Overview of global health and the role of epidemiology in studying health problems from a multi-disciplinary perspective.
EPI—Epidemiology

817 Epidemiology of Communicable Diseases
Fall. 3(3-0) P: EPI 810 or concurrently R: Open to graduate students in the Department of Epidemiology and Biostatistics 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 Geographic Information Systems. Administered by Epidemiology. P: EPI 810 or GEO 856 R: Open to graduate students in the Department of Epidemiology and Biostatistics or in 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 809 or EPI 808B) R: Open to graduate students in the Department of Epidemiology and Biostatistics 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 Department of Epidemiology and Biostatistics or approval of department. SA: HM 826
Analyses 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 R: Knowledge of research design and quantitative background. R: Open to graduate students in the Biostatistics Major or in the Epidemiology Major or 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 multicategory response variables, repeated and clustered categorical data, generalized linear mixed models.

828 Seminar in Responsible Conduct of Research
Fall. 1(1-0) P: EPI 810 SA: EPI 827
Ethical and regulatory issues in the responsible conduct of epidemiology research. Topics include informed consent; scientific misconduct; human subjects protection; responsible data management including electronic medical records, biological samples and genetic data; HIPAA compliance; and current issues of scientific integrity.

829 Design and Conduct of Epidemiological Studies and Clinical Trials
Spring. 3(2-2) Interdepartmental with Large Animal Clinical Sciences. Administered by Large Animal Clinical Sciences. P: (VM 533 or EPI 810) and (EPI 808 or EPI 808B) R: Open to graduate students in the Department of Epidemiology and Biostatistics or approval of department. Applied analytical methods in experimental design. Assessment of health and disease status of animal and human populations. Risk assessment and interpretation of clinical trials.

830 Epidemiologic Overview of Foodborne Diseases and Food Safety
Fall. 3(3-0) Interdepartmental with Large Animal Clinical Sciences. Administered by Large Animal Clinical Sciences. P: Advanced undergraduate courses in biology, microbiology, biological sciences, biochemistry, and food technology. R: Open to graduate students in the College of Veterinary Medicine or in the Food Safety Specialization or in the Food Safety major.

835 Neuroepidemiology
Fall of odd years. 3(3-0) Interdepartmental with Neurology and Ophthalmology. Administered by Epidemiology. P: EPI 810 or approval of department R: Open to graduate students in the Department of Epidemiology and Biostatistics or approval of department. Epidemiology of neurologic and neuropsychiatric disorders with emphasis on neurodegenerative disorders (e.g., Alzheimer's disease).

836 Practicum in Epidemiological Methods
Fall. 3(3-0) P: (EPI 812 or concurrently) and (EPI 826 or concurrently) R: Open to graduate students in the Department of Epidemiology and Biostatistics or approval of department.
Data management, analysis, interpretation and presentations using public data sets.

840 Clinical Epidemiology for Healthcare Practice
Fall. 3 credits. R: Approval of department. Introduction to clinical epidemiology and evidence-based medicine for clinical practitioners and other healthcare professionals.

847 Analysis of Survival Data
Spring of odd years. 3(3-0) Interdepartmental with Statistics and Probability. Administered by Statistics and Probability. RB: STT 422 or STT 442 or STT 862

851 SAS Programming I: Essentials
Fall. 1(1-0) R: Open to graduate students in the Department of Epidemiology and Biostatistics or approval of department.
A programming approach to plan and write simple SAS programs to solve common data management and data analysis problems.

852 SAS Programming II: Data Management and Analysis
Spring. 1(1-0) P: EPI 851 R: Open to graduate students in the Department of Epidemiology and Biostatistics or approval of department.
A programming approach to plan and write SAS programs to solve common data management and data analysis problems.

853B Statistical Computing
Fall. 3(3-0) P: EPI 808B and EPI 826B R: Open to graduate students in the Biostatistics Major or in the Epidemiology Major or approval of department.
Statistical computation using algorithms including programming languages, SAS/IML, R and/or Stata, Newton-Raphson method, Monte Carlo simulation of probability distributions, bootstrap, statistical graphics.

855 Biostatistical Modeling in Genomic Data Analysis
Fall. 3(3-0) P: (EPI 808B and EPI 826B) or (EPI 826 or concurrently) R: Open to graduate students in the Department of Epidemiology and Biostatistics or approval of department.
Introduction to fundamental principles and modeling of genomic/ genetic data and computational techniques.

856 Statistical Consulting in Public Health
Spring. 1(1-0) P: (EPI 826B and EPI 826) and (LCS 829 or concurrently) R: Open to graduate students in the Department of Epidemiology and Biostatistics or approval of department.
Critical appraisal of applied epidemiological studies, use of real applications to solve design and data analysis problems, and communication of findings to public health researchers, oral/written reports on intermediate and final results of case studies.

