurrently.		

EPI 501	Dynamics Infectious Diseases	2.5 credits	Spring 1

Advanced Epidemiologic Methods ♦ Cancer Prevention & Cancer Epidemiology ♦ Cardiovascular Epidemiology ♦ Clinical Epidemiology ♦ Environmental & Occupational Epidemiology ♦ Epidemiologic Methods ♦ Epidemiology of Aging ♦ Infectious Disease Epidemiology ♦ Genetic Epidemiology & Statistical Genetics ♦ Neuro-Psychiatric Epidemiology ♦ Nutritional Epidemiology ♦ Pharmacoepidemiology ♦ Reproductive, Perinatal, & Pediatric Epidemiology ♦ Research

Course Listing by Term ♦ Course listing by Area of Interest ♦ Course Catalog by Area of Interest

This course covers the basic concepts of infectious disease dynamics within human populations. Focus will be on transmission of infectious agents and the effect of biological, ecological, social, political, economic forces on the spread of infections. We will emphasize the impact of vaccination programs and other interventions. The dynamics of host-parasite interaction are illustrated using basic mathematical modeling techniques. A key component of the course is the introduction to the programming mathematical modeling techniques. A key component of the course is the introduction to the programming language R, which we will use for all mathematical modeling activities and examples.

Course Activities: In-class demonstrations and practical sessions, written homework assignments and final class debate. Previous coursework in epidemiology and programming helpful but not required.

Course Notes	

EPI 502 (Odd Years)	BIO & EPI of Antibiotic Resist	2.5 credits	Winter
Course Notes			

EPI 519	Evolutionary Epi of Infectious Disease	2.5 credits	Fall 2

Like all living things, pathogens have evolved by natural selection. The application of evolutionary principles to infectious disease epidemiology is crucial to such diverse subjects as outbreak analysis, the understanding of how different genomic combinations of virulence and drug resistance determinants emerge, and how selection acts to produce successful pathogens that balance the costs and benefits of virulence and transmission. The goal of this course is to introduce basic evolutionary concepts, highlighting the importance of transmission to the fitness as illustrated by comparisons of the adaptive process among different sorts of pathogenic microorganisms. Students will also learn the basics of phylogenetic sequence analysis for the study of outbreaks and transmission, and the construction of simple mathematical models that probe the adaptive process.

Course Notes	

EPI 523	Investigating Outbreaks	1.25 credits	Fall 2

The investigation of disease outbreaks both predates and gave birth to the fields of epidemiology and public health. In the modern day, tried and true epidemiologic methods persist along with new, sophisticated methods of discovery. The topic of outbreaks is also the fodder of movies and television with fictional characters playing the glamorous role of disease detectives solving ripped from the headlines situations. This course is grounded in the evidence-base and draws from the literature and field-based experience of the instructors to create an intensive and immersive two and a half-day learning experience. The key to the success of the course is learning experiences that lead up to (developing of Epi Info skills) and follows the interactive classroom-based experience (synthesis paper).

This course focuses on the fundamental epidemiologic skills needed to investigate an outbreak investigation. Mastery of the knowledge and skills in this area along with application during the course will foster the use of problem solving frameworks and implementation strategies needed to address future outbreak situations that you may face in your career. The case examples in the course and the real-time experience of attempting to address these scenarios will illustrate the complexities and unexpected nature of outbreak investigations. The experience of working in teams will also highlight the importance of collaboration in addressing pressing public health challenges.

Fall 2017 Class Meetings
Saturday, November 11, 8:30 AM - 5:20 PM
Sunday, November 12, 8:30 AM- 3:20 PM

Course Notes	

Genetic Epidemiology & Statistical Genetics

EPI 222	Genetic Epi of Diabetes, Obesity, & Their Complications	2.5	Spring 2

The course will discuss the search for genetic factors contributing to diabetes, obesity, and their complications and will use this as a case study to illustrate genetic epidemiology strategies for investigating the etiology of complex disorders. Recent advances in genome-wide association, epigenetic, and other –omics studies concerning diabetes, obesity, and their cardiovascular and kidney complications will be discussed in depth. Techniques of molecular genetics relevant to epidemiologic studies will be reviewed and datasets including genetic information will be analyzed with emphasis placed on the examination of genome-wide associations and gene/environment interactions.

