STATISTICS, PH.D.

The Department of Statistics offers a rich variety of courses and seminars in almost all branches of statistical theory and applications. The department offers the master of science (M.S.) and the doctor of philosophy in statistics (Ph.D.), and M.S. and Ph.D. degrees in statistics with a named option in biostatistics. An M.S. in statistics with a named option in data science is also available to students meeting the criteria (see the data science (http://guide.wisc.edu/graduate/statistics/statistics-ms/statistics-data-science-ms) page for more details). In addition, the department is closely involved with the biometry program, and with the School of Medicine and Public Health’s Department of Biostatistics and Medical Informatics, both listed separately in this catalog.

The statistics department provides extensive computing facilities, both hardware and software, to support instruction and research. Several computers and advanced graphic workstations are available for use in advanced courses enabling students to pursue the latest research directions in statistical computing and graphics. Common statistical packages and libraries are available on a variety of machines.

The department may be consulted for specific career information. A number of assistantships are available each year; see the department website (http://www.stat.wisc.edu) for application materials and deadlines. The master's degree programs are described below.

Additional information about the master's and Ph.D. programs, including time limits, can also be obtained from the department.

ADMISSIONS

Students holding a bachelor’s degree with a natural science, social science, or engineering major and strong mathematical background are encouraged to apply for admission to the graduate program in statistics. Students are advised to undertake graduate work in statistics only if their undergraduate grades in mathematics were uniformly high. Students cannot get credit for more than one of STAT 301 Introduction to Statistical Methods, STAT 324 Introductory Applied Statistics for Engineers, or STAT 371 Introductory Applied Statistics for the Life Sciences.

GRADUATE SCHOOL ADMISSIONS

Graduate admissions is a two-step process between academic degree programs and the Graduate School. Applicants must meet requirements of both the program(s) and the Graduate School. Once you have researched the graduate program(s) you are interested in, apply online (https://grad.wisc.edu/admissions).

FUNDING

Resources to help you afford graduate study might include assistantships, fellowships, traineeships, and financial aid. Further funding information (https://grad.wisc.edu/funding) is available from the Graduate School. Be sure to check with your program for individual policies and processes related to funding.

PROGRAM RESOURCES

Prospective students should see the program website (http://www.stat.wisc.edu/financial-aid) for funding information.

REQUIREMENTS

MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum academic progress and degree requirements (http://guide.wisc.edu/graduate/#policiesandrequirementstext), in addition to the program requirements listed below.

MAJOR REQUIREMENTS

MODE OF INSTRUCTION

<table>
<thead>
<tr>
<th>Face to Face</th>
<th>Evening/Weekend</th>
<th>Online</th>
<th>Hybrid</th>
<th>Accelerated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Mode of Instruction Definitions

Evening/Weekend: These programs are offered in an evening and/or weekend format to accommodate working schedules. Enjoy the advantages of on-campus courses and personal connections, while keeping your day job. For more information about the meeting schedule of a specific program, contact the program.

Online: These programs are offered primarily online. Many available online programs can be completed almost entirely online with all online programs offering at least 50 percent or more of the program work online. Some online programs have an on-campus component that is often designed to accommodate working schedules. Take advantage of the convenience of online learning while participating in a rich, interactive learning environment. For more information about the online nature of a specific program, contact the program.

Hybrid: These programs have innovative curricula that combine on-campus and online formats. Most hybrid programs are completed on-campus with a partial or completely online semester. For more information about the hybrid schedule of a specific program, contact the program.

Accelerated: These on-campus programs are offered in an accelerated format that allows you to complete your program in a condensed time-frame. Enjoy the advantages of on-campus courses with minimal disruption to your career. For more information about the accelerated nature of a specific program, contact the program.

CURRICULAR REQUIREMENTS

<table>
<thead>
<tr>
<th>Minimum Credit Requirement</th>
<th>51 credits</th>
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<tbody>
<tr>
<td>Minimum Residence Credit Requirement</td>
<td>32 credits</td>
</tr>
</tbody>
</table>

Minimum Graduate Coursework Requirement

Half of degree coursework (26 credits out of 51 total credits) must be completed graduate-level coursework; courses with the Graduate Level Coursework attribute are identified and searchable in the university’s Course Guide (http://my.wisc.edu/CourseGuideRedirect/BrowseByTitle).

Overall Graduate GPA Requirement

3.00 GPA required.
Other Grade Requirements: A grade of B or better must be received in any course used to fulfill the required and elective course requirements.

Assessments and Examinations: Students must pass the Ph.D. qualifying examination, an oral preliminary examination on a topic selected with the approval of the student's advisor, and a thesis defense.

Language Requirements: No language requirements.

Doctoral Minor/ Breadth Requirements: Statistics doctoral students are not required to complete a minor by the Graduate School. The program does require students to meet the breadth requirement in one of three ways: Students must complete either an Option A or Option B minor (at least 9 credits), or they may instead opt to complete a Breadth Option (called "Option C" in the statistics department) consisting of at least two of the following three: participatory seminar experience, collaborative research experience, and/or a breadth course. See the program website (http://www.stat.wisc.edu/phd-masters/PhD_Degree_Regulations) for more details.