858 Clinical Trials
Spring of even years. 3(3-0) P: (EPI 808B or EPI 809) or (LCS 829 or concurrently) R: Open to graduate students in the Department of Epidemiology and Biostatistics or approval of department.

860 Advanced Inference for Biostatistics
Fall. 3(3-0) Interdepartmental with Statistics and Probability. Administered by Epidemiology. P: STT 861 and (STT 862 or concurrently) or approval of department RB: Masters in statistics or biostatistics R: Open to doctoral students in the Department of Epidemiology and Biostatistics or approval of department.
Statistical inference problems with biomedical applications.

880 Select Topics in Biostatistics
Summer. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. P: (EPI 808B or EPI 809) or (PHM 830 or STT 464) R: Open to graduate students in the Department of Epidemiology and Biostatistics or approval of department.
Select topics in biostatistics including global disease distribution and estimation, causal inference, Bayesian methods in health services research.
889  
Applied Epidemiologic Methods for Public Health Practitioners  
Fall of even years. 3(3-0) Interdepartmental with Human Medicine. Administered by Human Medicine. P: HM 802 and HM 803 RB: Academic or professional background in public health and/or public health related discipline R: Open to students in the Public Health major or approval of college. 
Identification and conceptualization of public health problems. Generation of testable hypotheses and appropriate data sets. Interpretation of appropriate measures of associations. Evaluation of validity and generalizability of results and ethical issues surrounding the use of humans in epidemiological research. Real case studies are used to analyze study design including the role of chance, bias, misclassification, effect measure modification, interaction, and missing data.

890  
Independent Study in Epidemiology and Biostatistics  
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 12 credits in all enrollments for this course. RB: EPI 810 R: Open to master's students in the Department of Epidemiology and Biostatistics. Approval of department. Independent study in areas relevant to epidemiology and biostatistics.

899  
Master's Thesis Research  
Fall, Spring, Summer. 1 to 12 credits. A student may earn a maximum of 36 credits in all enrollments for this course. R: Open to master's students in the Department of Epidemiology and Biostatistics. Approval of department. SA: HM 899 Master's thesis research.

910  
Themes in Contemporary Epidemiology  
Spring. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. RB: Master of Science in Epidemiology R: Open to doctoral students in the Epidemiology major. Discussion and critique of important contemporary themes in epidemiology as reflected in current publications in the field.

920  
Advanced Methods in Epidemiology and Applied Statistics  
Spring. 3(3-0) Interdepartmental with Statistics and Probability. Administered by Epidemiology. P: (EPI 826B or concurrently) or EPI 826B RB: Calculus, linear algebra, regression, experimental designs. R: Open to students in the Department of Epidemiology and Biostatistics or approval of department. Pattern recognition and cluster analysis, longitudinal data analysis, path analysis, repeated measures and time-series analysis.

935  
Research Seminar  
Summer. 3(3-0) P: EPI 810 and EPI 812 and LCS 829 RB: Master of Science in Epidemiology or equivalent. Conceptualization, development, and writing of research proposals in epidemiology and other forms of clinical field research.

950  
Advanced Biostatistical Methods in Epidemiology  
Fall of even years. 3(3-0) P: (EPI 826 or concurrently) or EPI 826B RB: Calculus, linear algebra, regression, experimental designs. R: Open to students in the Department of Epidemiology and Biostatistics or approval of department. Study of specific biostatistical methods and epidemiology applications.

952  
Duration and Severity Analysis  
Spring of odd years. 3(3-0) P: (EPI 826B or concurrently) or EPI 826B RB: Calculus, linear and logistic regressions. R: Open to graduate students in the Department of Epidemiology and Biostatistics or approval of department. 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 826B or concurrently) or EPI 826B RB: Calculus, linear and logistic regressions. R: Open to graduate students in the Department of Epidemiology and Biostatistics or approval of department. 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.

977  
Social Epidemiology  
Fall of even years. 3(3-0) Interdepartmental with Sociology. Administered by Epidemiology. P: EPI 810 or approval of department RB: (LCS 829 or EPI 812) or equivalent R: Open to graduate students in the Department of Epidemiology and Biostatistics or approval of department. Introduction to the field of social epidemiology and the social determinants of health. Contemporary theoretical and methodological issues in social epidemiology.

979  
Advanced Topics in Infectious Disease Epidemiology  
Spring of even years. 3(3-0) RB: EPI 817 R: Open to graduate students in the Department of Epidemiology and Biostatistics or approval of department. Epidemiological and public health perspectives on the etiology, transmission and prevention of infectious diseases. Key conceptual and methodological issues associated with studying infectious diseases from molecular and population based perspectives.

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