Course Notes	Course Prerequisites: EPI202

EPI 249	Molecular Biology for Epidemiologists	2.5 credits	Fall 1

Molecular Biology for Epidemiologists, taught by Dr. Immaculata De Vivo, offers an overview of fundamental molecular biology concepts and techniques commonly used in the laboratory and in epidemiological research. During the term, we will cover a broad range of topics including, but not limited to, the mechanisms and regulatory processes involved in different steps of the central dogma of molecular biology, how cellular mechanisms go awry and how these cells can be repaired, Mendelian and non-Mendelian genetics, meiosis, mitosis, and both novel and classical molecular biology tools. This course will be of most interest to those who have not taken a recent college-level course in molecular biology, or equivalent.

Course Notes	

EPI 293	Analysis of Genetic Association Studies	2.5 credits	Winter

At the end of this course students will grasp Concept and Theory, Methods and Software Tools needed to critically evaluate and conduct genetic association studies in unrelated individuals and family samples, including: basic molecular and population genetics, marker selection algorithms, haplotyping, multiple comparisons issues, population stratification, genome-wide association studies, genotype imputation, gene-gene and gene-environment interaction, analysis of microarray data (including gene expression, methylation data analysis, eQTL mapping), next-generation sequencing data analysis and genetics simulation studies. Useful software tools will be introduced and practiced in labs and projects. Students interested in methodology development will find interesting research topics to pursue further. Students interested in application will learn cutting-edge methods and tools for their ongoing projects. Course materials will be updated according to the fast-growing areas of genetics/genomics and epigcs/epigenomics.

Course note: Familiarity with SAS or S-PLUS/R and UNIX computing environment are highly recommended. Students are encouraged to discuss course prerequisites with the instructor.

Course Notes	Course note: Familiarity with SAS or S-PLUS/R and UNIX computing environment are highly recommended. Students are encouraged to discuss course prerequisites with the instructor. Course Prerequisite(s): [(BIO201 and (BIO210 or BIO211 or BIO213 or EPI204)) or PHS2000A] and (ID200 or EPI200 or EPI201 or EPI505 or EPI500 or ID201); may not be taken concurrently.

EPI 507	Genetic Epidemiology	2.5 credits	Fall 2
Introduces the basic principles and methods of genetic epidemiology. After a brief review of history of genetic epidemiology, methods for the study of high penetrance and low penetrance alleles, as well as other high throughput genomic data will be described and discussed. Methods of analysis of genome-wide association studies are a particular focus. Examples of contribution of genetic analysis to major diseases will be reviewed.			
Course Notes			

EPI 511	Adv Population & Med Genetics	2.5	Spring 1
This course will cover quantitative topics in human population genetics and applications to medical genetics, including the HapMap project, linkage disequilibrium, population structure and stratification, population admixture, admixture mapping, and natural selection. The course is aimed at Epidemiology and Biostatistics students with a strong interest in statistical genetics, and is included in the Biostatistics Advanced Doctoral Core and Biostatistics Masters core. The course will emphasize hands-on analysis of large empirical data sets, thus requiring prior experience with a general-purpose high-level programming language such as Python or PERL. After taking this course, each student will have the experience and skills to develop and apply statistical methods to population genetic data.			
Course Notes	BIO510, or equivalent programming experience in Python or PERL, and (BIO227 or EPI293 or EPI507); may not be taken concurrently		

Neuro-Psychiatric Epidemiology

EPI 217	Epi of Adult Psych Disorders	2.5 credits	Fall 1
The goal of this course is to provide students with a working knowledge of the epidemiologic and clinical aspects of adult psychiatric disorders. A range of reading materials on the prevalence, risk factors, and distribution of major mental disorders will be covered. Emphasis will be placed on how a life-course perspective informs research on etiology, treatment and prevention. Through class discussion and completion of written assignments, special attention will be paid to the unique methodological and analytic issues highlighted in psychiatric epidemiological research. Students will consider implications for public health programs, interventions, and prevention.			
Course Notes	Course Prerequisite(s): EPI200 or EPI201 or EPI208 or EPI500 or EPI505 or ID201 or ID538 or ID207. Concurrency is allowed for all courses.		

