200 A Multi-disciplinary Approach to Problems in Global Public Health and Epidemiology
Fall. 3(3-0) R: Open to undergraduate students in the Global Public Health and Epidemiology Specialization.
Overview of global health and the role of epidemiology in studying health problems from a multi-disciplinary perspective.

290 History of Scientific Reasoning and Critical Thinking in Global Public Health and Epidemiology
Spring. 3(3-0) P: EPI 200 R: Open to undergraduate students in the Global Public Health and Epidemiology Specialization.
Introduction to the historical development of public health and epidemiology and how social and scientific contexts shape scientific theories of disease distribution.

390 Disease in Society: Introduction to Epidemiology and Public Health
Spring. 4(4-0) Interdepartmental with Social Science. Administered by Epidemiology.
Human epidemiology and population health issues facing contemporary society. Developed and less-developed settings. Health-related information in the mass media and scholarly publications.

490 Advanced Topics/Methods in Global Public Health and Epidemiology
Fall. 3(2-2) P: EPI 390 and EPI 200 and EPI 290 R: Open to undergraduate students in the Global Public Health and Epidemiology Specialization.
Conceptual and analytical methods used in public health and epidemiology.

495 Epidemiology and Behavioral Health in Society (I)
Summer. 3(3-0) P: Completion of Tier I Writing Requirement R: Not open to freshmen or sophomores or lifelong undergraduate students.
Introduction to epidemiology as applied to behavioral health issues in contemporary society. Life-span developmental perspective from preterm births to late life Alzheimer's disease and the dementias. Offered first half of semester.

546 Information Management: Fundamentals of Epidemiology and Biostatistics
Spring. 1(1-0) RB: Undergraduate statistics. R: Open to graduate-professional students in the College of Human Medicine.
Introduction to accessing, analyzing, and applying information to patients and to populations. Offered first ten weeks of the semester.

547 Information Management: Applications of Epidemiology and Biostats
Fall. 1(1-0) P: EPI 546 RB: Undergraduate statistics. R: Open to students in the College of Human Medicine or approval of department.
Basic competency in accessing, analyzing, and applying information to patients and populations. Offered first half of semester.

805 Readings in the Historical Roots of Epidemiological Thought
Fall. 3(3-0) Interdepartmental with History. Administered by Epidemiology. P: EPI 810 or approval of department R: Open to graduate students in the Epidemiology major or approval of department.
Historical evolution of models of disease causation and population perspectives on disease.

808 Biostatistics I
Fall. 3(3-0) Interdepartmental with Statistics and Probability. Administered by Epidemiology. RB: College-level algebra. R: Open to masters students or doctoral students in the Epidemiology major or approval of department. SA: STT 425
Applications of probability and statistics in the applied health sciences. Probability distributions, estimation and tests for one-, two-, and paired samples, linear regression, correlation, and ANOVA. Use of statistical software. Critical appraisal of statistical methods in the biomedical literature.

808B Advanced Biostatistics
Fall. 3(3-0) P: EPI 810 or concurrently or approval of department RB: Preparation in mathematics and statistics as reflected by previous degree program transcript and a designated score on the quantitative section of the GRE test. R: Open to graduate students in the Department of Epidemiology and Biostatistics. Approval of department.
Fundamental theory of probability and statistical inference related to the practice of public health. Discrete and continuous random variables, sampling distributions, parametric point and interval estimation, hypothesis testing, maximum likelihood estimates, methods of constructing test and estimation procedures. Sample size, power, and efficiency.

809 Biostatistics II
Spring. 3(3-0) Interdepartmental with Statistics and Probability. Administered by Epidemiology. P: EPI 808 RB: MTH 103 or MTH 110 or MTH 116 R: Open to masters students or doctoral students in the Epidemiology major or approval of department. SA: STT 426
Analysis of categorical data in epidemiologic studies. Contingency tables and logistic regression.

810 Introductory Epidemiology
Fall. 3(3-0) R: Open to graduate students in the Department of Epidemiology or approval of department. SA: HM 810
Disease from a population perspective as the interaction of host, agent, and environment. Case definition, measuring frequency of disease, mortality and morbidity data, and major study designs. Offered first half of semester.

812 Causal Inference in Epidemiology
Fall. 3(3-0) P: EPI 810 RB: LCS 829 R: Open to graduate students in the Epidemiology major or approval of department. SA: HM 812
Causality in epidemiology. Application of theoretical concepts to the design, analysis, and assessment of epidemiologic research.

