Epidemiology

Head

• James C. Torner

Graduate degrees: M.S. in clinical investigation; M.S. in epidemiology; Ph.D. in epidemiology

Faculty: http://www.public-health.uiowa.edu/epi-faculty-list/

Web site: http://www.public-health.uiowa.edu/epi/

The Department of Epidemiology focuses on surveillance for disease, risk factors for disease in the general population, behavioral factors in disease, use and outcome of health interventions and care, and the establishment and evaluation of disease control measures in the community. Students are guided by faculty members whose research interests include epidemiology of communication disorders, pharmacoepidemiology, cancer epidemiology, infectious disease epidemiology, adverse reproductive outcome epidemiology, anatomic pathology, genetics, cardiovascular disease, nutrition, smoking cessation, epidemiology of reproduction, dental epidemiology, clinical epidemiology, neuroepidemiology, meta-analysis, intervention trials, international health, and effects of aging.

Graduate Programs of Study

• Master of Science in clinical investigation
• Master of Science in epidemiology
• Doctor of Philosophy in epidemiology

The Department of Epidemiology collaborates with the University of Iowa Institute for Clinical and Translational Science to offer the M.S. program in clinical investigation and the Certificate in Translational and Clinical Investigation. In addition to its graduate degree, the department offers the epidemiology subprogram for the Master of Public Health; see “M.P.H. Subprogram” below. It also participates in a joint degree program with the Department of Biology (College of Liberal Arts and Sciences); see “Joint B.A. in Biology/M.S. in Epidemiology” below.

Master of Science: Clinical Investigation

The Master of Science program in clinical investigation requires 30 s.h. of graduate credit. In addition to completing the program’s required course work, M.S. students must write a thesis in the form of a manuscript, or a grant proposal for a National Institutes of Health (NIH) career award or its equivalent, with oral defense.

The program, which is offered in collaboration with the University’s Institute for Clinical and Translational Science, is designed for clinicians interested in pursuing careers in clinical research. It includes in-depth training in biostatistics, epidemiology, research ethics, and academic survival skills as well as didactic training applicable to basic training in clinical research careers. Graduates of the program are able to critically evaluate clinical literature, write competitive grant proposals, design and conduct clinical research projects, work effectively with other researchers and support staff, and disseminate research results through manuscripts and presentations.

Applicants to the program must have completed the following course work.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
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</thead>
<tbody>
<tr>
<td>BIOS:5110 Introduction to Biostatistics (or equivalent)</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>EPID:4400 Epidemiology I: Principles (or equivalent)</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>Courses in pathology, physiology, and/or pharmacology</td>
<td>6 s.h.</td>
</tr>
</tbody>
</table>

Students who are admitted to the program with deficiencies in the required 6 s.h. of pathology, physiology, and/or pharmacology may complete courses that fulfill the requirement once they have enrolled in the program.

Graduate students in the Department of Epidemiology must maintain a g.p.a. of at least 3.00. Those who receive a grade of C in 7 s.h. of course work may be dismissed from the program.

The Master of Science in clinical investigation requires the following course work.

CORE COURSES

Students must complete all of the following core courses (20 s.h.).

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPID:5241 Statistical Methods in Epidemiology</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>EPID:5500 Introduction to Clinical Epidemiology</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>EPID:5610 Intermediate Epidemiology Data Analysis with SAS and R</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>EPID:6000 Independent Study in Epidemiology</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>EPID:6150 Writing for Medical Journals</td>
<td>1 s.h.</td>
</tr>
<tr>
<td>EPID:6400 Epidemiology II: Advanced Methods</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>EPID:6950 Clinical Research Ethics</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>MPH:6100 Essentials of Public Health</td>
<td>1 s.h.</td>
</tr>
</tbody>
</table>

ELECTIVES

Students must earn a minimum of 10 s.h. in elective course work, which must include at least 3 s.h. in focus area electives. In addition to the focus area electives, the following courses are recommended as elective course work.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPID:5214 Meta-Analysis of Epidemiologic Studies</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>EPID:6100 Writing a Research Protocol</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>EPID:6900 Design of Intervention and Clinical Trials</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>EPID:6910 Pharmacoepidemiology</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

Focus Area Electives

Students must complete at least 3 s.h. chosen from the following focus area electives.

Health Services Epidemiology

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPID:4990 Practicing Evidence-Based Public Health</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>EPID:6360 Nutrition Intervention in Clinical Trials Research</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>EPID:6900 Design of Intervention and Clinical Trials</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>EPID:6910 Pharmacoepidemiology</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>BIOS:6610 Statistical Methods in Clinical Trials</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>BIOS:7600 Advanced Biostatistics Seminar</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>
CBH:6205 Designing and Implementing Interventions  3 s.h.
PCOL:5136 Pharmacogenetics and Pharmacogenomics  1 s.h.
PHAR:7100 Translational Research and Clinical Drug Development  3 s.h.

