Epidemiology, PhD

Learning Outcomes

Graduates will be able to:

- summarize specific risk factors and disease processes in a specialized area;
- describe methods for primary data collection including quality assurance and quality control;
- use advanced statistical analysis methods appropriate for the study design and controlling for confounding variables;
- develop data collection instruments for research purposes;
- develop hypotheses that build upon literature and theoretical models of disease and causation;
- compose a proposal for grant funding;
- communicate epidemiological concepts and methods in both writing and orally; and
- defend the methods, results, and implications of a research study.

Requirements

The Doctor of Philosophy (PhD) in epidemiology requires a minimum of 78 s.h. of graduate credit. Graduate students in epidemiology must maintain a Graduate College program grade-point average of at least 3.00.

Courses taken for the core, human pathology, or research area requirements must be taken on an A–F graded basis unless otherwise noted. Students must seek the permission of the program to apply coursework with grades of C or C- minus toward these three requirements. Students who receive a grade of C or lower in 7 s.h. of coursework may be dismissed from the program.

The PhD in epidemiology requires the following coursework.

Core Courses

CPH:6100, CPH:7270, and EPID:6050 may be taken on an S/U basis.

Students must retake CPH:7270 Principles of Scholarly Integrity: Public Health if they completed the course more than four years ago or if they have changed degree programs.

Course #	Title	Hours
All of these:		
EPID:4400	Epidemiology I: Principles	3
EPID:5600	Introduction to Epidemiology Data Management and Analysis	3
EPID:5610	Intermediate Epidemiology Data Analysis With SAS and R	3
EPID:6050	Research in Epidemiology	3
EPID:6100	Writing a Grant Proposal	3
EPID:6400	Epidemiology II: Advanced Methods	4
EPID:6655/ BIOS:6650/ IGPI:6650	Causal Inference	3
EPID:7400	Epidemiology III: Theories	3
BIOS:4120	Introduction to Biostatistics	3
BIOS:5120/ IGPI:5120/ STAT:5610	Regression Modeling and ANOVA in the Health Sciences	3
CPH:6100	Essentials of Public Health	2
CPH:7270	Principles of Scholarly Integrity: Public Health (taken first year in the fall semester for 0 s.h. and in the spring semester for 1 s.h.)	0-1
One of these:		
BIOS:6210/ IGPI:6210	Applied Survival Analysis	3
BIOS:6310/ IGPI:6310/ STAT:6550	Introductory Longitudinal Data Analysis	3

Human Pathology Requirement

Students must complete a human pathology course for 3 s.h. Most students choose to enroll in HHP:4390 Understanding Human Disease during the fall semester of their second year in the program. Alternatively, students with a strong biosciences background may choose to enroll in PATH:5270 Pathogenesis of Major Human Diseases.

Dissertation

Students complete at least 10 s.h. in EPID:7000 Thesis/ Dissertation. With the program's permission, students may take up to an additional 8 s.h. of this course for a total maximum of 18 s.h. applied to the degree. This course may be taken on an S/U graded basis.

Research Area Electives

Students complete 28 s.h. in research area electives. Students work with an advisor to develop a plan of study (25 s.h.) that ensures substantive knowledge in topical and methodological areas which will generate important original research in alignment with the student's dissertation interests. The department has many areas of research strength and several highlighted Interest Area course lists (under the Curriculum header in each of the interest area pages) in the fields of clinical and health services, chronic disease/life course, injury, infectious disease, and molecular and genetic epidemiology that are available to students to review in selecting their courses for the research area elective requirement.

Students must include 3 s.h. of epidemiology (prefix EPID) coursework outside of the research area in order to broaden their knowledge.

Students may select from courses numbered 4000 or above in the following subjects: epidemiology (prefix EPID), excluding EPID:5950 and EPID:5925; biostatistics (prefix BIOS); College of Public Health (prefix CPH); community and behavioral health (prefix CBH); health management and policy (prefix HMP); or occupational and environmental health (prefix OEH). The following courses outside of public health can also be considered as options for this requirement. With the permission of their advisor, students may also consider additional course options not listed here.

