# EPIDEMIOLOGY, M.S.

## Overview

The Department's programs are designed to prepare students for careers in health agencies and medical institutions; for consultation, especially in the biomedical fields; for independent biostatistical and epidemiological research; and for academic careers in schools of public health and medicine.

## Areas of Specialization

- Biostatistics and Epidemiology

## Career Opportunities

The programs are designed to prepare students for careers in health agencies and health-related institutions; for consultation, especially in biomedical fields; for independent biostatistical and epidemiological research; and for academic careers in schools of medicine or public health.

## It is the student's responsibility to ensure they are enrolled in the prescribed courses and to pay tuition and fees at the time designated by the Bursar's Office. Details regarding tuition/fee charges and collection are available from the Bursar's Office.

## Admission Requirements

In addition to the general admission criteria outlined in the Graduate College and College of Public Health Bulletins, applicants to the Department must also meet the following criteria:

### MASTER'S PROGRAM REQUIREMENTS

1. A baccalaureate degree from an accredited institution (120 semester hours or equivalent, minimum).
2. A minimum 3.0 grade point average in the last 60 hours Admission with full standing to Masters degree programs requires an undergraduate GPA of 3.0 in the last 60 semester hours of upper division (Junior and Senior level) coursework. If at least 12 semester hours of graduate work have been taken, then the minimum GPA will be based on the graduate work. Up to 12 semester hours of work completed as a Special Student may be applied to the degree program after admission.
3. Proof of language proficiency for international applicants; TOEFL score of 88 or above.
4. Additional prerequisite requirements for the MS in Biostatistics include:
5. a. Calculus and Analytic Geometry I. Topics covered include equations of straight line; conic sections; functions, limits and continuity; differentiation; maximum-minimum theory and curve sketching.
   b. Calculus and Analytic Geometry II. Integration and its applications; the calculus of transcendental functions; techniques of integration; and the introduction to differential equations.
   c. Calculus and Analytic Geometry III. Polar coordinates, parametric equations, sequences, infinite series, vector analysis.
   d. Calculus and Analytic Geometry IV. Vector calculus; functions of several variables; partial derivatives; gradients, extreme values and differentials of multivariate functions; multiple integrals; line and surface integrals.

## Master of Science Degree Requirements

The Master of Science (MS) degree is a research oriented degree offered in the area of biostatistics or epidemiology. Requirements for admission are the same as for all MS degree programs in the Graduate College and are described elsewhere in this bulletin. Additionally, the department requires three letters of reference and a statement of career goals.

Graduation requirements include a minimum of 39 semester hours (for the MS in Biostatistics) or 40 semester hours (for the MS in Epidemiology), including no more than 4 semester hours credit for BSE 5980 Research for Master's Thesis .

### The Outline of Graduate Work for the Master of Science in Epidemiology is as follows:

| Code | Title | Hours |
|---|---|---|
| **Required Courses (21 credit hours)** [1] | | |
| BSE 5001 | Problems in Biostatistics and Epidemiology | 1 |
| BSE 5013 | Application of Microcomputers to Data Analysis | 3 |
| BSE 5113 | Principles of Epidemiology | 3 |
| BSE 5163 | Biostatistical Methods I | 3 |
| BSE 5193 | Intermediate Epidemiologic Methods | 3 |
| **Elective Courses (15-18 credit hours)** | | |
| Epidemiology Courses (at least 9 credit hours) | | |
| BSE 5343 | Methods in Infectious Disease Epidemiology | 3 |
| BSE 6323 | Molecular and Genetic Epidemiology | 3 |
| BSE 6193 | Methods in Clinical Epidemiology | 3 |
| BSE 6194 | Advanced Epidemiologic Methods | 4 |
| Applied Biostatistics courses numbered above 5163 | | 6 |
| **Total Hours** | | **32** |

[1] Any MS student who has not previously completed the core MPH courses or earned an MPH degree will be required to complete an overview course in public health. This course should be completed within the first academic year of enrollment: BSE 5033 Foundations and Overview of Public Health

### Additional Degree Requirements

- Computer Literacy
- Basic knowledge of the biomedical sciences
- Comprehensive Exam
- Master's Thesis

Students are required to achieve a basic knowledge of the biomedical sciences. The course work to satisfy this requirement may be taken at this or another institution, either before or after entering the program. Course work undertaken to fulfill the requirement is in addition to the minimum 39 hours requirement for the degree.

A thesis is **required** for the degree. It is expected that a paper based on this thesis will be prepared and submitted to an appropriate professional journal for publication.

COMPUTER PROFICIENCY

Students are required to achieve a working knowledge of methods, programming and applications of computers as used in biostatistics. This knowledge may be acquired by formal class work or by experience acquired either before entering or during the course of the program. Completion of BSE 5013 Application of Microcomputers to Data Analysis with a passing grade will satisfy this requirement. Students who wish to have more information on the use of computers are encouraged to elect the following course: BSE 5023 Computer Applications in Public Health

### ELECTIVE COURSES

Only courses in the Department of Biostatistics and Epidemiology or on the published list of approved elective courses may be used to fulfill the remaining credit hours for graduation. The program of study should be formalized with the guidance of the faculty advisor and will be subject to approval by the Student's Advisory Committee and Chair of the Department.

Credit for BSE 5013 Application of Microcomputers to Data Analysis may not be used to satisfy the minimum hour requirements on this degree.

### EXAMINATION

Students must pass a written and/or oral examination covering both the academic program of study and the thesis.

### Notes

Usually this program requires at least two years to complete. The Faculty expects students to participate in the intellectual activities of the Department (e.g., seminars, special presentations).

## Master of Science Prerequisites

- Bachelor's degree from an accredited institution
- Grade point average of 3.0 or above calculated using the upper-division coursework of the bachelor's degree.
- Proof of language proficiency for international applicants: TOEFL score of 88 or above for most programs. The MHA program requires a TOEFL score of 100 IBT.

## Program Objectives

The Department of Biostatistics and Epidemiology has two main objectives:

1. Teach the concepts of biostatistics and epidemiology essential to all students in the health sciences.
2. Educate master's and doctoral students specializing in the fields of biostatistics or epidemiology leading to master and doctoral degrees in biostatistics or epidemiology.
3. Although the department functions as a single administrative unit, it includes two distinct disciplines: biostatistics and epidemiology. A student may work toward a master's or doctoral degree in either discipline, depending on his or her interests and background. Each discipline has a different set of required courses; however, there is some flexibility in the program to allow each student to develop his or her strengths and interests through elective courses.