

STATISTICS: BIostatistics, MS

This is a named option in the Statistics MS. (<https://guide.wisc.edu/graduate/statistics/statistics-ms/#text>)

ADMISSIONS

ADMISSIONS

Please consult the table below for key information about this degree program’s admissions requirements. The program may have more detailed admissions requirements, which can be found below the table or on the program’s website.

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

| Requirements | Detail |
|------------------------------------|---|
| Fall Deadline | January 2 |
| Spring Deadline | The program does not admit in the spring. |
| Summer Deadline | The program does not admit in the summer. |
| GRE (Graduate Record Examinations) | Not Required. |
| English Proficiency Test | Refer to the Graduate School: Minimum Requirements for Admission policy: https://policy.wisc.edu/library/UW-1241 (https://policy.wisc.edu/library/UW-1241/). |
| Other Test(s) (e.g., GMAT, MCAT) | n/a |
| Letters of Recommendation Required | 3 |

Applicants 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. Applicants are advised to undertake graduate work in statistics only if their undergraduate grades in mathematics were uniformly high.

FUNDING

FUNDING

GRADUATE SCHOOL RESOURCES

[The Bursar’s Office provides information about tuition and fees associated with being a graduate student.](#) [Resources to help you afford graduate study might include assistantships, fellowships, traineeships, and financial aid.](#) [Further funding information is available from the Graduate School.](#)

Be sure to check with your program for individual policies and restrictions related to funding.

PROGRAM RESOURCES

Each option within Statistics has different funding policies and opportunities for students. Please see each option for details.

- Statistics: Applied Statistics, MS (<https://guide.wisc.edu/graduate/statistics/statistics-ms/statistics-applied-statistics-ms/>)
- Statistics: Biostatistics, MS (p. 1)
- Statistics: Statistics and Data Science, MS (<https://guide.wisc.edu/graduate/statistics/statistics-ms/statistics-statistics-data-science-ms/>)
- Statistics: Statistics, MS (<https://guide.wisc.edu/graduate/statistics/statistics-ms/statistics-statistics-ms/>)

REQUIREMENTS

MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum degree requirements (<https://guide.wisc.edu/graduate/#requirements-text>) and policies (<https://guide.wisc.edu/graduate/#policies-text>), in addition to the program requirements listed below.

NAMED OPTION REQUIREMENTS

MODE OF INSTRUCTION

| Face to Face | Evening/ Weekend | Online | Hybrid | Accelerated |
|--------------|---------------------|--------|--------|-------------|
| Yes | No | No | No | No |

Mode of Instruction Definitions

Accelerated: Accelerated programs are offered at a fast pace that condenses the time to completion. Students typically take enough credits aimed at completing the program in a year or two.

Evening/Weekend: Courses meet on the UW–Madison campus only in evenings and/or on weekends to accommodate typical business schedules. Students have the advantages of face-to-face courses with the flexibility to keep work and other life commitments.

Face-to-Face: Courses typically meet during weekdays on the UW–Madison Campus.

Hybrid: These programs combine face-to-face and online learning formats. Contact the program for more specific information.

Online: These programs are offered 100% online. Some programs may require an on-campus orientation or residency experience, but the courses will be facilitated in an online format.

CURRICULAR REQUIREMENTS

| Requirement | Detail |
|--------------------------------------|------------|
| Minimum Credit Requirement | 30 credits |
| Minimum Residence Credit Requirement | 16 credits |

| | |
|---|--|
| Minimum Graduate Coursework Requirement | 15 credits must be graduate-level coursework. Refer to the Graduate School: Minimum Graduate Coursework (50%) Requirement policy: https://policy.wisc.edu/library/UW-1244 (https://policy.wisc.edu/library/UW-1244/). |
| Overall Graduate GPA Requirement | 3.00 GPA required. Refer to the Graduate School: Grade Point Average (GPA) Requirement policy: https://policy.wisc.edu/library/UW-1203 (https://policy.wisc.edu/library/UW-1203/). |
| 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 a competency test containing both a written and an oral component, demonstrating that they have the potential to be a practicing statistician. |
| Language Requirements | No language requirements. |