EPI 219	Assessment Concepts/Methods in Psych Epi	2.5 credits	Fall 2
Presents the application of basic epidemiologic and psychometric concepts and methods in psychiatric research. Topics include: measurement theory, reliability, validity, screening, and diagnostic classification procedures, as they specifically relate to psychiatric research. The course is in the psychiatric epidemiology track and is intended primarily for students interested in conducting mental health research. Course Activities: Class discussion, brief homework, class project with oral presentation and final paper. Course Note: Students should be familiar with the major forms of psychopathology, basic epidemiologic research methods, and introductory statistics; lab or section time to be arranged at first meeting.			
Course Notes	Course Prerequisites: ID538 or ID201 or [(BIO200 or BST201 or BST202&203 or BST206&207 or BST206&208 or BST206&BIO209 or PHS2000A) and (EPI500 or EPI201 or EPI208 or EPI500 or EPI505)] (all courses may be taken concurrently)		

EPI 227	Child Psych Epidemiology	1.25 credits	Winter
Psychiatric problems frequently occur in children and adolescents. Epidemiological methods are used in child			

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Course Listing by Term ♦ Course listing by Area of Interest ♦ Course Catalog by Area of Interest

psychiatric research to study the occurrence of psychiatric disorders, test causal hypotheses and investigate the developmental trajectories.In this course epidemiological research and methods in Child and Adolescent Psychiatry will be discussed in depth. Using an interactive approach most material is presented in seminar format. A wide range of topics will be covered ranging from descriptive epidemiology, major research milestones, and current methodological challenges to a future research agenda for Child and Adolescent Psychiatry. These themes are linked to selected major disorders. Other seminars will cover selected research topics. Students are engaged to evaluate and design different research projects. Particular emphasis lies on study designs with a developmental, multi-informant, or multi-method approach. Upon completion of the course the student will be able to: 1) Critically interpret the literature in the field of Child and Adolescent Psychiatry.2. Evaluate critically major child psychiatric research themes such as nosology, genetics, brain imaging or multi-informant approach.3. Design and analyze a Child Psychiatric epidemiological study. This course is intended primarily for doctoral and master students with interest in developmental or psychiatric research. However, the course should be of interest for any student whose career might involve behavioral or emotional problems in children or psychiatric problems in adults.

Course Notes	EPI200 or EPI201 or EPI208 or EPI500 or ID 201 or EPI505 or ID538 or ID207; may not be taken concurrently.

EPI 284 (Even Years)	Epidemiology of Neurologic Diseases	2.5 credits	Spring 2
This course is designed to introduce students to the epidemiology of major neurologic diseases. The emphasis will be both on research methods and on substantive issues. The course will stress etiologic and research integrating epidemiology with clinical and pathological aspects. We will discuss several neurological diseases, such as multiple sclerosis, Alzheimer's disease, dementia, Parkinson's disease, and amyotrophic lateral sclerosis, among others.			
Course Notes			

Nutritional Epidemiology

ID 206	Scientific Writing in Nutrition & Epi	2.5 credits	Spring 1
This course is designed for nutrition/epidemiology doctoral degree students. Others may be admitted after discussion with the instructor. The course will cover organization of scientific papers, presentation of data in graphical and tabular forms, and style. The course is designed for advanced students who are beginning to work on a paper for publication. Each section of a paper will be discussed extensively. The goal is for each student to have a manuscript ready for submission to a peer review journal at the end of the course. Course Activities: Principles of scientific writing will be taught. Students will work on their papers independently, under the overall supervision of their own faculty advisors. Each student will critique the papers of classmates. The instructor will guide the discussion and use the paper to make additional points of constructive criticism, which will serve to illustrate the principles enunciated at the beginning of the class. Guidelines for journals and co-author criteria will be discussed. Approach to revisions based on reviewers' comments will be covered.			
Course Notes			

