

## EPIDEMIOLOGY

## EPI

Department of Epidemiology  
College of Human Medicine

- 200 A Multi-disciplinary Approach to Problems in Global Public Health and Epidemiology**  
Fall. 2(2-0) 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. 2(2-0) 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) and (STT 200 or STT 201) R: Open to undergraduate students in the Global Public Health and Epidemiology Specialization.

Conceptual and analytical methods used in public health and epidemiology.

- 546 Information Management: Fundamentals of Epidemiology and Biostatistics**  
Spring. 1(1-0) RB: Undergraduate mathematics and/or statistics R: Open only 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 mathematics and/or 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.

- 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. 2(2-0) 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.

- 811 Epidemiology Exercises and Applications**  
Fall. 1(1-0) R: Open to graduate students in the Department of Epidemiology or approval of department. C: EPI 810 concurrently and EPI 808 concurrently.

Theoretical, conceptual, and methodological issues in epidemiological practice.

- 812 Causal Inference in Epidemiology**  
Fall. 3(3-0) P: EPI 810 and EPI 811 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 and EPI 811 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 811) 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 and EPI 811 R: Open to graduate students in the Department of Epidemiology or approval of department. SA: HM 815

Survey of methodologies used in epidemiologic studies of cardiovascular diseases. Review of evidence of genetic, environmental, and behavioral causes of cardiovascular disease.

- 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 of even years. 3(3-0) RB: EPI 810 R: Open to graduate students in the Epidemiology major 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 in the Department of Geography or approval of department. SA: HM 819

Concepts, techniques, and utilization of spatio-epidemiologic analyses for human health.

- 820 Evidence-Based Medicine**  
Spring of even years. 3(3-0) Interdepartmental with Medicine. Administered by Epidemiology. P: (EPI 810 and EPI 811) and (EPI 808 and EPI 809 or approval of department)

Methodology of clinical epidemiology and health services outcomes research. Linkage of epidemiology with daily clinical problems.

- 823 Cancer Epidemiology**  
Spring of odd years. 3(3-0) P: (EPI 810 and EPI 811) 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

Basic principles of carcinogenesis. Major etiologic factors, types of malignancies, and biomarkers for susceptibility and exposure. Prevention and early detection of cancer.

- 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

Analyses of epidemiologic and clinical data applying statistical methods, based on logistic and survival models, using standard software.

- 828 Seminar in Responsible Conduct of Research**  
Summer. 1(1-0) P: EPI 810 and EPI 811 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 other current issues of scientific integrity.

## Epidemiology—EPI

- 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 811)) and EPI 808  
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. RB: Advanced undergraduate courses in biology, microbiology, biological sciences, biochemical sciences, 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.  
Epidemiologic survey of important foodborne diseases addressing recent trends. Sources of surveillance data. Measurement and management of risk factors associated with major foodborne diseases. Tracking foodborne pathogens from farm to table. Introduction to Hazard Analysis Critical Control Points (HACCP).
- 831 Global Burden of Disease - Non-Communicable I**  
Fall. 1(2-0) P: EPI 810 or concurrently R: Open to students in the Epidemiology major or in the Global Public Health and Epidemiology Specialization or in the Health Communication major or approval of department.  
Cardiovascular disease, diabetes, breast cancer and neurological diseases. Epidemiology and public health aspects of non-communicable diseases. Data sources (State vital records), drug dependence, kidney disease, and psychiatric diseases. Offered first half of semester.
- 832 Global Burden of Disease - Communicable I**  
Fall. 1(2-0) P: EPI 810 or concurrently R: Open to students in the Epidemiology major or in the Global Public Health and Epidemiology Specialization or in the Health Communication major or approval of department.  
Tuberculosis, food-borne illnesses, anti-microbial resistance and avian influenza topics. Epidemiology and public health aspects of these communicable diseases. Outbreak investigations, rabies, SARS, zoonotic diseases and emerging diseases. Offered second half of semester.
- 833 Global Burden of Disease - Non-Communicable II**  
Spring. 1(2-0) P: EPI 810 or concurrently R: Open to students in the Epidemiology major or in the Global Public Health and Epidemiology Specialization or in the Health Communication major or approval of department.  
Asthma, colon cancer, psychiatric diseases and chronic obstructive pulmonary disease-related topics. Data sources (birth defects), drug dependence, psychiatric diseases and kidney disease. Offered first half of semester.
- 834 Global Burden of Disease - Communicable II**  
Spring. 1(2-0) P: EPI 810 or concurrently R: Open to students in the Epidemiology major or in the Global Public Health and Epidemiology Specialization or in the Health Communication major. Approval of department.  
HIV, influenza, West Nile, and vaccine-preventable diseases. Rabies, outbreak investigations, SARS, zoonotic diseases and emerging diseases. Offered second half of semester.
- 835 Neuroepidemiology**  
Summer of even years. 3(3-0) Interdepartmental with Neurology and Ophthalmology. Administered by Epidemiology. P: EPI 810 and EPI 811 R: Open to graduate students in the Epidemiology major or approval of department.  
Epidemiology of neurologic conditions and discussion of the inherent difficulty in studying these disorders. Offered half of semester.
- 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  
Analysis of lifetime data. Estimation of survival functions for parametric and nonparametric models. Censored data. The Cox proportional hazards model. Accelerated failure time models. Frailty models. Use of statistical software packages.
- 851 SAS Programming I: Essentials**  
Fall. 1(1-0) R: Open only to graduate students in the Epidemiology major 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 only to graduate students in the Epidemiology major or approval of department.  
A programming approach to plan and write SAS programs to solve common data management and data analysis problems.
- 853 SAS Programming III: Research Data Analysis Using SAS**  
Summer. 1(1-0) P: EPI 852 R: Open only to graduate students in the Epidemiology major or approval of department.  
A programming approach to plan and write SAS programs to solve data management and data analysis problems in research settings.
- 890 Independent Study in Epidemiology**  
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 only to master's students in the Epidemiology major. Approval of department. SA: HM 890  
Independent study in areas relevant to epidemiology such as population genetics.
- 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 only to master's students in the Epidemiology major. 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 of even years. 3(3-0) Interdepartmental with Statistics and Probability. Administered by Epidemiology. P: EPI 826  
Pattern recognition and cluster analysis, longitudinal data analysis, path analysis, repeated measures and time-series analysis.
- 935 Research Seminar**  
Spring. 3(3-0) P: EPI 810 and EPI 811 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 808 or EPI 809 RB: Calculus, linear algebra, regression, experimental designs. R: Open to students in the Epidemiology major or approval of department.  
In-depth study of specific biostatistical methods and epidemiology applications.
- 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 only to doctoral students in the Epidemiology major.  
Doctoral dissertation research.