Nutrition Science
EPID:4120 Public Health Nutrition  3 s.h.
EPID:6245 Epidemiology of Physical Activity  3 s.h.
EPID:6330 Global Nutrition Policy  3 s.h.
EPID:6350 Nutritional Epidemiology  2 s.h.
EPID:6360 Nutrition Intervention in Clinical Trials Research  2 s.h.
EPID:6370 Nutrition Intervention in Research Lab  3 s.h.

Epidemiology
EPID:5560 Introduction to Molecular Epidemiology  3 s.h.
EPID:5570 Zoonotic Diseases  3 s.h.
EPID:6250 Genetics and Epidemiology  4 s.h.
EPID:6510 Injury Epidemiology  3 s.h.
EPID:6530 Epidemiology of Occupational Injuries  3 s.h.
EPID:6550 Epidemiology of Infectious Diseases  3 s.h.
EPID:6560 Hospital Epidemiology  2 s.h.
EPID:6600 Epidemiology of Chronic Diseases  3 s.h.
EPID:6630 Epidemiology of Reproductive Diseases  2 s.h.
EPID:6640 Epidemiology of Maternal and Infant Health  2 s.h.
EPID:6650 Cardiovascular Disease Epidemiology  3 s.h.
EPID:6670 Psychiatric Epidemiology  3 s.h.
EPID:6700 Cancer Epidemiology and Control  3 s.h.
DPH:6004 Principles of Oral Epidemiology  3 s.h.
GEOG:3110 Geography of Health  3 s.h.

Informatics
EPID:4450 Public Health Data  2 s.h.
EPID:5200 Principles of Public Health Informatics  3 s.h.
EPID:5600 Introduction to Epidemiology Data Management and Analysis  3 s.h.
HMP:5315 Health Services Information Systems  3 s.h.
HMP:5370 Health Informatics I  3 s.h.
IGPI:5210 Health Informatics II  3 s.h.

Community Studies
CBH:5235 Community-Based Participatory Research  3 s.h.
CBH:5305 Evaluation I: Approaches and Applications  3 s.h.
CBH:6205 Designing and Implementing Interventions  3 s.h.
CBH:6305 Evaluation II: Design and Methods  3 s.h.
EPLS:5165 Introduction to Program and Project Evaluation  3 s.h.

Statistical Methods
BIOS:6210 Applied Survival Analysis  3 s.h.
BIOS:6310 Introductory Longitudinal Data Analysis  3 s.h.

Outcomes and Health Services Research
HMP:5410 Health Economics I  3 s.h.
HMP:7550 Cost Effectiveness and Decision Analysis  3 s.h.
HMP:7960 Analytic Issues in Health Services Research I  3 s.h.
HMP:7965 Analytic Issues in Health Services Research II  3 s.h.

Pharmacy Science
PHAR:5310 Pharmaceutical Socioeconomics  1 s.h.
PHAR:5350 Introduction to Research Methods  3 s.h.
PHAR:6305 Foundation Literature in Pharmaceutical Socioeconomics  3 s.h.

Master of Science: Epidemiology

The Master of Science program in epidemiology requires 39 s.h. of graduate credit and is offered with or without thesis. The program prepares graduate students for professional careers in which specialized knowledge of epidemiological methods and analytic techniques are essential. Graduates find employment in local, state, and federal health agencies, academic institutions, and private enterprise, for example, hospitals, pharmaceutical and device companies, insurance companies, and foundations.

Graduate students in epidemiology must maintain a g.p.a. of at least 3.00. Those who receive a grade of C in 7 s.h. of course work may be dismissed from the program. Students who choose to complete the degree without thesis are required to pass a comprehensive examination.

Students are required to attend 80 percent, for three semesters, of all Department of Epidemiology seminar meetings and journal club meetings. They must present one scientific poster at the departmental level before they may graduate, and the department recommends that they present at the international, national, regional, state, or University level before graduating.

The Master of Science in epidemiology requires the following course work.

CORE COURSES

Students earn 30-31 s.h. in the required core, as follows.