ID 214	Nutritional Epi	2.5 credits	Spring
Reviews methods for assessing the dietary intake of populations and individuals. Students gain experience in the actual collection, analysis and interpretation of dietary intake. The course also reviews several specific diet/disease relationships, integrating information from international studies, secular trends, clinical trials, analytical epidemiology, and animal experiments.			
Course Notes	ID538 or [(BIO200 or ID200 or BIO201 or ID201 or BIO202&203 or BIO206&207/8/9) and (EPI200 or EPI201 or EPI208 or EPI505)]		

NUT 214	Global CVD and Met. Health	2.5 credits	Spring 2
Reviews methods for assessing the dietary intake of populations and individuals. Students gain experience in the actual collection, analysis and interpretation of dietary intake. The course also reviews several specific diet/disease relationships, integrating information from international studies, secular trends, clinical trials, analytical epidemiology, and animal experiments.			
Course Notes	ID538 or [(BIO200 or ID200 or BIO201 or ID201 or BIO202&203 or BIO206&207/8/9) and (EPI200 or EPI201 or EPI208 or EPI505)]		

ID 537	Obesity Epi	2.5 credits	Fall
This course reviews current evidence on the burden, causes, consequences, and prevention of obesity from an epidemiological perspective. The course also reviews common epidemiologic methods to conduct obesity research and provides students with skills to critically analyze studies in obesity epidemiology. The policy and public health implications of recent findings in obesity research are discussed through case-studies.			
Course Notes	ID538 or ID201 or [(BIO200 or BIO201 or BIO202&203 or BIO206&207 or BIO206&208 or BIO206&209 or PHS2000A) and (EPI500 or EPI201 or EPI208 or EPI505)] (ID538 may be taken concurrently)		

Pharmacoepidemiology

EPI 221	Pharmacoepidemiology	2.5 credits	Fall 1
Within the framework of formal epidemiologic analysis, this course covers inference about the effects of pharmaceuticals from case reports, case series, vital statistics and other registration schemes, cohort studies, and case-control studies. Decision-making with inadequate data is examined from the perspectives of manufacturers and of regulators. Students are graded on the basis of group projects. This course is intended primarily for students wishing to pursue a career in the pharmaceutical industry or in national regulatory bodies, but may have more general interest as an applied mid-level course with a heavy methodological emphasis. Course Activities: Written and oral group projects, individual class presentations, class discussion.			
Course Notes	Knowledge of epidemiology at the level of EPI 202 and a basic understanding of drug use and nomenclature are assumed; completion of EPI 203 preferred.		

EPI 286	Advanced Pharmacoepidemiology Database Analytics in Pharmacoepidemiology	2.5 credits	Fall 2
Using contemporary examples and with the participation of prominent researcher in Pharmacoepidemiology, this course addresses a range of study designs and analytic techniques for observational studies on the utilization, safety, and effectiveness of pharmaceuticals. During the course students will plan, implement, and analyze a safety or effectiveness study in a large electronic healthcare database using a specialized analysis platform. Faculty will lead in-class discussions on design options, analysis strategies, and sensitivity analyses for confounding and other biases. This course is intended for individuals who plan to conduct observational studies using electronic healthcare databases in academia, the pharmaceutical/biotech industry, pharmaceutical benefits management, national regulatory bodies, or other research organizations. No programming experience is required.			
Course Notes	Familiarity with epidemiology study designs and data analysis approaches is expected.		

Reproductive, Perinatal, & Pediatric Epidemiology

WGH 211	Women, Gender & Hlth:Intro Perspective	2.5 credits	Fall 1

This course will introduce students to gender as a theoretical concept and a category of analysis in public health, specifically, the ways in which gender contributes to differentially structuring women and men's experiences of health. The course proposes to answer such questions as: How can understanding gender structures help us interpret public health research? How has gender influenced the construction of public health in diverse societies? How do our social frameworks and structures, such as gender, affect people's experiences and expectations of health? How is the success of behavioral change interventions and the validity of basic behavioral and evaluation research affected by gender?