813 Investigation of Disease Outbreaks
Spring. 3 credits. P: EPI 810 R: Open to graduate students in the Epidemiology major or approval of department. SA: HM 813
Principles of and practice in investigating disease outbreaks.

814 Nutritional Epidemiology
Spring of even years. 3(3-0) P: EPI 810 and (EPI 808 and EPI 809 or approval of department) RB: LCS 829 SA: HM 814
Methodologies used in epidemiologic studies of diet and health in the context of U.S. and international dietary patterns. Relationship between diet and specific diseases.

815 Epidemiology of Cardiovascular Disease
Spring of even years. 3(3-0) RB: EPI 810 R: Open to graduate students in the Department of Epidemiology or approval of department. SA: HM 815

816 Perinatal Epidemiology
Fall. 3(3-0) RB: EPI 810 R: Open to graduate students in the Epidemiology major or approval of department. SA: HM 816
Epidemiology of adverse health states in pregnancy and the puerperium. Impact of these health states on subsequent child development.

817 Epidemiology of Communicable Diseases
Fall. 3(3-0) P: EPI 810 or concurrently R: Open to graduate students in the Department of Epidemiology or the Department of Geography or approval of department. SA: HM 817
Application of principles of epidemiology to research in communicable diseases relevant to public health in the U.S. and other countries.

819 Spatial Epidemiology and Medical Geography
Spring. 3(3-0) Interdepartmental with Geography. Administered by Epidemiology. P: EPI 810 or GEO 435 R: Open to graduate students in the Department of Epidemiology or the Department of Geography or approval of department. SA: HM 819
Concepts, techniques, and utilization of spatial-epidemiologic analyses for human health.

823 Cancer Epidemiology
Spring of odd years. 3(3-0) P: EPI 810 and (EPI 808 or approval of department) and (EPI 809 or approval of department) R: Open to graduate students in the Epidemiology major or approval of department. SA: HM 823

826 Research Methods in Epidemiology
Fall. 3(3-0) P: EPI 809 R: Open to graduate students in the Epidemiology major or approval of department. SA: HM 826
Analysis of epidemiologic and clinical data applying statistical methods based on logistic and survival models, using standard software.

826B Categorical Data Analysis
Spring. 3(3-0) P: EPI 808B and EPI 810 RB: Knowledge of research design and quantitative background. R: Approval of department.
Applications to real data from clinical and epidemiologic studies of categorical outcomes, distributions for categorical responses and contingency tables, logistic regression and related logit models for binary and multivariate response variables, repeated and clustered categorical data, generalized linear mixed models.
950  **Advanced Biostatistical Methods in Epidemiology**  
Fall of even years. 3(3-0) P: EPI 808 or EPI 809  
RB: Calculus, linear algebra, regression, experimental designs. R: Open to students in the Epidemiology major or approval of department.  
Study of specific biostatistical methods and epidemiology applications.

951  **Latent Variable Modeling**  
Fall of even years. 3(3-0) P: EPI 808 and EPI 809 and EPI 826 or approval of department  
RB: Calculus, linear algebra, regression, experimental designs. R: Open to graduate students in the Epidemiology major.  
Latent variable models that involve quantities measured indirectly by using multiple proxy items such as factor analysis, latent trait analysis, latent profile analysis, and latent class analysis. Applications.

952  **Duration and Severity Analysis**  
Spring of odd years. 3(3-0) P: EPI 808 and EPI 809 and EPI 826 or approval of department  
RB: Calculus, linear and logistic regressions. R: Open to graduate students in the Epidemiology major.  
Analysis of data that involve time to occurrence of a single event or multiple durations between occurrences of several events; modeling techniques; survival analysis in clinical and public health studies; frailty models; experimental and non-experimental applications using major statistical software.

953  **Analytical Strategies for Observational Studies**  
Fall of odd years. 3(3-0) P: EPI 808 and EPI 809 and EPI 826 or approval of department  
RB: Calculus, linear and logistic regressions  
R: Open to graduate students in the Epidemiology major.  
Models and methods such as propensity scores, instrumental variables, regression discontinuity design, discrete choice analysis, and marginal structural models. Examples will be demonstrated with procedures in major statistical software.

990  **Independent Study**  
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Open to doctoral students in the Department of Epidemiology. Approval of department.  
Special projects, directed reading, and research arranged by an individual graduate student and a faculty member in areas supplementing regular course offerings.

999  **Doctoral Dissertation Research**  
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Open to doctoral students in the Epidemiology major.  
Doctoral dissertation research.