All of these:
EPID:4400 Epidemiology I: Principles  3 s.h.
EPID:5241 Statistical Methods in Epidemiology  4 s.h.
EPID:5600 Introduction to Epidemiology Data Management and Analysis  3 s.h.
EPID:5610 Intermediate Epidemiology Data Analysis with SAS and R  3 s.h.
EPID:5925 Epidemiology Journal Club: Evaluating the Literature  0 s.h.
EPID:6400 Epidemiology II: Advanced Methods  4 s.h.
BIOS:5110 Introduction to Biostatistics  3 s.h.
MPH:6100 Essentials of Public Statistics  1 s.h.
One of these:

- PATH:5270 Pathogenesis of Major Human Diseases 3 s.h.
- PATH:8133 Introduction to Human Pathology for Graduate Students 4 s.h.

One of these:

- EPID:6550 Epidemiology of Infectious Diseases 3 s.h.
- EPID:6600 Epidemiology of Chronic Diseases 3 s.h.

One of these:

- EPID:5950 Preceptorship in Epidemiology (for nonthesis students) 3 s.h.
- EPID:7000 Thesis/Dissertation (for thesis students, may be taken twice) 3 s.h.

**ELECTIVES**

Students must earn a minimum of 5 s.h. in elective course work from Department of Epidemiology courses (prefix EPID) and 2 s.h. in additional graduate course work pertinent to the student's educational goals and background (the additional 2 s.h. may be earned in an epidemiology course or in another graduate course, with the advisor's approval). The following courses are recommended.

- BIOS:6210 Applied Survival Analysis 3 s.h.
- BIOS:6310 Introductory Longitudinal Data Analysis 3 s.h.
- CBH:5220 Health Behavior and Health Education 3 s.h.
- HMP:4000 Introduction to the U.S. Health Care System 3 s.h.
- OEH:4240 Global Environmental Health 3 s.h.

Students may need additional elective course work in order to complete the minimum 39 s.h. required for the degree.

**Joint B.A. in Biology/M.S. in Epidemiology**

Bachelor of Arts students majoring in biology who are interested in earning a Master of Science in epidemiology may apply to the joint B.A./M.S. program offered by the College of Liberal Arts and Sciences and the College of Public Health. The joint program permits students to count 12 s.h. of credit toward the requirements of both degrees, enabling them to begin the study of public health before they complete their bachelor's degree. For information about the B.A. program, see Biology (College of Liberal Arts and Sciences) in the Catalog.

**M.P.H. Subprogram**

The Department of Epidemiology offers the epidemiology subprogram for the Master of Public Health. The subprogram focuses on fundamental concepts and methods and provides training in the use of data and methods for disease assessment and for evaluation of programs and interventions. Graduates of the program work in public health departments and other health care settings. See Master of Public Health Program in the Catalog.

**Doctor of Philosophy: Epidemiology**

The Doctor of Philosophy program in epidemiology requires a minimum of 78 s.h. of graduate credit. The program prepares graduate students for careers as scientists, teachers, and practitioners of epidemiologic methods. Employment opportunities exist in academic institutions; local, state, and federal health agencies; and in private enterprises.

Graduate students in epidemiology must maintain a g.p.a. of at least 3.00. Those who receive a grade of C in 7 s.h. of course work may be dismissed from the program.

All doctoral students must successfully complete a qualifying examination, a comprehensive examination, a dissertation prospectus, and a dissertation. The research topic and content, which vary depending on the program of study, must be approved by the student's dissertation committee. Other degree requirements include approved electives chosen from Department of Epidemiology courses (prefix EPID) and other University of Iowa courses.

Students are required to attend 80 percent, for five semesters, of all Department of Epidemiology seminar meetings and journal club meetings; attendance during the student's enrollment in the M.S. program does not count toward this requirement. Students also must present a departmental seminar on their dissertation research and an oral presentation or scientific poster presentation at an international, national, regional, state, or University level before they may graduate.

The Doctor of Philosophy in epidemiology requires the following course work.

**CORE COURSES**

Students earn 39-41 s.h. in the required core, as follows.

All of these:

- EPID:4400 Epidemiology I: Principles 3 s.h.
- EPID:5241 Statistical Methods in Epidemiology 4 s.h.
- EPID:5600 Introduction to Epidemiology Data Management and Analysis 3 s.h.
- EPID:5610 Intermediate Epidemiology Data Analysis with SAS and R 3 s.h.
- EPID:5925 Epidemiology Journal Club: Evaluating the Literature 0 s.h.
- EPID:6050 Research in Epidemiology 3 s.h.
- EPID:6100 Writing a Research Protocol 3 s.h.
- EPID:6400 Epidemiology II: Advanced Methods 4 s.h.
- EPID:7400 Epidemiology III: Theories 3 s.h.
- BIOS:5110 Introduction to Biostatistics 3 s.h.
- MPH:6100 Essentials of Public Health 1 s.h.

One of these:

- BIOS:6210 Applied Survival Analysis 3 s.h.
- BIOS:6310 Introductory Longitudinal Data Analysis 3 s.h.