This course is designed for students who wish to enhance their understanding of the social and cultural factors that have influenced the development of individual and societal health. The interactions between gender, class, race/ethnicity, and sexuality will be emphasized.

The course will cover a broad range of health issues for which gender has been of special importance. Topics covered include: reproductive health; sexual health and sexuality; mental health; violence; occupational health and work; environmental health and pollution; and chronic diseases. Issues relating to the distribution of health, disease, and well-being will be addressed across sessions. Additionally, sessions will include global, US domestic and historical perspectives, with attention paid to both epidemiologic investigation, social and behavioral sciences, and health policy dimensions.

Course Notes	

EPI 269	Epi Research in Ob/Gyn	2.5 credits	Fall 2
This course will provide an overview of the current research in reproductive epidemiology. The course will cover epidemiologic research in the areas of contraception, infertility, pregnancy, menopause, and both benign and malignant gynecological conditions. Students will be introduced to methods used in reproductive epidemiology and learn how to critically evaluate results from epidemiologic studies in obstetrics and gynecology. An overview of the clinical and physiological underpinnings of particular topical areas will be provided.			
Course Notes	Course Prerequisites: ID200 or ID201 or EPI200 or EPI201 or EPI208 or EPI500 or EPI505 or ID538 (all courses may be taken concurrently)		

EPI 270 (Odd Years)	Advanced Reprod. Epidemiology	1.25 credits	Spring 2
Course Notes			

Research

EPI 205	Practice of Epidemiology	2.5 credits	Fall
The seminars consist of student presentations of plans for collection and analysis of epidemiological data (typically for the doctoral dissertation), with discussion by students and faculty. Preparatory work is done under tutorial arrangements with members of the faculty mostly in Fall1. The emphasis is on conceptual issues necessary for the development of a feasible and informative epidemiological study. Course Activities: Individual student grant proposal and presentation, class discussion, and student and faculty critiques. Course Note: This course is aimed primarily at epidemiology and nutritional epidemiology doctoral students, usually in their third year.			
Course Notes	At least a full year of epidemiology methods and biostatistics methods. Two years of such courses is strongly preferred.		

EPI 242-1	Practice and Culminating Experience for Clinical Effectiveness (Academic Year)	1.25 credits	Fall/Spring
This seminar serves as a forum for students' clinical epidemiologic research. In the process, students are exposed to a variety of research designs, analytic strategies, and content areas. There is active class discussion. Faculty emphasize methodologic issues pertinent to the class research presentation. Course Activities: Student presentations or written assignment			
Course Notes	Must register in each appropriate semester; separate grade given at the end of each semester. Instructor approval required for all NON-MPH CLE students.		

EPI 242-2	Practice and Culminating Experience for Clinical Effectiveness (Academic Year)	1.25 credits	Fall/Spring
EPI242, SECTION 1 Daniel Singer (Primary Instructor) This seminar serves as a forum for students' clinical epidemiologic research. In the process, students are exposed to a variety of research designs, analytic strategies, and content areas. There is active class discussion. Faculty emphasizes methodologic issues pertinent to the class research presentation. Course Activities: Student presentations or written assignment Course Note: Must register in each appropriate semester; separate grade given at the end of each semester. Instructor approval required for all NON-MPH CLE students.EPI242, SECTION 2 Heather Baer (Primary Instructor) This seminar is an alternative to the EPI242 Section 1 seminar on Friday mornings. This section is reserved for MPH-CLE students who are unable to attend the Friday morning EPI242 seminar on a regular basis, due to clinical responsibilities or other unavoidable conflicts. Students in Section 2 must attend another works-in-progress research seminar in their department or division on a weekly basis (subject to approval by the Instructor), and they must present their own work and get feedback from faculty and colleagues. The goal is to expose students to a variety of research designs, analytic strategies, and content areas. Course Activities: Students must participate in regular research seminars, work on their own research projects, and present their work. Course Note: You must register in each appropriate semester (need 2 semesters total); separate grade given at the end of each semester. Instructor approval required. Please contact the Instructor at hbaer@partners.org for details about how to request approval.			
Course Notes	You must register in each appropriate semester (need 2 semesters total); separate grade given at the end of each semester. Instructor approval required.		

