Biostatistics, Ph.D.

Requirements

The Doctor of Philosophy program in biostatistics requires a minimum of 79 s.h. of graduate credit, including credit from a master's degree. 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.

All students must successfully complete a comprehensive examination 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. Other degree requirements include approved electives chosen from Department of Biostatistics and other University of Iowa courses.

The Ph.D. with a major in biostatistics requires the following work.

Master of Science Background

Ph.D. students must take the following courses required for the Master of Science in biostatistics. Students who have completed equivalent course work at other institutions may request waivers and/or transfers of credit. Students who earned a Master of Science in biostatistics at the University of Iowa automatically receive credit for these courses.

### Code | Title | Hours
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STAT:4100-STAT:4101 | Mathematical Statistics I-II | 6
STAT:5100-STAT:5101 | Statistical Inference I-II | 6
BIOS:5510 | Biostatistical Computing (taken twice for 2 s.h. each; topics should be programming with R and programming with SAS) | 4
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

**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

**Core Courses**

### Code | Title | Hours
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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
STAT:7200 | Linear Models | 4

**Electives**

With approval of their advisor, students choose 12-19 s.h. of courses according to their interest in biostatistics, statistics, genetics, computing, public health, or in other areas. No more than 5 s.h. in nonquantitative courses (e.g., epidemiology, environmental health) may count toward the electives requirement. Courses required for the M.S. degree that are not listed above also may be used to satisfy the electives requirement, although BIOS:7800 Independent Study in Biostatistics does not generally count as an elective. At least 6 s.h. of elective course work must be taken with grades awarded.

Students may take the following courses.

### Code | Title | Hours
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BIOS:6420 | Survey Design and Analysis | 3
BIOS:6650 | Causal Inference | 3
BIOS:6720 | Statistical Machine Learning for Biomedical and Public Health Data | 3
BIOS:6810 | Bayesian Methods and Design | 3
BIOS:7230 | Advanced Clinical Trials | 3
BIOS:7240 | High-Dimensional Data Analysis | 3
BIOS:7330 | Advanced Biostatistical Computing | 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 | arr.
BIOL:4213 | Bioinformatics | 4
IE:4172 | Big Data Analytics | 3
STAT:4520 | Bayesian Statistics | 3
STAT:6300 | Probability and Stochastic Processes | 3
STAT:6540 | Applied Multivariate Analysis | 3
STAT:6560 | Applied Time Series Analysis | 3
STAT:7100 | Advanced Inference I | 3
STAT:7101 | Advanced Inference II | 3
STAT:7400 | Computer Intensive Statistics | 3
STAT:7520 | Bayesian Analysis | 3

**Dissertation**

Students must enroll in the following dissertation course for at least two semesters in residence.

### Code | Title | Hours
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BIOS:7900 | Thesis/Dissertation | 6-13
Admission

Applicants to the Ph.D. 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.

Completion of an M.S. program in statistics or biostatistics generally is required for admission to the Ph.D. program.

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

Ph.D. application deadlines are posted on the Department of Biostatistics website, visit Requirements and How to Apply to Biostatistics.

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

The program prepares students for professional and academic careers in biostatistics, especially for positions that emphasize developing and applying statistical methodology to solve important biological and public health problems.