

# EPIDEMIOLOGY OF INFECTIOUS DISEASES CONCENTRATION (EID)

The M.S. with a concentration in Epidemiology of Infectious Diseases will benefit clinical fellows seeking formal research training in infectious disease epidemiology methods. The program is designed for students with a sufficient quantitative background who are seeking to gain additional skills and research experience in order to work in mentored research positions or prepare/improve their competitiveness for doctoral training related to the study of communicable diseases.

This one-year program (full-time) offers two areas of specialization: a quantitative area aims to provide quantitatively focused research training in the epidemiology of infectious diseases, focusing on the analysis of communicable disease data as well as modeling and simulation; and a clinical area aims to provide research training for clinicians and clinical trainees interested in furthering their research expertise. Students may choose to complete the program in two years (part-time).

Applicants to the quantitative area of specialization will have at least an undergraduate degree and sufficient background in mathematics/statistics to take advanced biostatistics courses without taking introductory biostatistics courses.

Applicants to the clinical area of specialization will typically have a graduate degree from a clinical program or currently be enrolled in a clinical degree-granting program.

## DEGREE REQUIREMENTS

The Epidemiology of Infectious Diseases concentration requires a total of ten courses (excluding the year-long Seminar, EMD 525/EMD 526), including satisfactory completion of the capstone course. There are two capstone course options:

**Option 1** Students may elect to enroll in EMD 625, How to Develop, Write, and Evaluate an NIH Proposal. Students in this course will develop an NIH-style research proposal focusing on a topic related to infectious disease epidemiology. This course will be taken by students in the final term of their M.S. program. Students will meet as a group for cross-cutting didactic sessions on reading RFAs, NIH peer review and scoring, and effective grant writing and grantsmanship. Students will work one-on-one outside of these sessions with faculty mentors to construct their grant proposals over the course of the term. They will work with other students in the course to refine their projects and will do an oral presentation of their proposal at the final capstone course symposium at the end of the term.

**Option 2** Students may elect to enroll in EMD 563, Laboratory and Field Studies in Infectious Diseases. This course provides students with hands-on training in laboratory or epidemiological research techniques. Students will work one-on-one with faculty members on existing or new projects. Students choosing this option will write up and present their findings at the final capstone course symposium at the end of their final term.

The Graduate School requires an overall grade average of High Pass, including a grade of Honors in at least one full-term graduate course for students enrolled in a one-year

program. In order to maintain the minimum average of High Pass, each grade of Pass on the student's transcript must be balanced by one grade of Honors. Each grade of Fail must be balanced by two grades of Honors. If a student retakes a course in which the student has received a failing grade, only the newer grade will be considered in calculating this average. The initial grade of Fail, however, will remain on the student's transcript. A grade awarded at the conclusion of a full-year course in which no grade is awarded at the end of the first term would be counted twice in calculating this average.

## CURRICULUM

### Required Courses: Quantitative Specialization

(or substitutions approved by the student's adviser and the DGS)

BIS 623	Advanced Regression Models	1
BIS 630	Applied Survival Analysis	1
EMD 517	Principles of Infectious Diseases I	1
EMD 518	Principles of Infectious Diseases II	1
EMD 525	Seminar in Epidemiology of Microbial Diseases <sup>1</sup>	0
EMD 526	Seminar in Epidemiology of Microbial Diseases <sup>1</sup>	0
EMD 538	Quantitative Methods for Infectious Disease Epidemiology	1
EMD 553	Transmission Dynamic Models for Understanding Infectious Diseases	1
or EMD 539	Introduction to the Analysis and Interpretation of Public Health Surveillance Data	
EMD 625	How to Develop, Write, and Evaluate an NIH Proposal	1
or EMD 563	Laboratory and Field Studies in Infectious Diseases	
EPH 508	Foundations of Epidemiology and Public Health	1
EPH 608	Frontiers of Public Health (EPH 600 no longer required for MS students) <sup>2</sup>	1

<sup>1</sup> These courses do not count toward the ten required courses.

<sup>2</sup> Students entering the program with an M.P.H. or relevant graduate degree may be exempt.

In addition, students must complete one elective course in Epidemiology of Infectious Diseases (approved by the student's adviser and the DGS).

### Required Courses: Clinical Specialization

(or substitutions approved by the student's adviser and the DGS)

BIS 505	Biostatistics in Public Health II	1
or CDE 534	Applied Analytic Methods in Epidemiology	
EMD 517	Principles of Infectious Diseases I	1
EMD 518	Principles of Infectious Diseases II	1
EMD 525	Seminar in Epidemiology of Microbial Diseases <sup>1</sup>	0
EMD 526	Seminar in Epidemiology of Microbial Diseases <sup>1</sup>	0

EMD 530	Health Care Epidemiology: Improving Health Care Quality through Infection Prevention	1
or EMD 536	Outbreak Investigations: Principles and Practice	
EMD 567	Tackling the Big Three: Malaria, TB, and HIV in Resource-Limited Settings	1
or EMD 533	Implementation Science	
EMD 625	How to Develop, Write, and Evaluate an NIH Proposal	1
or EMD 563	Laboratory and Field Studies in Infectious Diseases	
EPH 505	Biostatistics in Public Health	1
EPH 508	Foundations of Epidemiology and Public Health	1
EPH 608	Frontiers of Public Health (EPH 600 no longer required for MS students ) <sup>2</sup>	1

<sup>1</sup> These courses do not count toward the ten required courses.

<sup>2</sup> Students entering the program with an M.P.H. or relevant graduate degree may be exempt.

In addition, students must complete one elective course in Epidemiology of Infectious Diseases (approved by the student's adviser and the DGS).

Suggested electives for both specializations include:

EMD 531	Genomic Epidemiology of Infectious Diseases	1
EMD 537	Water, Sanitation, and Global Health	1
EMD 541	Health in Humanitarian Crises	1
EMD 546	Vaccines and Vaccine-Preventable Diseases	1
EMD 580	Reforming Health Systems: Using Data to Improve Health in Low- and Middle-Income Countries	1
EMD 582	Political Epidemiology	1

Alternate electives must be approved in consultation with the student's adviser and the DGS.

## COMPETENCIES

Upon receiving an M.S. in the Epidemiology of Infectious Diseases concentration of Public Health, the student will be able to:

- Explain the role of quantitative and qualitative methods and sciences in describing and assessing a population's health (especially in terms of risk/burden of infectious diseases).
- Explain ecological perspective on the connection between human health, animal health, and ecosystem health with respect to microbial threats.
- Analyze datasets that arise in the context of outbreaks, epidemics, and endemic infectious diseases. (Quantitative specialization only)
- Design observational and/or experimental studies to study the relationship between host, microbial, or environmental factors on the occurrence or control of infectious diseases. (Clinical specialization only)