Biostatistics, PhD

Learning Outcomes

Students will:

- describe current statistical theory, methods, and practices used in health sciences;
- analyze data from experimental and observational studies;
- design modern modeling structures used in health sciences analyses and research;
- communicate research findings to various audiences in writing and through oral presentation; and
- interpret analytical results from health science studies.

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.

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 the Department of Biostatistics and other University of Iowa courses.

The PhD in biostatistics requires the following work.

Requirements	Hours
Foundational Coursework	33
Core Courses	17
Focus Electives	16
Dissertation	6-13
General Electives	0-7

Foundational Coursework

PhD students must take the following courses required for the Master of Science in biostatistics. Students who have completed equivalent coursework at other institutions may request substitutions 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.

All foundational courses except CPH:6100 and BIOS:7270 must be taken on an A–F graded basis.

Course #	Title	Hours
This sequence:		
STAT:4100/ IGPI:4100	Statistical Inference I	3
STAT:4101/ IGPI:4101	Statistical Inference II	3
This sequence:		
BIOS:5710/ IGPI:5710	Biostatistical Methods I	4
BIOS:5720/ IGPI:5720	Biostatistical Methods II	4
All of these:		
BIOS:5510/ IGPI:5510	Biostatistical Computing (taken twice for 2 s.h. each; topics should be programming with R and programming with SAS)	4
BIOS:5730/ IGPI:5730	Biostatistical Methods in Categorical Data	3
BIOS:6610/ IGPI:6610	Statistical Methods in Clinical Trials	3
BIOS:7500	Preceptorship in Biostatistics	3
EPID:4400	Epidemiology I: Principles	3

Public Health Requirement

Course #	Title	Hours
This course:		
CPH:6100	Essentials of Public Health	2

Responsible Conduct of Research Training

Course #	Title	Hours
This course:		
BIOS:7270	Scholarly Integrity in Biostatistics	1

Core Courses

Students must earn a grade of B-minus or higher in all core courses.

Course #	Title	Hours
All of these:		
BIOS:6810	Bayesian Methods and Design	3
BIOS:7110	Likelihood Theory and Extensions	4
BIOS:7210/ IGPI:7210/ STAT:7570	Survival Data Analysis	3
BIOS:7250	Theory of Linear and Generalized Linear Models	4
BIOS:7310/ IGPI:7310	Longitudinal Data Analysis	3

Focus Electives

Students complete a minimum of 16 s.h. in focus elective courses; at least 6 s.h. must be taken on an A–F graded basis. Students select courses according to their interest in biostatistics, statistics, genetics, computing, public health, or other areas; focus electives are approved by the student's advisor.

At least 11 of the 16 s.h. must be in quantitative coursework selected from biostatistics or statistics courses (prefixes BIOS or STAT) numbered 5000 or above, excluding BIOS:5120, BIOS:5130, BIOS:5310, and BIOS:7900.

Up to 5 s.h. of non-quantitative courses selected from the following list may be counted toward to the focus electives. Additional courses not listed here may be approved by an advisor.

Course #	Title	Hours
BIOL:4213/ GENE:4213/ IGPI:4213	Bioinformatics	2,4

BME:5335	Computational Bioinformatics	3
CBH:4105	Introduction to Health Promotion and Disease Prevention	3
CPH:5100	Introduction to Public Health	3
GENE:7191	Human Molecular Genetics	3
HHP:4390	Understanding Human Disease	3
HMP:4000	Introduction to the U.S. Health Care System	3
ISE:4172	Big Data Analytics	3
OEH:4240	Global Environmental Health	3
PATH:5270/ MMED:5270/ IGPI:5270	Pathogenesis of Major Human Diseases	3
PATH:8133	Introduction to Human Pathology for Graduate Students	2-4
RHET:7940	Public Speaking for Academics	3

Dissertation

Students are required to complete at least 6 s.h. in BIOS:7900 Thesis/Dissertation. Students may count up to an additional 7 s.h. for a maximum total of 13 s.h. of this course toward the degree.

General Electives

Elective courses must bring the total credit for the degree to 79 s.h., if needed. Electives may be selected from biostatistics or statistics courses (prefixes BIOS or STAT) numbered 5000 or above.

Combined Programs

PhD/MD

Students may work toward the Doctor of Medicine degree and a PhD in biostatistics 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 to the PhD 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 University of Iowa 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 grade-point averages, letters of recommendation, intent and motivation for graduate study, and research interests.

All applicants must hold a bachelor's degree and have a cumulative grade-point average of at least 3.00.

All biostatistics applicants 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.

PhD application deadlines are posted on the Department of Biostatistics website. Application deadline is Dec. 1. Visit Requirements and How to Apply to Biostatistics on the department's website.

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.

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.

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This sample plan is currently being reviewed and will be added at a later date.