Course #	Title	Hours
BIOL:3314/ IGPI:3314	Genomics	3

FRRB:7001/ CBIO:7001/ PATH:7001	Molecular and Cellular Biology of Cancer	3
GENE:7191	Human Molecular Genetics	3
HHP:3500	Human Physiology	3
MICR:6247/ IMMU:6247	Graduate Immunology and Human Disease	4
MICR:6259	Graduate Bacteria and Human Disease	3-4
MICR:6267	Graduate Viruses and Human Disease	3
PCOL:5136	Pharmacogenetics and Pharmacogenomics	1
PCOL:6250	Advanced Problem Solving in Pharmacological Sciences	1
PSQF:5165/ EPLS:5165	Introduction to Program and Project Evaluation	3
SEES:4150/ GHS:4150/ IGPI:4150	Health and Environment: GIS Applications	3
STAT:6560	Applied Time Series Analysis	3

Other Requirements

Preceptorship Requirement

Doctoral students who did not complete the MS in epidemiology at the University of Iowa are required to take EPID:5950 Preceptorship in Epidemiology or demonstrate that an equivalent course has been completed, such as a completed master's thesis at another institution. This requirement must be fulfilled within one year of admission to the PhD program.

Epidemiology Journal Club

Students are required to enroll in EPID:5925 Epidemiology Journal Club: Evaluating the Literature to gain experience in reading, interpreting, and critically evaluating recently published journal articles. Students who have completed the MS in epidemiology or the Master of Public Health with the epidemiology subprogram at the University of Iowa will take this course eight times over the course of their academic career: three times as a master's student and five times as a doctoral student. Students who have completed their master's degree at another institution will take this course five times as part of their doctoral studies.

Full-time students enroll in this course for 0 s.h. Students enrolled part-time (less than 9 s.h.) who have a graduate research assistantship appointment may choose to register for 1 s.h. However, the credit earned for this course is not applied toward the minimum semester hours required for the PhD in epidemiology.

Every other week during the academic year, the journal club meets to discuss articles of interest in the field. Contact information for the journal club coordinators can be found on the Department of Epidemiology website under Preceptorship, Journal Club, and Seminar Contacts. Information about the schedule is distributed to students each semester. Students are required to achieve at least 80% attendance at journal club for three semesters during their time in the program.

Department of Epidemiology Seminar

Every week during the fall and spring semesters, the Department of Epidemiology seminar provides a forum for speakers to present information or research pertaining to diverse topics in epidemiology. Students are expected to achieve at least 80% attendance at the seminar during each semester of enrollment.

Scientific Poster Requirement

Every student is required to present at least one scientific poster at the department level and one poster at the international, national, regional, state, or university level at some point prior to graduation. A student's advisor or dissertation mentor can help determine the suitability and timeline for the poster presentation.

Seminar Presentation

In addition to the dissertation defense, students are required to make a presentation at a Department of Epidemiology seminar. It is recommended that students complete the seminar presentation and dissertation defense in the same semester, with the seminar presentation scheduled before the defense so the seminar can serve as preparation for the defense.

Human Subjects Protections (Institutional Review Board) Certification

Students are required to provide evidence that they have completed an approved education program in human subjects protection. This should be done at the time of appointment to a graduate research assistantship position, at the start of the preceptorship, or at the start of thesis/dissertation research. More information is available about the human subjects protection certification on the University of Iowa's Human Subjects Office website.

Examinations

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 a student's dissertation committee.

Combined Programs

PhD/MD

Students may work toward the Doctor of Medicine degree and PhD in epidemiology in a combined degree program offered by the Carver College of Medicine and the College of Public Health. Applicants must be admitted to both programs before they may be admitted to the combined degree program. See the Medical Scientist Training Program (Carver College of Medicine) in the catalog.