EPI 300	Independent Study	Variable	All Terms by Request
An opportunity for independent study is offered for interested and qualified students or small groups of students. Arrangements must be made with individual faculty members and are limited by the amount of faculty time available. These programs are open to all students who wish to go beyond the content of the regular courses.			
Course Notes	Must have faculty approval		

EPI 315	Research: Clinical Epidemiology	Variable	All Terms by Request
All students who intend to complete the requirements for a Master of Science in Epidemiology based on only a summer schedule are required to undertake and complete a clinical research project at their institution under the supervision of a local mentor and a member of the Harvard faculty. Five to 12.5 tutorial credits will be granted for this research. Each student is required to submit a written paper summarizing his or her research project. The exact content of this research project is determined by the faculty member assigned as principal advisor to the student. An appropriate content for this project might include the development of a research proposal to address a clinical question of interest, the implementation of this proposal with the collection of patient data, the analysis of these data, and the creation of a publishable manuscript (with detailed appendices) to describe the results of the analysis. Alternatively, part of this project might pertain to the creation of a full-fledged RO1 study protocol in			

the National Institutes of Health format, a publishable paper based on the analysis of existing data, a decision analysis, or a cost-effectiveness analysis. **Course Activities:** Supervised research. Written progress reports must be submitted each semester			
Course Notes	EPI SM1 Summer-Only Students		

ID 320	Practice & Culminating Experience for Clinical Effectiveness (Summer-Only)	2.5 credits-7.5 credits	All Terms by Request
Summer- Only CLE Master of Public Health Program students develop an off-site practicum at their home institution under the supervision of a local mental and member of faculty at HSPH. This practicum may include aspects of epidemiology, biostatics, decision sciences, or other quantitative aspects of public health. Students should apply the competencies learned in core courses to an actual investigation. Following the first summer course work, students must submit a written proposal for the practicum along with a letter of support from an investigator from the student's home site, indicating an agreement to act as the local mentor for the project. This proposal is reviewed and an HSPH faculty supervisor is identified. Students ordinarily would write a paper suitable for publication, a grant proposal or technical report. This exercise will culminate with a presentation in the final summer of the student's program.			
Course Notes	Student must attend the sessions of this course during the second and third summer and they are encouraged to attend their first summer. Regular contact between students and mentors and among students is expected via e-mail during the year to seek advice, provide activity updates and to discuss approaches to the solution of methodological issues.		

EPI 330	Practice & Culminating Experience for Epidemiology - MPH EPI	5 credits/7.5 credits	Spring
Students in the Master of Public Health in Epidemiology (MPH-EPI) Program develop an offsite practicum under the supervision of a Harvard University faculty member, often from but not restricted to, the Harvard T.H. Chan School of Public Health. This practicum may include aspects of epidemiology, biostatistics, decision sciences, or other quantitative aspects of public health. Students apply the competencies learned in core courses to an actual investigation that they select. During the first year of the program members of the MPH-EPI Practicum Committee assist the students in selecting an appropriate practicum topic and identify the Harvard mentor for it. This is accomplished by small-group and individual meetings with students while on campus in June of the first year, followed by online video-conference meetings during the subsequent year. Once students finalize the topic for the practicum, they submit one-page description of the practicum, along with name(s) of suggested mentors to the MPH-EPI Practicum Committee. Once approved, the committee recruits the mentor for the practicum, who works with the student to complete the practicum by the end of the second year of the program. This exercise will culminate with an on-campus presentation of the results of the practicum in May of the second year prior to graduation.			
Course Notes	Restricted to MPH-EPI students in 2nd year		

EPI 350	Research	Variable	All Terms by Request
For doctoral candidates who have passed their school-wide Oral Qualifying Examination and who are undertaking advanced work along the lines of fundamental or applied research in the department.			
Course Notes	For doctoral students who have passed oral exam		