One of these:

- PATH:5270 Pathogenesis of Major Human Diseases 3 s.h.
- PATH:8133 Introduction to Human Pathology for Graduate Students 4 s.h.
Focus Area
Each Ph.D. student must declare a focus area. Working with the focus area coordinator, a student develops a study plan that will enable him or her to develop substantive knowledge in a specific area that will lead to important original research. Focus areas for Ph.D. students include cancer control, cancer etiology, infectious disease, occupational and environmental epidemiology, and pharmacoepidemiology. For lists of required course work in each focus area, see Ph.D. in Epidemiology on the department’s web site. Individualized Ph.D. programs may be completed with the department’s approval.

Electives
Students must complete a total of 23-25 s.h. of elective course work. They must earn 3 s.h. in a Department of Epidemiology course (prefix EPID) outside their focus area and at least 20 s.h. in courses in their focus area. Course selection must be approved by the student’s advisor and Ph.D. plan of study committee.

Dissertation
All doctoral students must successfully complete a Ph.D. thesis.

Certificate in Translational and Clinical Investigation
The Department of Epidemiology and the Institute for Clinical and Translational Science offer the graduate certificate program in translational and clinical investigation; see Translational and Clinical Investigation in the Catalog.

Related Certificate: Emerging Infectious Disease Epidemiology
The College of Public Health and the Graduate College offer the Certificate in Emerging Infectious Disease Epidemiology. The certificate program provides basic information and training related to infectious diseases. It is designed for a broad range of individuals, including graduate students, international public health professionals, laboratory professionals, physicians, nurses, veterinarians, and medical technologists. To learn more, see Emerging Infectious Disease Epidemiology in the Catalog.

Admission
Applicants to the M.S. and Ph.D. programs in the Department of Epidemiology must apply through the Schools of Public Health Application Service (SOPHAS); they also must apply for admission to the Graduate College through the University of Iowa Office of Admissions. For detailed application information, visit Prospective Students/How to Apply on the Department of Epidemiology web site.

M.S.: Clinical Investigation
Applicants to the M.S. program in clinical investigation must hold a doctoral-level degree in a clinical discipline (e.g., M.D., D.O., D.D.S., Ph.D., Pharm.D., D.V.M.) or be enrolled in the Medical Scientist Training Program (Carver College of Medicine). They must hold a baccalaureate degree with a cumulative g.p.a. of at least 3.00; foreign-trained applicants must have an outstanding doctoral training record.

Applicants are considered based on their credentials, prior training, and research training plans. An applicant with deficiencies in one area may be admitted if all other components of his or her application are strong. Applicants must have a sponsoring department.

Applicants must meet the admission requirements of the Graduate College; see the Manual of Rules and Regulations of the Graduate College.

Application deadlines are April 1 for U.S. citizens, March 15 for international applicants.

M.S. and Ph.D.: Epidemiology
The epidemiology faculty considers several factors when evaluating applications for admission, including Graduate Record Exam (GRE) General Test scores, grade-point average, letters of recommendation, intent and motivation for graduate study, and research interests. A student with deficiencies in one area may be admitted if all other components of his or her application are very strong.

All M.S. program applicants must hold a baccalaureate degree and have a cumulative g.p.a. of at least 3.00. Undergraduate preparation must include two semesters of biological sciences and mathematics through algebra. Course work in statistics is highly recommended.

Ph.D. program applicants must hold a baccalaureate degree (an M.S. or M.P.H. usually is required) and must have a cumulative g.p.a. of at least 3.00. Courses in the biological, physical, and mathematical sciences provide important background; one semester of calculus, one semester of statistics or biostatistics, and two semesters of biological sciences are highly recommended. Computing skills also are desirable.

All applicants to the M.S. or Ph.D. program must have taken the Graduate Record Examination (GRE) General Test, the Medical College Admission Test (MCAT), or the Dental Admission Test (DAT), scoring above the 50th percentile, within four years before applying to the epidemiology program. The department prefers recent test scores, particularly for applicants who completed educational programs and/or courses after taking one of these tests.

Applicants whose first language is not English and who do not hold a baccalaureate degree from an accredited institution in the United States, the United Kingdom, Canada (except Quebec), Australia, or New Zealand must score at least 100 (Internet-based) on the Test of English as a Foreign Language (TOEFL). Applicants who score 81-99 (Internet-based) are required to take English fluency courses. Applicants who score below 81 are not considered for admission. In place of TOEFL scores, the department accepts International English Testing System (IELTS) scores of 7.0 or higher, with no subscore below 6.0.

All M.S. and Ph.D. applicants and students are required to have strong written and oral communication skills.
Applicants must meet the admission requirements of the Graduate College; see the Manual of Rules and Regulations of the Graduate College.