REQUIRED COURSES

| Code | Title | Credits |
|---|--|---------|
| Core | | |
| Students must complete the following courses. | | |
| STAT/B M I 641 | Statistical Methods for Clinical Trials | 3 |
| STAT 849 | Advanced Statistical Methods | 4 |
| STAT 998 | Statistical Consulting | 3 |
| <i>Mathematical Statistics I</i> | | |
| Students must complete one of the following courses for at least 3 credits. | | |
| STAT 609 or STAT/ MATH 709 | Mathematical Statistics I | 3 |
| <i>Mathematical Statistics II</i> | | |
| Students must complete one of the following courses for 4 credits. | | |
| STAT 610 or STAT/ MATH 710 | Introduction to Statistical Inference | 4 |
| Methods | | |
| Students must complete 3 credits of methods. Refer to the "Methods Courses" table for courses that satisfy this requirement. | | |
| Biostatistics Elective | | |
| Students must complete one of the following courses for 3 credits. Note: Students cannot apply the same course towards both the methods requirement and biostatistics elective requirement. | | |
| STAT/B M I 642 | Statistical Methods for Epidemiology | 3 |
| STAT/B M I 727 | Theory and Methods of Longitudinal Data Analysis | 3 |
| STAT/B M I 741 | Survival Analysis Theory and Methods | 3 |
| STAT/B M I 877 | Statistical Methods for Molecular Biology | 3 |
| Additional Electives | | |

Students must complete 7 credits of additional electives to meet the minimum credit requirement. Students may apply biostatistics elective courses and/or courses listed in the "Additional Electives Courses" table to satisfy this requirement. Note: Students cannot apply the same course towards more than one of the category requirements.

Total Credits **30**

Methods Courses

| Code | Title | Credits |
|---------------------------|---|---------|
| STAT 351 | Introductory Nonparametric Statistics | 3 |
| STAT 411 | An Introduction to Sample Survey Theory and Methods | 3 |
| STAT 421 | Applied Categorical Data Analysis | 3 |
| STAT 443 | Classification and Regression Trees | 3 |
| STAT 451 | Introduction to Machine Learning and Statistical Pattern Classification | 3 |
| STAT 453 | Introduction to Deep Learning and Generative Models | 3 |
| STAT 456 | Applied Multivariate Analysis | 3 |
| STAT 461 | Financial Statistics | 3 |
| STAT/B M I 542 | Introduction to Clinical Trials I | 3 |
| STAT 575 | Statistical Methods for Spatial Data | 3 |
| STAT/B M I 620 | Statistics in Human Genetics | 3 |
| STAT/B M I 642 | Statistical Methods for Epidemiology | 3 |
| STAT/B M I 643 | Clinical Trial Design, Implementation, and Analysis | 3 |
| STAT/B M I 727 | Theory and Methods of Longitudinal Data Analysis | 3 |
| STAT/B M I 741 | Survival Analysis Theory and Methods | 3 |
| STAT 761 | Decision Trees for Multivariate Analysis | 3 |
| STAT/B M I 768 | Statistical Methods for Medical Image Analysis | 3 |
| STAT/ECON/ GEN BUS 775 | Bayesian Statistics | 3 |
| STAT/MATH 803 | Experimental Design I | 3 |
| STAT/B M I 828 | Semiparametric Methods in Data Science | 3 |
| STAT 841 | Nonparametric Statistics and Machine Learning Methods | 3 |
| STAT/B M I 877 | Statistical Methods for Molecular Biology | 3 |

Additional Electives Courses

| Code | Title | Credits |
|--|---|---------|
| Statistics Elective Courses | | |
| Students may choose to apply up to 7 credits from the following courses. | | |
| STAT/B M I 620 | Statistics in Human Genetics | 3 |
| STAT/B M I 643 | Clinical Trial Design, Implementation, and Analysis | 3 |

