EPIDEMIOLOGY (EPI)

Graduate Studies

EPI 202 — Quantitative Epidemiology I: Probability (5 units)

Course Description: Foundations in probability for epidemiologists. Emphasis on properties of and relationships between distributions and application of probability concepts to epidemiology. Includes a mathematical skills laboratory to assist in solution of epidemiologic problems.
Prerequisite(s): ((MAT 016A, MAT 016B) or (MAT 017A, MAT 017B) or (MAT 021A, MAT 021B)); STA 100; STA 108 (can be concurrent); or equivalent of any listed course with consent of instructor; concurrent or previous enrollment in a basic epidemiology course (e.g., EPI 205).
Learning Activities: Lecture 4 hour(s), Laboratory 2 hour(s).
Grade Mode: Letter.

EPI 203 — Quantitative Epidemiology II: Statistical Inference (4 units)

This version has ended; see updated course, below.
Course Description: Provides the mathematical statistics foundation for statistical models, methods, and data analysis.
Prerequisite(s): STA 108; (EPI 202 or STA 130A or STA 131A); EPI 205.
Learning Activities: Lecture 3 hour(s), Discussion/Laboratory 1 hour(s).
Grade Mode: Letter.

EPI 203 — Quantitative Epidemiology II: Statistical Inference (4 units)
Course Description: Provides the mathematical statistics foundation for statistical models, methods, and data analysis.
Prerequisite(s): STA 108; (EPI 202 or STA 130A or STA 131A); (EPI 205 or MPM 205); ((MAT 017A B or better, MAT 017B B or better) or (MAT 021A B or better, MAT 021B B or better)); MAT 017C or MAT 021C or MAT 167 recommended.
Learning Activities: Lecture 3 hour(s), Discussion/Laboratory 1 hour(s).
Enrollment Restriction(s): Open to Epidemiology graduate students.
Grade Mode: Letter.
This course version is effective from, and including: Spring Semester 2026.

EPI 204 — Quantitative Epidemiology III: Statistical Models (4 units)

Course Description: Introduces statistical models, methods, and data analysis in the areas of generalized linear model and survival analysis methodology.
Prerequisite(s): STA 108; (EPI 203 or STA 130B or STA 131B); EPI 205.
Learning Activities: Lecture 3 hour(s), Discussion/Laboratory 1 hour(s).
Grade Mode: Letter.

EPI 205 — Principles of Epidemiology (4 units)

Course Description: Basic epidemiologic concepts and approaches to epidemiologic research, with examples from veterinary and human medicine, including outbreak investigation, infectious disease epidemiology, properties of tests, and an introduction to epidemiologic study design and surveillance.
Prerequisite(s): MPM 202; or consent of instructor; an introductory statistics course.
Learning Activities: Lecture 4 hour(s).
Cross Listing: MPM 205.
Grade Mode: Letter.

EPI 206 — Epidemiologic Study Design (4 units)

Course Description: Builds on concepts presented in EPI 205. Concepts of epidemiologic study design (clinical trials, observational cohort studies, case control studies) introduced in EPI 205A are covered in more depth, using a problem-based format. Discussion of published epidemiologic studies.
Prerequisite(s): EPI 205; or consent of instructor.
Learning Activities: Lecture 30 hour(s), Discussion 9 hour(s), Laboratory 2 hour(s).
Cross Listing: MPM 206.
Grade Mode: Letter.

EPI 207 — Advanced Epidemiologic Methodology (4 units)

Course Description: In-depth integration of advanced epidemiological concepts. Theory, methods, and applications for observational studies including random and systematic error, confounding, counterfactuals, causal inference, effect modification, internal and external validity, estimability, and interpretation of effect measures, and advanced study designs.
Prerequisite(s): EPI 206.
Learning Activities: Lecture/Discussion 4 hour(s).
Cross Listing: SPH 207.
Grade Mode: Letter.

EPI 208 — Analysis & Interpretation of Epidemiologic Data (3 units)

Course Description: Application of theory and concepts of statistics and epidemiology to analysis and interpretation of data typically found in veterinary and human epidemiologic research.
Prerequisite(s): EPI 204 (can be concurrent); EPI 207; (STA 144 or PHR 202); and entry level skill in standard statistical software (eg. SPSS, BMDP, SAS, Stata, MinTab, S-Plus).
Learning Activities: Lecture 16 hour(s), Laboratory 21 hour(s), Project.
Grade Mode: Letter.

EPI 209 — History of Epidemiology in Public Health (2 units)

Course Description: Introduction to the history of epidemiology in solving major public health problems. Original historical articles will be read/discussed. Topics may include: infectious disease, accidents/adverse events, nutritional deficiencies, community vaccination trials, occupational exposures, cancer, birth defects, cardiovascular disease, and smoking.
Learning Activities: Lecture 0.50 hour(s), Discussion 1.50 hour(s).
Cross Listing: SPH 209.
Grade Mode: Letter.