Application deadlines for fall entrance to the M.S. in epidemiology are June 1 for U.S. citizens, April 1 for international applicants.

Application deadline for fall entrance to the Ph.D. in epidemiology is April 1.

Financial Support
A limited number of graduate research assistantships are available for advanced M.S. and Ph.D. students; for information, consult the department. For information on financing education through jobs, grants, and loans, contact the University’s Office of Student Financial Aid.

Scholarships for incoming Ph.D. students are available; for information, visit the Department of Epidemiology website.

Opportunities for funded predoctoral fellowships are available. Funded positions sponsored by federal agencies are available only to U.S. citizens.

Resources
The State Health Registries of Iowa, which encompasses the Iowa Cancer Registry and the Iowa Registry for Congenital and Inherited Disorders, works in cooperation with the Iowa Department of Public Health to collect medical data on Iowans. The Iowa Cancer Registry is one of 18 registries nationwide that report data to the National Cancer Institute.

The Preventive Intervention Center conducts population-based intervention trials to prevent occurrence and recurrence of disease and to promote wellness, with a focus on the elderly. It also specializes in research promoting prevention of cardiovascular disease and provides an interdisciplinary approach to risk factor interventions. The Health Effectiveness Research Center is a collaborative research enterprise with the College of Pharmacy that studies whether particular health care treatments or services are over- or underutilized. The Center for Emerging Infectious Diseases employs epidemiological methods, laboratory technologies, and clinical evaluations to achieve a better understanding of emerging infectious diseases. The Nutrition Center provides expertise in nutrition and dietary assessment, dietary interventions, and nutrition lifestyle change strategies.

Courses

EPID:3099 Evidence-Based Public Health Methods
How to choose, conduct, and evaluate evidence-based programs and policies in public health; finding and using scientific evidence, implementing and evaluating interventions that produce new evidence. Offered summer sessions. Requirements: Certificate in Public Health enrollment.

EPID:4110 Quality Dietary Studies for Individuals and Environment
Overview of current methods to evaluate the quality of nutrition in individuals, communities, and environment; methods include dietary records, dietary recalls, food frequency questionnaires and screeners, and nutrition environmental assessments. Recommendations: a basic nutrition course.

EPID:4120 Public Health Nutrition
Case studies of state and federal public health nutrition programs and role of public health practitioners; identifying community need for action around public health nutrition policy and environmental change; topic-specific public health nutrition programs in children; prevention of obesity, cardiovascular disease, and cancer.

EPID:4210 International Health
Urgent health problems in the developing world and among disadvantaged populations in developed countries; biological, social, cultural, political aspects of international health problems; applications of research methods from epidemiology, environmental health, social sciences. Same as GHS:4210, OEH:4210.

EPID:4314 Field Experiences in Public Health
Direct involvement in actions being taken at local community level; topics include environmental health, infectious diseases, chronic diseases, and pediatric health; practical examples and hands-on experiences during site visits for topic-specific field investigations. Requirements: biology or microbiology course work.

EPID:4400 Epidemiology I: Principles
Epidemiological concepts and methods; design of descriptive and analytic studies, such as aggregate, case series, cross-sectional, case-control, cohort studies, clinical trials; application of epidemiology to public health practice; communication and dissemination of epidemiological findings.

EPID:4450 Public Health Data
Concepts and methods of obtaining and using public health data in community settings; how public health data are used for epidemiologic investigations and prevention programs. Offered spring semesters of odd years. Corequisites: BIOS:5110 and EPID:4400.

EPID:4510 Injury and Violence Prevention
Theory, research, and practice of injury control; unintentional and intentional injuries; local, national, international injury issues. Same as OEH:4510.

EPID:4520 Research Methods in Disaster Studies
Epidemiologic study of disasters and their health consequences; research to identify and reduce health effects, research in context of response and preparedness. Same as OEH:4520, GHS:4275.

EPID:4990 Practicing Evidence-Based Public Health
How epidemiologic and other scientific studies underlie public health practice; relationship between evidence and action; controversies at interface of science and policy. Offered spring semesters of even years.
EPID:5200 Principles of Public Health Informatics 3 s.h.
Systematic applications of information science, computer science, and technology to public health practice, research, and learning; methods of disease surveillance, data collection, analysis, and reporting with health informatics. Offered fall semesters. Same as IGPI:5220.

EPID:5214 Meta-Analysis of Epidemiologic Studies 3 s.h.
Methods for quantitative pooling of analytic study associations (cohort and case-control) between exposure and a dichotomous outcome; literature searches, data abstraction, test of homogeneity, publication bias and consideration of adjusted risk ratios (effects of confounding). Offered spring semesters of odd years. Prerequisites: EPID:4400 and BIOS:5120.

