# 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 cumulative g.p.a. of at least 3.00. Those who receive a grade of C on 7 s.h. of coursework 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 coursework at other institutions may request waivers and/or transfers of credit. Students who earned a Master of Science with a major in biostatistics at the University of Iowa automatically receive credit for these courses.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>STAT:5100-STAT:5101</td>
<td>Statistical Inference I-II</td>
<td>6</td>
</tr>
<tr>
<td>BIOS:5510</td>
<td>Biostatistical Computing (taken twice for 2 s.h. each; topics should be programming with R and programming with SAS)</td>
<td>4</td>
</tr>
<tr>
<td>BIOS:5710 &amp; BIOS:5720</td>
<td>Biostatistical Methods I-II</td>
<td>8</td>
</tr>
<tr>
<td>BIOS:5730</td>
<td>Biostatistical Methods in Categorical Data</td>
<td>3</td>
</tr>
<tr>
<td>BIOS:6610</td>
<td>Statistical Methods in Clinical Trials</td>
<td>3</td>
</tr>
<tr>
<td>BIOS:7500</td>
<td>Preceptorship in Biostatistics</td>
<td>3</td>
</tr>
<tr>
<td>EPID:4400</td>
<td>Epidemiology I: Principles</td>
<td>3</td>
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## Public Health Requirement

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>CPH:6100</td>
<td>Essentials of Public Health</td>
<td>2</td>
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</table>

## Responsible Conduct of Research Training

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>BIOS:7270</td>
<td>Scholarly Integrity in Biostatistics</td>
<td>1</td>
</tr>
</tbody>
</table>

## Core Courses

All of these:

- BIOS:6810 Bayesian Methods and Design 3
- BIOS:7110 Likelihood Theory and Extensions 4
- BIOS:7210/STAT:7570 Survival Data Analysis 3
- BIOS:7250 Theory of Linear and Generalized Linear Models 4
- BIOS:7310 Longitudinal Data Analysis 3

## Electives

With approval of their advisor, students choose 16-23 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 coursework must be taken with grades awarded.

These courses are recommended, but other coursework may be selected; students should consult their advisor.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>BIOS:6650</td>
<td>Causal Inference</td>
<td>3</td>
</tr>
<tr>
<td>BIOS:6720</td>
<td>Statistical Machine Learning for Biomedical and Public Health Data</td>
<td>3</td>
</tr>
<tr>
<td>BIOS:7120</td>
<td>Advanced Topics in Biostatistics</td>
<td>4</td>
</tr>
<tr>
<td>BIOS:7230</td>
<td>Advanced Clinical Trials</td>
<td>3</td>
</tr>
<tr>
<td>BIOS:7240</td>
<td>High-Dimensional Data Analysis</td>
<td>3</td>
</tr>
<tr>
<td>BIOS:7330</td>
<td>Advanced Biostatistical Computing</td>
<td>3</td>
</tr>
<tr>
<td>BIOS:7410/STAT:7510</td>
<td>Analysis of Categorical Data</td>
<td>3</td>
</tr>
<tr>
<td>BIOS:7600</td>
<td>Advanced Biostatistics Seminar (topics include model selection, spatial biostatistics, statistical methods in genetics/genomics, analysis of network data)</td>
<td>1-3</td>
</tr>
<tr>
<td>STAT:6560</td>
<td>Applied Time Series Analysis</td>
<td>3</td>
</tr>
<tr>
<td>STAT:7400</td>
<td>Computer Intensive Statistics</td>
<td>3</td>
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</tbody>
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## Dissertation

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

<table>
<thead>
<tr>
<th>Code</th>
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<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOS:7900</td>
<td>Thesis/Dissertation</td>
<td>6-13</td>
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