BACHELOR OF ARTS (BA) DEGREE WITH A MAJOR IN STATISTICS

Program Learning Outcomes for the BA Degree with a Major in Statistics

Upon completing the BA degree with a major in Statistics, students will be able to:

1. Apply fundamental theory in probability and statistical inference.
2. Apply and evaluate statistical models.
3. Apply statistical computing for data analysis and data science.
4. Demonstrate competency as a professional statistician.
5. Effectively communicate as a professional statistician.

Requirements for the BA Degree with a Major in Statistics

For general university requirements, see Graduation Requirements (ga.rice.edu/undergraduate-students/academic-policies-procedures/graduation-requirements). Students pursuing the BA degree with a major in Statistics must complete:

- A minimum of 16 courses (49-55 credit hours) depending on course selection to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 11 courses (34 credit hours) at the 300-level or above.
- A maximum of 3 courses (9 credit hours) from study abroad or transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major’s academic advisor, or where applicable, the department’s Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier).) Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
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<td>Total Credit Hours Required for the Major in Statistics</td>
<td>49-55</td>
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<td>Total Credit Hours Required for the BA Degree with a Major in Statistics</td>
<td>120</td>
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### Degree Requirements

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<td>Core Requirements</td>
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#### Mathematics

MATH 101 SINGLE VARIABLE CALCULUS I 3
or MATH 105 AP/OTH CREDIT IN CALCULUS I

**MATH 102** SINGLE VARIABLE CALCULUS II 3
or MATH 106 AP/OTH CREDIT CALCULUS II
Select 1 from the following: 3 or 6

MATH 212 MULTIVARIABLE CALCULUS
MATH 221 HONORS CALCULUS III
& MATH 222 and HONORS CALCULUS IV
Select 1 from the following:

**CAAM 335** MATRIX ANALYSIS 3
or MATH 354 HONORS LINEAR ALGEBRA
or MATH 355 LINEAR ALGEBRA

### Computation

STAT 405 R FOR DATA SCIENCE 3

### Basic Computing

Select 1 from the following: 3 or 4

COMP 100 INTRODUCTION TO COMPUTING AND INFORMATION SYSTEMS
COMP 130 ELEMENTS OF ALGORITHMS AND COMPUTATION
COMP 140 COMPUTATIONAL THINKING
COMP 182 ALGORITHMIC THINKING
COMP 200 ELEMENTS OF COMPUTER SCIENCE

### Advanced Computing

Select 1 from the following: 3 or 4

COMP 215 INTRODUCTION TO PROGRAM DESIGN
COMP 322 / ELEC 323 PRINCIPLES OF PARALLEL PROGRAMMING
COMP 330 TOOLS AND MODELS FOR DATA SCIENCE
COMP 382 REASONING ABOUT ALGORITHMS
CAAM 378 INTRODUCTION TO OPERATIONS RESEARCH AND OPTIMIZATION
CAAM 440 APPLIED MATRIX ANALYSIS
CAAM 453 NUMERICAL ANALYSIS I
CAAM 471 LINEAR AND INTEGER PROGRAMMING
CAAM 519 COMPUTATIONAL SCIENCE I

### Probability and Statistics

Select 6 courses from departmental (STAT) course offerings at the 300-level or above, including at least 3 from the following list of methodology/theory courses: 1

STAT 310 / ECON 307 PROBABILITY AND STATISTICS 3 or 4
or STAT 315 PROBABILITY AND STATISTICS FOR DATA SCIENCE

STAT 410 LINEAR REGRESSION 4

### Elective Requirements

Select 6 courses from departmental (STAT) course offerings at the 300-level or above, including at least 3 from the following list of methodology/theory courses: 1

STAT 411 ADVANCED STATISTICAL METHODS
STAT 413 INTRODUCTION TO STATISTICAL MACHINE LEARNING
STAT 418 PROBABILITY
STAT 419 STATISTICAL INFERENCE
STAT 421 APPLIED TIME SERIES AND FORECASTING
STAT 425 INTRODUCTION TO BAYESIAN INFERENCE
STAT 453 BIOSTATISTICS
STAT 502 / COMP 502 / ELEC 502 NEURAL MACHINE LEARNING I
Bachelor of Arts (BA) Degree with a Major in Statistics

STAT 541  MULTIVARIATE ANALYSIS
STAT 545  GLM & CATEGORICAL DATA ANALYSIS

Senior Capstone
STAT 435  DATA SCIENCE PROJECTS  3

Total Credit Hours Required for the Major in Statistics  49-55
Additional Credit Hours to Complete BA Degree Requirements  5-11
University Graduation Requirements (ga.rice.edu/undergraduate-students/academic-policies-procedures/graduation-requirements)  60

Total Credit Hours  120

Footnotes and Additional Information
* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.
1 With advisor approval, 1 course (3 credit hours) from departments other than Statistics may be used as an elective. The substitution course may not be used as a replacement for 1 of the 3 required methodology/theory courses listed above. STAT 305, STAT 310, STAT 315 and STAT 385 will not count as electives.

Policies for the BA Degree with a Major in Statistics

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (ga.rice.edu/undergraduate-students/academic-policies-procedures/transfer-credit). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines
Students pursuing the major in Statistics should be aware of the following departmental transfer credit guidelines:

• No more than 3 courses (9 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the major.
• Requests for transfer credit will be considered by the program director (and/or the program's official transfer credit advisor) on an individual case-by-case basis.

Additional Information
For additional information, please see the Statistics website: https://statistics.rice.edu/.

Opportunities for the BA Degree with a Major in Statistics

Academic Honors
The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (ga.rice.edu/undergraduate-students/honors-distinctions/university) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (ga.rice.edu/undergraduate-students/honors-distinctions/university). Some departments have department-specific Honors awards or designations.

Internship and Research Opportunities
The Department of Statistics encourages its major and minors to participate the practice of statistics through summer internships, employment and research. Information on current opportunities are posted here: https://statistics.rice.edu/undergraduate-program/opportunities. Students can also approach individual faculty about research opportunities in their group. An undergraduate advisor can talk with you about these and other possibilities.

Additional Information
For additional information, please see the Statistics website: https://statistics.rice.edu/.