Graduate Education

Graduate education prepares students with advanced knowledge and skills in specialized fields. At the University of Iowa, the Graduate College advocates for student-centered graduate education and supports equitable application of rules and policies across graduate programs.

Academics

University of Iowa graduate credentials are regulated by policies and requirements found in the Graduate College Manual of Rules and Regulations. This includes minimum grade-point average (GPA) requirements for academic

standing and degree conferral. The Graduate College sets the minimum requirement. Individual graduate programs may establish higher GPA requirements.

Admissions

Graduate student applicants must meet admission requirements for both the Graduate College and the program to which they have applied. University of Iowa graduate admission requirements are published by the Graduate College and on the Graduate Admissions website.

Financial Support

Graduate students might be eligible for financial support. Several contingencies apply, including degree program and award type, satisfactory progress toward degree, satisfactory completion of all duties related to an appointment, and availability of funding. Graduate students should inquire directly with their program for more information about funding availability. The Graduate Student Employment Standards govern the employment relationship between the University of Iowa and all graduate teaching and research assistants in all matters except wages, which are covered by an existing collective bargaining agreement or the conditions of an applicable federal grant.

Admission

Applicants must apply through the Schools of Public Health Application Service (SOPHAS); they must also pay the required application fee to the Graduate College through University of Iowa Admissions when prompted. For detailed application information, visit How to Apply to the Department of Epidemiology on the department's website.

The epidemiology faculty considers several factors when evaluating applications for admission, including Graduate Record Examination (GRE) General Test scores, grade-point average, letters of recommendation, intent and motivation for graduate study, and research interests. Students with deficiencies in one area may be admitted if all other components of their application are very strong.

All applicants must hold a baccalaureate degree (an Master of Science (MS) or Master of Public Health (MPH) is usually required) and must have a cumulative grade-point average 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 are also desirable.

All 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 on the Graduate College website.

The application deadline for fall admission is April 1.

Career Advancement

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 private enterprises.

Academic Plans

Sample Plan of Study

Sample plans represent one way to complete a program of study. Actual course selection and sequence will vary and should be discussed with an academic advisor. For additional sample plans, see MyUI.

Epidemiology, PhD

Course	Title	Hours
Academic Career		
Any Semester		
78 s.h. must be graduate level coursework; graduate transfer credits allowed upon approval. More information is included in the General Catalog and on department website. [a, b, c]		
Graduate College program GPA of at least 3.00 is required.		
	Hours	**0**
First Year		
Any Semester		
Preceptorship Requirement [d]		
PhD Qualifying Exam [e]		
Department Seminar [f]		
	Hours	**0**
Fall		
BIOS:4120	Introduction to Biostatistics	3
CPH:6100	Essentials of Public Health	2
CPH:7270	Principles of Scholarly Integrity: Public Health [g]	0
EPID:4400	Epidemiology I: Principles	3
EPID:5600	Introduction to Epidemiology Data Management and Analysis	3
EPID:5925	Epidemiology Journal Club: Evaluating the Literature [h]	0 - 1
	Hours	**11-12**
Spring		
BIOS:5120	Regression Modeling and ANOVA in the Health Sciences	3
CPH:7270	Principles of Scholarly Integrity: Public Health [g]	1
EPID:5610	Intermediate Epidemiology Data Analysis With SAS and R	3
EPID:5925	Epidemiology Journal Club: Evaluating the Literature [h]	0 - 1
EPID:6400	Epidemiology II: Advanced Methods	4
	Hours	**11-12**
Summer		
EPID:6050	Research in Epidemiology [i]	3
	Hours	**3**
Second Year		
Any Semester		
Department Seminar [f]		
	Hours	**0**
Fall		
BIOS:6310	Introductory Longitudinal Data Analysis [j, k]	3