EPID:5241 Statistical Methods in Epidemiology 4 s.h.
Overview of methods to analyze data from epidemiologic investigations; estimation of relative measures of risk, attributable risk, stratified analysis; model-fitting approaches using linear, logistic, and Poisson regression analysis; confounding and effect modification; analysis of epidemiologic data sets. Prerequisites: BIOS:5110.

EPID:5300 Food Safety 3 s.h.
Current issues and concepts of food safety in the United States, from plant to table; foodborne illness from microbial agents, food toxins, adulterants; disease investigation, risk analysis, risk mitigation, prevention. Offered summer sessions.

EPID:5320 Exotic and Emerging Diseases of Animals 1 s.h.
Major exotic and emerging animal diseases; veterinarian's role in recognizing and diagnosing such diseases; how outbreaks affect economies and veterinary medicine; public health concerns; responding agencies and their roles in control and eradication. Offered fall semesters.

EPID:5470 Applied Veterinary Epidemiology/Biostatistics 3 s.h.
Epidemiology and biostatistics applied to veterinary public health; outbreak investigations, surveillance, analyzing and evaluating diagnostic tests, translation methodology, risk assessment, data analysis software programs. Offered summer sessions. Prerequisites: EPID:4400 and BIOS:5110.

EPID:5500 Introduction to Clinical Epidemiology 3 s.h.
Epidemiologic applications and methods used in clinical settings to evaluate clinical medicine and other health profession disciplines, including health measurement, health outcome determination, diagnostic process, risk assessment and communication, prognosis, study design, patient surveys, clinical trials, decision analysis and meta-analysis, health services research. Offered fall semesters. Corequisites: EPID:4400 and BIOS:5110, if not taken as prerequisites.

EPID:5530 Surveillance Internship: IRCID 2 s.h.
Experience in the Iowa Registry for Congenital and Inherited Disorders; active, population-based surveillance for selected congenital and inherited disorders. Offered fall semesters of even years. Prerequisites: EPID:4400 and EPID:5600 and EPID:6400.

EPID:5540 Surveillance Mechanisms and Applications: Cancer and Other Registries 2 s.h.
Sources of data necessary for operation of a population-based cancer registry; potential uses of data; methods and personnel required for collecting, editing, storing, reporting, and assuring quality of data. Offered fall semesters. Prerequisites: EPID:4400.

EPID:5550 Diagnostic Microbiology for Epidemiology 3 s.h.
Introduction to microbiological culture, antigen detection, immunological and molecular amplification laboratory techniques for bacteria, viruses, parasites, fungi. Offered spring semesters. Prerequisites: MICR:2157 or MICR:3112 or MICR:3164 or MICR:8202.

EPID:5560 Introduction to Molecular Epidemiology 3 s.h.
Introduction to basic techniques of molecular biology (DNA, RNA, protein techniques) and their use in epidemiological research (e.g., diagnosis of disease, biomarker discovery and validation). Corequisites: EPID:4400, if not taken as a prerequisite.

EPID:5570 Zoonotic Diseases 2-3 s.h.
Introduction to the epidemiology and control of zoonotic diseases; zoonoses endemic to the midwestern United States. Offered summer sessions. Prerequisites: EPID:5550 or EPID:6550 or MICR:2157 or MICR:3112 or MICR:3164 or MICR:8202.

EPID:5580 Public Health Laboratory Techniques 1 s.h.
Common laboratory techniques in emerging infectious respiratory disease research and epidemiologic surveillance laboratories; emphasis on techniques for culturing, characterization, and serological surveillance of exposure to influenza viruses. Offered spring semesters. Requirements: completion of online Basic Biological Safety and Blood-Borne Pathogens courses; completed certificates must be brought to class.

EPID:5590 Applied Infectious Disease Epidemiology 2 s.h.
Introduction to infectious disease surveillance, outbreak investigations, interventions, biodefense, emerging infectious diseases, subject recruitment, mathematical modeling, and analytic approaches pertaining to infectious disease prevention and control; emphasis on practical knowledge and how to apply basic infectious disease epidemiology to real-life scenarios and research projects.

EPID:5600 Introduction to Epidemiology Data Management and Analysis 3 s.h.
Organization, collection, management, and analysis of epidemiological data using computer programs. Offered fall semesters. Corequisites: EPID:4400 and BIOS:5110, if not taken as prerequisites.
EPID:5610 Intermediate Epidemiology Data Analysis with SAS and R 3 s.h.
Basic principles of data analysis and collaborative research; SAS fundamentals; data manipulation and interpretation techniques. Offered spring semesters.

