Biostatistics, M.S.

Requirements

The Master of Science program in biostatistics requires a minimum of 38 s.h. of graduate credit. The program provides training in the design of experiments and in analysis of data related to biomedical or public health problems. It emphasizes mathematical, statistical, and computer methods for dealing with quantitative information and provides opportunities for students to gain statistical consulting experience with a variety of problems.

M.S. students are required to complete an in-depth preceptorship under the direction of a departmental faculty member and a final comprehensive-style examination.

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

The M.S. with a major in biostatistics requires the following course work.

Core Courses

All of these:
BIOS:5510 Biostatistical Computing 4 (taken twice for 2 s.h. each; topics should be programming with R and programming with SAS)

BIOS:5710 & BIOS:5720 Biostatistical Methods I-II 8
BIOS:5730 Biostatistical Methods in Categorical Data 3
BIOS:6610 Statistical Methods in Clinical Trials 3
BIOS:7500 Preceptorship in Biostatistics 3
EPID:4400 Epidemiology I: Principles 3

One of these sequences:
STAT:4100-STAT:4101 Mathematical Statistics I-II 6
STAT:5100-STAT:5101 Statistical Inference I-II (preferred for students who intend to earn a Ph.D.) 6

Public Health Requirement

This course:
CPH:6100 Essentials of Public Health 2

Responsible Conduct of Research Training

This course:
BIOS:7270 Scholarly Integrity in Biostatistics 1

Electives

Students complete a minimum of 5-6 s.h. of electives with at least 3 s.h. in quantitative course work (statistics or biostatistics). It is recommended that students consider a biology/public health course as the other elective, particularly for those who have not had prior exposure to these areas. Electives must be approved by the advisor and the director of graduate studies.

BIOS:6210 Applied Survival Analysis 3

BIOS:6310/STAT:6550 Introductory Longitudinal Data Analysis 3
BIOS:6650 Comparative Effectiveness Research Methods for Observational Data 3
BIOS:6810 Bayesian Methods and Design 3
BIOS:7110 Theory of Biostatistics I 4
BIOS:7120 Theory of Biostatistics II 4
BIOS:7210/STAT:7570 Survival Data Analysis 3
BIOS:7310 Longitudinal Data Analysis 3
BIOS:7410/STAT:7510 Analysis of Categorical Data 3
BIOS:7600 Advanced Biostatistics Seminar (topics include high-dimensional data analysis, statistical methods in bioinformatics, model selection, spatial modeling, statistical computing) 1-3

BIOS:7700 Problems/Special Topics in Biostatistics 1
BIOL:4213 Bioinformatics 4
CBH:4105 Introduction to Health Promotion and Disease Prevention 3
CS:5110 Introduction to Informatics 3
ECE:5220 Computational Genomics 3
GENE:7191 Human Molecular Genetics 3
HMP:4000 Introduction to the U.S. Health Care System 3
IE:4172 Big Data Analytics 3
OEH:4240 Global Environmental Health 3
PATH:8133 Introduction to Human Pathology for Graduate Students 4

STAT:4520 Bayesian Statistics 3
STAT:6540 Applied Multivariate Analysis 3
STAT:7200 Linear Models 4
STAT:7400 Computer Intensive Statistics 3
STAT:7520 Bayesian Analysis 3

Admission

Applicants to the M.S. program in biostatistics must apply through the Schools of Public Health Application Service (SOPHAS). After the SOPHAS application is verified, the applicant pays a supplemental Graduate College admission fee to the University of Iowa Office of Admissions. For detailed application information, visit Requirements and How to Apply to Biostatistics on the Department of Biostatistics website.

The biostatistics faculty considers several factors when evaluating applications for admission, including Graduate Record Examination (GRE) General Test scores, grade-point averages, letters of recommendation, intent and motivation for graduate study, and research interests.

All applicants must hold a bachelor's degree, have a cumulative g.p.a. of at least 3.00, and have taken the Graduate Record Examination (GRE) General Test. Applicants whose first language is not English and who do not hold a
baccalaureate or more advanced degree from an accredited institution in the United States, United Kingdom, Ireland, Canada (excluding French Quebec), English-speaking Africa, Australia, or New Zealand must score at least 100 (Internet-based) on the Test of English as a Foreign Language (TOEFL). Applicants with lower scores 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 biostatistics applicants are required to have strong written and oral communication skills.

All applicants must be competent in at least one computer programming language. They also must have mathematical sciences training in methods and techniques of single variable and multivariable differential and integral calculus, and in linear algebra. Previous course work or experience in statistical methods or data analysis is preferred.

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

Students may enter in the fall; the priority application deadline is December 1.

**Financial Support**

A limited number of teaching and research assistantships are available. Assistantships offer financial support and tuition assessed at the resident tuition rate along with a tuition scholarship. They also provide valuable on-the-job training experience.

For information on financing education through jobs, grants, and loans, contact the University's Office of Student Financial Aid.

**Career Advancement**

Graduates find career opportunities in many areas, including pharmaceutics, health care, research companies and institutions, consulting firms, universities, and government agencies.