### REQUIRED COURSES

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Required Courses:</strong></td>
<td></td>
<td></td>
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<tr>
<td>STAT/MATH 709</td>
<td>Mathematical Statistics</td>
<td>4</td>
</tr>
<tr>
<td>STAT/MATH 710</td>
<td>Mathematical Statistics</td>
<td>4</td>
</tr>
<tr>
<td>STAT/MATH 733</td>
<td>Theory of Probability I</td>
<td>3</td>
</tr>
<tr>
<td>or STAT 771</td>
<td>Statistical Computing</td>
<td></td>
</tr>
<tr>
<td>STAT 849</td>
<td>Theory and Application of Regression and Analysis</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>of Variance I</td>
<td></td>
</tr>
<tr>
<td>STAT 850</td>
<td>Theory and Application of Regression and Analysis</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>of Variance II</td>
<td></td>
</tr>
<tr>
<td>STAT 998</td>
<td>Statistical Consulting</td>
<td>3</td>
</tr>
<tr>
<td><strong>Elective Courses:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eighteen or more elective credits from Statistics Courses,</td>
<td>1-18</td>
<td></td>
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<tr>
<td>including:</td>
<td></td>
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<tr>
<td>STAT/B M I 641</td>
<td>Statistical Methods for Clinical Trials</td>
<td>3</td>
</tr>
<tr>
<td>STAT/B M I 642</td>
<td>Statistical Methods for Epidemiology</td>
<td>3</td>
</tr>
<tr>
<td>or 700 or higher</td>
<td><strong>Sufficient credits of STAT 990 to reach the 51-credit minimum</strong></td>
<td></td>
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</tbody>
</table>

**Total Credits**: 27-44

1 Courses that do not count in this requirement: STAT 609, STAT 610, STAT 699, STAT/MATH 709, STAT/MATH 710, STAT 849, STAT 850, STAT 990, or STAT 998

### NAMED OPTIONS (SUB-MAJORS)

A named option is a formally documented sub-major within an academic major program. Named options appear on the transcript with degree conferral.


### GRADUATE SCHOOL POLICIES

The Graduate School's Academic Policies and Procedures (https://grad.wisc.edu/acadpolicy) provide essential information regarding general university policies. Program authority to set degree policies beyond the minimum required by the Graduate School lies with the degree program faculty. Policies set by the academic degree program can be found below.

### MAJOR-SPECIFIC POLICIES

#### GRADUATE PROGRAM HANDBOOK

The Graduate Program Handbook (http://www.stat.wisc.edu/sites/default/files/2016-17%20Complete%20PDF%20Handbook.pdf) is the repository for all of the program's policies and requirements.

### PRIOR COURSEWORK

#### Graduate Work from Other Institutions

With program approval, students are allowed to count no more than 9 credits of graduate coursework from other institutions toward the graduate degree credit and graduate coursework (50%) requirements. Coursework earned ten or more years prior to admission to a doctoral degree is not allowed to satisfy requirements.

#### UW–Madison Undergraduate

With program approval, up to 6 statistics credits from a UW–Madison undergraduate degree at the 600 level or above are allowed to count toward minimum graduate degree credits. Coursework earned ten or more years prior to admission to a doctoral degree is not allowed to satisfy requirements.

#### UW–Madison University Special

With program approval, up to 15 statistics credits completed at UW–Madison while a University Special student at the 300 level or above are allowed to count toward minimum graduate degree and graduate residence credit requirements. Of these credits, those at the 700 level or above may also count toward the minimum graduate coursework (50%) requirement. Coursework earned ten or more years prior to admission to a doctoral degree is not allowed to satisfy requirements.

### PROBATION

Three consecutive reviews in which a student fails to meet the minimum criteria for satisfactory progress will result in the student being dropped from the program. Contact the program for more information.

### ADVISOR / COMMITTEE

Students are required to meet with their advisor near the beginning of each semester to discuss course selection and progress.

### CREDITS PER TERM ALLOWED

15 credits

### TIME CONSTRAINTS

Students must pass the Ph.D. qualifying examination within six semesters from the first fall semester of registration as a graduate student in the department. Students who complete a master’s in
Statistics, Ph.D.

the department and then are admitted to the Ph.D. program must pass the Ph.D. qualifying examination within four semesters after entering the Ph.D. program.

OTHER

Students pursuing the general statistics and biostatistics options are considered for department financial support and may seek a dual degree if desired.

PROFESSIONAL DEVELOPMENT

GRADUATE SCHOOL RESOURCES

Take advantage of the Graduate School's professional development resources (https://grad.wisc.edu/pd) to build skills, thrive academically, and launch your career.

LEARNING OUTCOMES

1. Articulates research problems, potentials, and limits with respect to the theories, methodologies, and/or applications of statistics.

2. Formulates ideas, concepts, designs, and methods beyond the current boundaries of knowledge within statistics.

3. Creates research that makes a substantive contribution to theoretical and/or applied statistics.

4. Demonstrates breadth in the theories, methodologies, and applications of statistics.

5. Advances contributions of statistics to society.

6. Communicates complex ideas in a clear and understandable manner.

7. Fosters ethical and professional conduct.

PEOPLE

Faculty: Professors J. Zhu (chair), Ane, Chappell, Chien, Keles, Larget, Loh, Newton, Shao, Y. Wang, Yandell, C. Zhang, Z. Zhang; Associate Professor Rohe; Assistant Professors Garcia Trillos, Kang, Patel, Raschka, Raskutti, M. Wang, A Zhang