| | | | | | |
|--|---|-----|--|---|-----|
| STAT 701 | Applied Time Series Analysis, Forecasting and Control I | 3 | STAT/COMP SCI/ MATH 475 | Introduction to Combinatorics | 3 |
| STAT/COMP SCI/ I S Y E/MATH 726 | Nonlinear Optimization I | 3 | STAT 479 | Special Topics in Statistics ¹ | 1-3 |
| STAT 732 | Large Sample Theory of Statistical Inference | 3 | STAT/COMP SCI/ I S Y E/MATH 525 | Linear Optimization | 3 |
| STAT/MATH 733 | Theory of Probability I | 3 | STAT 575 | Statistical Methods for Spatial Data | 3 |
| STAT/MATH 734 | Theory of Probability II | 3 | Non-Departmental Courses | | |
| STAT 760 | Multivariate Analysis I | 3 | Students may choose to apply up to 6 credits of graduate courses outside of Statistics (STAT), chosen in consultation with advisor. | | |
| STAT 761 | Decision Trees for Multivariate Analysis | 3 | Directed Study | | |
| STAT/B M I 768 | Statistical Methods for Medical Image Analysis | 3 | Students may choose to apply up to 6 credits from the following course, chosen in consultation with advisor. | | |
| STAT 772 | Linear Randomized Algorithms for Data Science | 3 | STAT 699 | Directed Study | 1-6 |
| STAT/ECON/ GEN BUS 775 | Bayesian Statistics | 3 | ¹ Students may not apply multiple special topics courses with the same topic title towards their degree. | | |
| STAT 780 | Introduction to Quantum Data Science | 3 | Additional Elective Courses Requirement: Statistics Courses Numbered 300-599 | | |
| STAT 801 | Advanced Financial Statistics | 3 | Courses that cover the same or similar topic at the undergraduate- and graduate-level may both be used towards the MS requirements. If both courses are to be used, the undergraduate level course must be completed first for both courses to be counted. Otherwise, only the graduate level course will be applied. | | |
| STAT/MATH 803 | Experimental Design I | 3 | Please note that this policy does not preclude students from taking just the undergraduate or just the graduate version of a topic. These combinations would include STAT 349 and STAT 701; STAT 351 and STAT 809; STAT 456 and STAT 760; STAT 443 and STAT 761; STAT 451 and STAT 615; and STAT/COMP SCI 471 and STAT 771. This will also apply to special topics courses that have similar topics between the undergraduate and graduate level. | | |
| STAT 809 | Non Parametric Statistics | 3 | POLICIES | | |
| STAT/B M I 828 | Semiparametric Methods in Data Science | 3 | GRADUATE SCHOOL POLICIES | | |
| STAT/MATH 833 | Topics in the Theory of Probability ¹ | 3 | The Graduate School's Academic Policies and Procedures (https://grad.wisc.edu/acadpolicy/) serve as the official document of record for Graduate School academic and administrative policies and procedures and are updated continuously. Note some policies redirect to entries in the official UW-Madison Policy Library (https://policy.wisc.edu/). Programs may set more stringent policies than the Graduate School. Policies set by the academic degree program can be found below. | | |
| STAT 841 | Nonparametric Statistics and Machine Learning Methods | 3 | NAMED OPTION-SPECIFIC POLICIES | | |
| STAT/COMP SCI/ E C E 861 | Theoretical Foundations of Machine Learning | 3 | PRIOR COURSEWORK | | |
| STAT/E C E/ MATH 888 | Topics in Mathematical Data Science ¹ | 1-3 | Graduate Credits Earned at Other Institutions | | |
| STAT 992 | Seminar ¹ | 1-3 | Refer to the Graduate School: Transfer Credits for Prior Coursework (https://policy.wisc.edu/library/UW-1216/) policy. | | |
| Statistics Courses Numbered 300-599 | | | | | |
| Students may choose to apply up to 6 credits from the following courses. | | | | | |
| STAT 303 | R for Statistics I | 1 | Undergraduate Credits Earned at Other Institutions or UW-Madison | | |
| STAT 304 | R for Statistics II | 1 | With program approval, up to 6 Statistics (STAT) (https://guide.wisc.edu/courses/stat/) credits from a UW-Madison undergraduate degree numbered 600 or above may transfer toward minimum graduate degree credits. Coursework earned ten or more years prior to admission to a | | |
| STAT 305 | R for Statistics III | 1 | | | |
| STAT 349 | Introduction to Time Series | 3 | | | |
| STAT 351 | Introductory Nonparametric Statistics | 3 | | | |
| STAT 411 | An Introduction to Sample Survey Theory and Methods | 3 | | | |
| STAT 421 | Applied Categorical Data Analysis | 3 | | | |
| STAT 433 | Data Science with R | 3 | | | |
| STAT 443 | Classification and Regression Trees | 3 | | | |
| STAT 451 | Introduction to Machine Learning and Statistical Pattern Classification | 3 | | | |
| STAT 453 | Introduction to Deep Learning and Generative Models | 3 | | | |
| STAT 456 | Applied Multivariate Analysis | 3 | | | |
| STAT 461 | Financial Statistics | 3 | | | |
| STAT/COMP SCI 471 | Introduction to Computational Statistics | 3 | | | |

master's degree is not allowed to satisfy requirements. Transfer credits from other institutions are not accepted.

Credits Earned as a Professional Student at UW-Madison (Law, Medicine, Pharmacy, and Veterinary careers)

Refer to the Graduate School: Transfer Credits for Prior Coursework (<https://policy.wisc.edu/library/UW-1216/>) policy.

Credits Earned as a University Special Student at UW-Madison

With program approval, up to 14 Statistics (STAT) (<https://guide.wisc.edu/courses/stat/>) credits completed at UW-Madison while a University Special student in coursework numbered 300 or above are allowed to transfer for the minimum graduate degree credit requirement. Of these credits, those numbered 700 or above or are taken to meet the requirements of a capstone certificate and has the "Grad 50%" attribute may also transfer for the minimum graduate coursework (50%) requirement. Coursework earned ten or more years prior to admission to a master's 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 credit maximum. Refer to the Graduate School: Maximum Credit Loads and Overload Requests (<https://policy.wisc.edu/library/UW-1228/>) policy.