EPID:5630 Seminar in Clinical and Translational Research 1 s.h.
Presentation of ongoing clinical research projects, grant applications, and methodological articles, with emphasis on works in progress.

EPID:5900 Problems and Special Topics in Epidemiology arr.
Didactic material in epidemiology; may include tutorial, seminar, faculty-directed independent work (e.g. literature search, project, short research project).

EPID:5925 Epidemiology Journal Club: Evaluating the Literature 0 s.h.
Critical evaluation of primary epidemiologic methods and research papers; informative, challenging, and current topics from scientific literature. Requirements: epidemiology M.S., M.P.H., or Ph.D. standing.

EPID:5950 Preceptorship in Epidemiology arr.
Quantitative research-oriented project performed with a preceptor; preparation of prospectus, presentation of research results in a publication-quality report and a scientific poster session.

EPID:6000 Independent Study in Epidemiology arr.
In-depth pursuit of an area of special interest in epidemiology requiring substantial creativity and independence.

EPID:6050 Research in Epidemiology arr.
Research that may lead to a dissertation.

EPID:6070 Social Epidemiology 3 s.h.
Introduction with global focus and emphasis on methodological issues, including definition/measurement of social constructs, appropriate research designs, analytic approaches. Prerequisites: EPID:4400 and BIOS:5110.

EPID:6100 Writing a Research Protocol 3 s.h.
Small group projects to develop research protocols using epidemiological study designs; presentation and defense of proposals before faculty site visitors. Offered fall semesters. Prerequisites: EPID:4400 and EPID:6400 and BIOS:5110 and BIOS:5120. Requirements: pass epidemiology Ph.D. qualifying exam, approval of research topic by dissertation advisor, and completion and approval of literature review by dissertation advisor prior to first day of class.

EPID:6110 Grant Writing for Clinical Investigators arr.
Development of skills for writing effective, scientifically sound applications for external research grants; for students who have completed the literature review section for their topic. Prerequisites: EPID:4400 and BIOS:5110.

EPID:6150 Writing for Medical Journals 1 s.h.
Skill development in writing medical journal articles for publication. Offered spring semesters.

EPID:6200 Environmental and Occupational Epidemiology 3 s.h.
Overview of methods to interpret and perform environmental and occupational epidemiologic studies with focus on exposure assessment; valuable insights into identifying regional, national, global environmental, and occupational health-related issues. Prerequisites: EPID:4400. Same as OEH:6510.

EPID:6245 Epidemiology of Physical Activity 3 s.h.
Physical activity/disease relationships examined through application of epidemiologic methods, including research design, interpretation of studies, selection of measures to fit research questions. Same as HHP:6210.

EPID:6250 Genetics and Epidemiology 4 s.h.
Basic human genetic and population genetics principles; methods of integrating genetic principles into epidemiological studies; analytical methods for case control and family data. Offered fall semesters. Prerequisites: EPID:4400 and BIOS:5110.

EPID:6330 Global Nutrition Policy 1.3 s.h.
Concepts and methods used in setting public health nutrition policy; evidence-based aspects of nutrition policy formation in public health settings; evaluation of nutritional public health policy implementation and ways of changing policy in China, Korea, Micronesia, Hawaii, Italy, and the United States. Offered spring semesters.

EPID:6350 Nutritional Epidemiology 2 s.h.
Application of epidemiology study designs to nutrition variables and chronic disease; analysis of nutrition epidemiology studies; research protocol design. Offered spring semesters. Recommendations: a basic nutrition course.

EPID:6360 Nutrition Intervention in Clinical Trials Research 2 s.h.
Nutrition interventions in clinical trials; disease related to nutrition variables; research that links effects of diet on chronic diseases. Offered fall semesters. Recommendations: a basic nutrition course.

EPID:6370 Nutrition Intervention in Research Lab 3 s.h.
Development, demonstration of group counseling skills in ongoing nutrition research projects at the University of Iowa. Offered fall semesters. Corequisites: EPID:6360, if not taken as a prerequisite.

EPID:6400 Epidemiology II: Advanced Methods 4 s.h.
Epidemiologic study design and analysis; bias, confounding, effect modification; case-control studies; cohort studies; field methods; measurement principles; exposure and disease classification; acute and chronic disease examples. Offered spring semesters. Prerequisites: EPID:4400 and EPID:5600 and BIOS:5110.
EPID:6510 Injury Epidemiology 3 s.h.
How epidemiology can be applied to injury prevention and control: epidemiology literature, specific methodological problems involved in the epidemiology of injuries, critical evaluation of research articles. Offered spring semesters of odd years. Prerequisites: EPID:4400. Same as OEH:6520.