EPID:5925	Epidemiology Journal Club: Evaluating the Literature [h]	0 - 1
EPID:6100	Writing a Grant Proposal	3
EPID:7400	Epidemiology III: Theories	3
HHP:4390	Understanding Human Disease [l]	3
	Hours	**12-13**
Spring		
BIOS:6210	Applied Survival Analysis [j, k]	3
EPID:5925	Epidemiology Journal Club: Evaluating the Literature [h]	0 - 1
EPID:6655	Causal Inference	3
Research area elective course [j]		3
Research area elective course [j]		2
	Hours	**11-12**
Third Year		
Any Semester		
Exam: Doctoral Comprehensive Exam [m]		
Prospectus Defense		
Department Seminar [f]		
	Hours	**0**
Fall		
EPID:5925	Epidemiology Journal Club: Evaluating the Literature [h]	0 - 1
Research area elective course [j]		3
Research area elective course [j]		3
Research area elective course [j]		3
	Hours	**9-10**
Spring		
Research area elective course [j]		3
Research area elective course [j]		3
Research area elective course [j]		2
Elective course (prefix EPID, outside of research area) [j]		3
	Hours	**11**
Fourth Year		
Any Semester		
Department Seminar [f]		
	Hours	**0**
Fall		
EPID:7000	Thesis/Dissertation [n]	9
	Hours	**9**
Spring		
EPID:7000	Thesis/Dissertation [n]	1 - 9
Exam: Doctoral Final Exam [o]		
	Hours	**1-9**
	Total Hours	**78-91**

a All core courses except CPH:6100, CPH:7270, and EPID:6050 must be taken on an A-F graded basis.

b Every student is required to present at least one scientific poster at the department level and one poster at the international, national, regional, state, or university level at some point prior to graduation. A student?s advisor or dissertation mentor can help determine the suitability and timeline for the poster presentation.

c Students must complete specific requirements in the University of Iowa Graduate College after program admission. Refer to the Graduate College website and the Manual of Rules and Regulations for more information.

d Doctoral students who did not complete the MS program in epidemiology at the University of Iowa are required to take EPID:5950 or demonstrate that an equivalent course has been completed. This requirement must be fulfilled within one year of admission to the PhD program.

e Taken during spring semester of the first year (or after completion of epidemiology core coursework); same as the MS final examination with the addition of an essay exam.

f Students must attend the Department of Epidemiology seminar and are expected to achieve at least 80% attendance at the seminar during each semester of enrollment; PhD students are required to make one presentation, preferably during the semester of their dissertation defense.

g Taken first year in the fall semester for 0 s.h. and in the spring semester for 1 s.h.

h Full-time students enroll in EPID:5925 for 0 s.h. five times, typically the first five fall and spring semesters before the end of their third year. Students enrolled part-time (less than 9 s.h.) who have a graduate research assistantship appointment may choose to register for 1 s.h. However, the credit earned for this course will not be applied toward the minimum semester hours required for the PhD in epidemiology.

i Students complete EPID:6050 to conduct a thorough literature review to frame a targeted research question/specific aim as part of the approval process to register for EPID:6100.

j Students must complete 25 s.h. in research area electives, as well as at least 3 s.h. from Department of Epidemiology courses (prefix EPID) outside their research interest area. Work with faculty advisor to select appropriate graduate elective coursework.

k Students must complete either BIOS:6310 (typically during second year fall semester) or BIOS:6210 (typically during second year spring semester).

l Students must take a human pathology course on an A-F graded basis. Most students enroll in HHP:4390, but those with a strong biosciences background may choose to enroll in PATH:5270.

mTaken after the majority of coursework for the PhD degree has been completed.

n Complete at least 10 s.h. in EPID:7000. With the program's permission, students may take up to an additional 8 s.h. of this course for a total maximum of 18 s.h. applied to the degree; may be taken on an S/U graded basis.

o Dissertation defense.