EPI 210 — Implementation Research in Health (3 units)

Course Description: Introduction to concepts and methods in implementation science, including theories, models and frameworks, qualitative and mixed methods, adaptations, and common study designs in implementation research.
Prerequisite(s): EPI 205 and consent of instructor.
Learning Activities: Lecture/Discussion 3 hour(s).
Grade Mode: Letter.

EPI 212 — Infectious Disease Epidemiology (3 units)

Course Description: Basic and advanced level of conceptual and methodological foundations in infectious disease epidemiology necessary for veterinarians to develop and evaluate programs for detection, prevention, and control of infectious diseases in animal populations.
Prerequisite(s): Consent of instructor.
Learning Activities: Lecture 2 hour(s), Discussion/Laboratory 1 hour(s).
Cross Listing: MPM 212.
Grade Mode: Letter.

EPI 220 — Problems in Epidemiologic Study Design (4 units)

Course Description: Design and development of research protocols and funding applications for peer review. Application of research methods data collection and management and statistical analysis in research proposals. Methods of evaluating research proposals, mechanisms of funding, specifying human subjects considerations.
Prerequisite(s): MPM 405; STA 102; STA 106; or the equivalent; MPM 406 or the equivalent; PHR 207 required concurrently.
Learning Activities: Lecture 3 hour(s), Term Paper.
Grade Mode: Letter.

EPI 223 — Spatial Epidemiology (3 units)

Course Description: Geographic Information Systems (GIS) and spatial statistics. Students are expected to complete a term project based on their graduate research.
Prerequisite(s): EPI 205 or MPM 205.
Learning Activities: Lecture 2 hour(s), Laboratory 3 hour(s).
Grade Mode: Letter.

EPI 224 — Health & Ecological Risk Analysis (4 units)

Course Description: Methodological approach to risk analysis for human and animal-related health and ecological issues. Basic principles of risk analysis, including perception, communication, assessment and management. Emphasis on the assessment of risk.
Learning Activities: Lecture 2 hour(s), Laboratory 4 hour(s).
Grade Mode: Letter.

EPI 225 — Advanced Topics in Epidemiology Methods (2 units)

Course Description: In-depth study of topics in epidemiology theory and methods, selected from: causal inference, confounding, study design, or other related areas, with year to year variation. Readings are assigned and students are expected to lead discussions on the readings.
Prerequisite(s): EPI 205; EPI 206; EPI 207; or equivalents, with consent of instructor.
Learning Activities: Discussion 2 hour(s).
Repeat Credit: May be repeated when topic differs.
Grade Mode: Letter.

EPI 226 — Methods for Longitudinal & Repeated Measurement Data (3 units)

Course Description: Mixed models for longitudinal data (LD)/repeated measurements; Mean and covariance models; General linear LD models; Random coefficients models; Linear mixed effects models for continuous outcome; Generalized linear mixed effects model for discrete outcome including binary, ordinal and count data.
Prerequisite(s): EPI 204; or consent of instructor.
Learning Activities: Lecture 2 hour(s), Discussion 1 hour(s).
Grade Mode: Letter.

EPI 227 — Meta Analysis (4 units)

Course Description: Systematic review, standard and advanced statistical methods for meta-analysis and syntheses of knowledge and evidence. Quantitative analysis of published data, primarily in aggregate form. Students demonstrate skills in study design, protocol, analysis, and results reporting through presentation of drafted first author paper.
Prerequisite(s): A course in basic statistics or consent of instructor.
Learning Activities: Lecture 3 hour(s), Term Paper.
Grade Mode: Letter.

EPI 229 — Geographic Information Systems for Health Professionals (4 units)

Course Description: Emphasis on basic geographic and data management principles. Focus on software proficiency in application to analyzing/solving health-related problems. For graduate and professional students in epidemiology, public health, preventive veterinary medicine, health informatics with interest in spatial techniques in research.
Learning Activities: Lecture 2 hour(s), Laboratory 6 hour(s).
Grade Mode: Letter.

EPI 230 — Introduction to Molecular Epidemiology (3 units)

Course Description: Overview of the modern field of molecular epidemiology. Integrates molecular biology into traditional epidemiologic research by identifying pathways, molecules and genes that influence the risk of developing disease.
Prerequisite(s): EPI 205.
Learning Activities: Lecture/Discussion 3 hour(s).
Grade Mode: Letter.

EPI 231 — Infectious Disease Epidemiology (3 units)

Course Description: Infectious disease epidemiology and prevention, with emphasis on human and veterinary diseases of global health importance. Major global health epidemics and challenges of infectious diseases, by mode of transmission.
Prerequisite(s): Introductory epidemiology course; e.g., EPI 205.
Learning Activities: Lecture 2 hour(s), Discussion 1 hour(s).
Grade Mode: Letter.

EPI 232 — Advanced Data Analysis with SAS (3 units)

Course Description: Provide an overview of common advanced statistical methods as well as a treatment of how to use SAS to implement them. Learn the ideas of reproducible research and reporting of statistical analyses.
Prerequisite(s): EPI 202; EPI 203; EPI 204; or the equivalent, or consent of instructor.
Learning Activities: Lecture 3 hour(s).
Grade Mode: Letter.