EPID:6530 Epidemiology of Occupational Injuries 3-4 s.h.
Epidemiological literature on occupational injuries and their prevention; focus on research methods. Offered spring semesters of even years. Prerequisites: EPID:4400. Same as OEH:6530.

EPID:6550 Epidemiology of Infectious Diseases 3 s.h.
Underlying epidemiological concepts of infection disease, including causation and surveillance; prevention and control; case studies. Offered fall semesters. Prerequisites: EPID:4400. Same as GHS:6550.

EPID:6560 Hospital Epidemiology 2 s.h.
Health care-associated infections; surveillance, investigative methods, resistant organisms, molecular epidemiology; methods for preventing spread of pathogens, including isolation precautions; environmental issues, construction, sterilization; interactive exercises. Offered spring semesters of odd years. Prerequisites: EPID:4400.

EPID:6570 Infectious Causes of Chronic Disease 3 s.h.
Evidence linking various infectious agents with the development of different types of chronic disease. Offered even years. Corequisites: EPID:4400, if not taken as a prerequisite.

EPID:6600 Epidemiology of Chronic Diseases 3 s.h.
Chronic disease epidemiology; survey of leading chronic diseases, including measurement of disease, lifestyle, nutrition, occupation, family history. Offered spring semesters. Prerequisites: EPID:4400.

EPID:6620 Neuroepidemiology 2 s.h.
Basic epidemiologic concepts of neurologic disease; concepts, methods, examples of neuroepidemiology; varied diseases, methods. Prerequisites: EPID:4400 and EPID:5600.

EPID:6630 Epidemiology of Reproductive Diseases 2 s.h.
Evaluation of methodological issues and current findings for reproductive diseases and conditions; etiological mechanisms, including behavioral and genetic. Offered fall semesters of odd years.

EPID:6640 Epidemiology of Maternal and Infant Health 2 s.h.
Overview of maternal and infant epidemiologic and methodologic issues; prevalence and trends; risk factors; data sources, including limitations and availability; relevant measurement issues; directions for future research. Offered spring semesters of odd years. Prerequisites: EPID:4400 and BIOS:5110.

EPID:6650 Cardiovascular Disease Epidemiology 3 s.h.
Natural history of atherosclerotic disease in humans and risk factors affecting its development; atherosclerotic disease by age, sex, and in varied populations worldwide; recent guidelines and clinical trials to delay onset, reduce incidence, improve outcome of cardiovascular disease. Offered fall semesters of odd years. Prerequisites: EPID:4400 and BIOS:5110.

EPID:6670 Psychiatric Epidemiology 3 s.h.
Population-based studies of psychiatric disorders and associated etiologic tools; diagnostic criteria used in psychiatric research, common structured interviews and rating scales; recent research relevant to common psychiatric disorders; experience writing a research idea using NIH PHS grant form. Offered spring semesters of even years. Prerequisites: EPID:4400. Recommendations: EPID:6400 or two years of resident training in psychiatry. Same as PSYC:8267.

EPID:6700 Cancer Epidemiology and Control 3 s.h.
Incidence, mortality, survival; risk factors for major cancer sites; comprehensive cancer control; introduction to SEER*Stat and its application. Offered spring semesters of even years. Prerequisites: EPID:4400 and BIOS:5110 and PATH:8133.

EPID:6900 Design of Intervention and Clinical Trials 3 s.h.
Methodologic introduction to rationale and design of clinical trials; basics of clinical trial design, variety of designs, and examples from clinical trials. Offered fall semesters. Prerequisites: EPID:4400 and BIOS:5110.

EPID:6910 Pharmacoepidemiology 3 s.h.
Drug approval process, methods for identification and attribution of adverse drug events, current understanding of the epidemiology of adverse drug events; study designs, data sources for pharmacoepidemiology, pharmacoeconomics. Offered fall semesters of even years. Prerequisites: EPID:4400.

EPID:6950 Clinical Research Ethics 2-3 s.h.
Ethical and regulatory aspects of clinical research; historical background, current regulations, Institutional Review Board requirements related to human subjects protection issues. Requirements: K30 training grant or enrollment in degree program with clinical research project.


EPID:7200 Teaching in Epidemiology 3 s.h.
Teaching methods in epidemiology; guided practicum experience in teaching epidemiology, in preparation for academic careers. Prerequisites: EPID:4400 and EPID:5600 and EPID:6400.

EPID:7400 Epidemiology III: Theories 3 s.h.
How epidemiology fits into the wider context of scientific inquiry. Offered fall semesters of odd years. Prerequisites: EPID:4400 and EPID:6400 and BIOS:6110.