TIME LIMITS

The competency test must be passed within six semesters after entering the department.

GRIEVANCES AND APPEALS

These resources may be helpful in addressing your concerns:

- Bias or Hate Reporting (<https://doso.students.wisc.edu/bias-or-hate-reporting/>)
- Graduate Assistantship Policies and Procedures (<https://hr.wisc.edu/policies/gapp/#grievance-procedure>)
- Hostile and Intimidating Behavior Policies and Procedures (<https://hr.wisc.edu/hib/>)
 - Office of the Provost for Faculty and Staff Affairs (<https://facstaff.provost.wisc.edu/>)
- Employee Assistance (<http://www.eao.wisc.edu/>) (for personal counseling and workplace consultation around communication and conflict involving graduate assistants and other employees, post-doctoral students, faculty and staff)
- Employee Disability Resource Office (<https://employeedisabilities.wisc.edu/>) (for qualified employees or applicants with disabilities to have equal employment opportunities)
- Graduate School (<https://grad.wisc.edu/>) (for informal advice at any level of review and for official appeals of program/departmental or school/college grievance decisions)
- Office of Compliance (<https://compliance.wisc.edu/>) (for class harassment and discrimination, including sexual harassment and sexual violence)
- Office Student Assistance and Support (OSAS) (<https://osas.wisc.edu/>) (for all students to seek grievance assistance and support)
- Office of Student Conduct and Community Standards (<https://conduct.students.wisc.edu/>) (for conflicts involving students)
- Ombuds Office for Faculty and Staff (<http://www.ombuds.wisc.edu/>) (for employed graduate students and post-docs, as well as faculty and staff)
- Title IX (<https://compliance.wisc.edu/titleix/>) (for concerns about discrimination)

L&S POLICY FOR GRADUATE STUDENT ACADEMIC APPEALS

Graduate students have the right to appeal an academic decision related to an L&S graduate program if the student believes that the decision is inconsistent with published policy.

Academic decisions that may be appealed include:

- Dismissal from the graduate program
- Failure to pass a qualifying or preliminary examination
- Failure to achieve satisfactory academic progress
- Academic disciplinary action related to failure to meet professional conduct standards

Issues such as the following cannot be appealed using this process:

- A faculty member declining to serve as a graduate student's advisor.
- Decisions regarding the student's disciplinary knowledge, evaluation of the quality of work, or similar judgements. These are the domain of the department faculty.
- Course grades. These can be appealed instead using the L&S Policy for Grade Appeal (<https://kb.wisc.edu/lis/22258/>).
- Incidents of bias or hate, hostile and intimidating behavior (<https://hr.wisc.edu/hib/>), or discrimination (Title IX (<https://compliance.wisc.edu/titleix/>), Office of Compliance (<https://compliance.wisc.edu/eo-complaint/formal-investigations/>)). Direct these to the linked campus offices appropriate for the incident(s).

Appeal Process for Graduate Students

A graduate student wishing to appeal an academic decision must follow the process in the order listed below. Note time limits within each step.

1. The student should first seek informal resolution, if possible, by discussing the concern with their academic advisor, the department's Director of Graduate Studies, and/or the department chair.
2. If the program has an appeal policy listed in their graduate program handbook, the student should follow the policy as written, including adhering to any indicated deadlines. In the absence of a specific departmental process, the chair or designee will be the reviewer and decision maker, and the student should submit a written appeal to the chair within 15 business days of the academic decision. The chair or designee will notify the student in writing of their decision.
3. If the departmental process upholds the original decision, the graduate student may next initiate an appeal to L&S. To do so, the student must submit a written appeal to the L&S Assistant Dean for Graduate Student Academic Affairs within 15 business days of notification of the department's decision.

- a. To the fullest extent possible, the written appeal should include, in a single document: a clear and concise statement of the academic decision being appealed, any relevant background on what led to the decision, the specific policies involved, the relief sought, any relevant documentation related to the departmental appeal, and the names and titles of any individuals contributing to or involved in the decision.
 - b. The Assistant Dean will work with the Academic Associate Dean of the appropriate division to consider the appeal. They may seek additional information and/or meetings related to the case.
 - c. The Assistant Dean and Academic Associate Dean will provide a written decision within 20 business days.
4. If L&S upholds the original decision, the graduate student may appeal to the Graduate School. More information can be found on their website: Grievances and Appeals (<https://grad.wisc.edu/documents/grievances-and-appeals/>) (see: Graduate School Appeal Process).

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

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.