EPI 240 — Principles of Injury Epidemiology (3 units)

Course Description: Overview of the epidemiology of human injury, including general principles, surveillance methods, behavioral factors, environmental factors, treatment issues and engineering and legal interventions related to vehicular injuries, drownings, falls, fires and burns, poisonings, firearm injuries, and other intentional injuries.
Learning Activities: Lecture/Discussion 3 hour(s).
Grade Mode: Letter.

EPI 242 — Critical Thinking in Epidemiology (3 units)

Course Description: Critical thinking in Epidemiology.
Prerequisite(s): EPI 205 B or better; EPI 206 B or better; EPI 207 (can be concurrent).
Learning Activities: Discussion 3 hour(s).
Enrollment Restriction(s): Open to Epidemiology Graduate Group students or advanced medical students only; limited to 15 students.
Grade Mode: Letter.

EPI 251 — Environmental Epidemiology (3 units)

Course Description: Examination of the human health effects and the risk of disease from community, occupational, and personal exposure to toxic substances.
Prerequisite(s): MPM 405 (can be concurrent); upper division undergraduates who have completed EST 126; or the equivalent.
Learning Activities: Lecture 3 hour(s).
Grade Mode: Letter.

EPI 260 — Epidemiology of Chronic Diseases & Aging (3 units)

Course Description: Overview of the epidemiology of chronic disease in old age. Topics include biology of aging, epidemiology of cardiovascular disease, neoplasms, osteoporosis and fractures, psychosocial factors and health in old age, dementias, functional status and prevention of disease.
Learning Activities: Lecture/Discussion 3 hour(s).
Grade Mode: Letter.

EPI 270 — Research Methods in Occupational Epidemiology (3 units)

Course Description: Methods used in epidemiologic research on occupational hazards. Topics include design and analysis of cohort and case-control studies, sample size, measuring dose, choosing a control group, validation of employment and health data, interpreting negative studies, and analysis software.
Prerequisite(s): (EPI 205 or MPM 205); (MPM 202 or STA 100).
Learning Activities: Lecture/Discussion 3 hour(s).
Grade Mode: Letter.

EPI 272 — Cancer Epidemiology (2 units)

Course Description: Covers the underlying concepts essential to understanding cancer epidemiology, such as trends in incidence and survival, epidemiologic methods used to assess cancer etiology, prevention and control, and an introduction to the cancer initiation and progression multi-stage model.
Prerequisite(s): EPI 205; EPI 206 (can be concurrent); STA 100; must have basic understanding of epidemiologic and statistical concepts covered in the listed courses.
Learning Activities: Recitation 1 hour(s), Discussion 1 hour(s).
Grade Mode: Letter.

EPI 277 — Mathematical Models in Epidemiology (3 units)

Course Description: Theory of epidemics and mathematical modeling concepts for infectious diseases to include discrete and continuous time models, their use to explore disease dynamics and investigate prevention and control strategies for human and veterinary infectious diseases.
Prerequisite(s): MPM 403; MPM 405; consent of instructor; although not required, students encouraged to refresh their knowledge of high school calculus and differential equations.
Learning Activities: Lecture/Discussion 2 hour(s), Laboratory 2 hour(s).
Enrollment Restriction(s): Limited to 30 students.
Cross Listing: PHR 277.
Grade Mode: Letter.

EPI 280 — Introduction to SAS Programming (3 units)

Course Description: Introduction to SAS, an integrated software system for data retrieval and management, data manipulation and programming.
Prerequisite(s): Introductory statistics course; e.g., MPM 402, STA 102.
Learning Activities: Lecture 2 hour(s), Discussion/Laboratory 1 hour(s).
Cross Listing: SPH 280.
Grade Mode: Letter.

EPI 290 — Seminars in Epidemiology (0.5 units)

Course Description: Faculty and students will present and lead discussion of ongoing or published epidemiologic research.
Learning Activities: Seminar 0.50 hour(s).
Grade Mode: Satisfactory/Unsatisfactory only.

EPI 291 — Seminars in Human Health Services Research & Clinical Epidemiology (1 unit)

Course Description: Critical review, evaluation, and discussion of research in health services and clinical epidemiology. Presentation of statistical, epidemiologic, and econometric methods. Students present their own research and critique the work of others.
Learning Activities: Seminar 1 hour(s).
Repeat Credit: May be repeated.
Cross Listing: GMD 291.
Grade Mode: Satisfactory/Unsatisfactory only.

EPI 298 — Group Study (1-5 units)

Course Description: Group study in selected areas of epidemiology.
Learning Activities: Seminar 1-5 hour(s).
Grade Mode: Letter.

EPI 299 — Research (1-12 units)

Course Description: Research in selected areas of epidemiology.
Learning Activities: Variable.
Grade Mode: Satisfactory/Unsatisfactory only.