

# STATISTICS, B.S.

The Bachelor of Science degree program provides a strong basis in both applied and theoretical statistics and prepares students for a variety of careers. Students will demonstrate the ability to perform fundamental statistical analyses and to prepare informative graphics for public presentations. They will gain mastery of probability and mathematical statistics as well as the use of statistical programming languages and improve technical writing and presentation skills.

Statisticians are in great demand and work in various settings including finance, insurance, banking, survey research, government agencies, and e-commerce. "Statistician" and "data scientist" are consistently ranked among the top jobs for graduates due to their high demand and excellent salaries. There are two options under the B.S. in Statistics degree program: the General Major and the Major with a Concentration in Actuarial Science, designed for students planning a career as an actuary. Statistics is also an ideal double major to gain analytical skills to complement a primary field of study.

## Learning Outcomes

1. Students will demonstrate the ability to perform fundamental statistical analyses and to prepare informative graphics for public presentation.
2. Students will demonstrate a mastery of probability and mathematical statistics at the mathematical level of calculus and linear algebra.
3. Students will demonstrate the ability to use statistical programming languages.
4. Students will demonstrate competency in technical writing and presentation.

## Retention

To be retained in the program, a student must obtain a grade of C or higher in at most two attempts in all mathematics, computer science, and statistics courses required for graduation.

## Transfer Requirement

Any student applying to transfer to the statistics major from other programs within the University, or from other accredited colleges and universities, is required to have earned a grade of "B" or higher in at least one of the following courses, or their equivalent: USC's MATH 141, MATH 142, STAT 509, or STAT 515. An AP or IB exam score that provides credit for MATH 142 also satisfies this requirement. STAT 509 and STAT 515 are advanced undergraduate courses. This requirement is in addition to the minimum University and College of Arts and Sciences requirements.

## Admissions

### Entrance Requirements

New freshmen who meet University admissions standards are eligible for admission to degree programs offered by the college. A student who wishes to enter the College of Arts and Sciences from another college on the Columbia campus must be in good standing and have a cumulative GPA of 2.00 or higher. A student who wishes to enter the College of Arts and Sciences from another USC campus must fulfill one of the following requirements:

1. Be in good standing, meet the admission requirements for a baccalaureate degree on the Columbia campus, and have a cumulative GPA of 2.00 or higher.
2. Be in good standing and have completed 30 semester hours with a GPA of 2.00 or higher on a USC campus.

Some programs in the College of Arts and Sciences have special admission requirements established by the department or committee that supervises the specific degree program, for example, Cardiovascular Technology, Biological Sciences, Chemistry, Biochemistry and Molecular Biology, Economics, Environmental Science, the Bachelor of Arts in Interdisciplinary Studies, and the Bachelor of Science in Interdisciplinary Studies. These requirements are listed in the sections of this bulletin that describe department and special degree programs.

## Degree Requirements (120 hours)

### Program of Study

Requirements	Credit Hours
1. Carolina Core	34-46
2. College Requirements	15-19
3. Program Requirements	28-44
4. Major Requirements	27

### Founding Documents Requirement

All undergraduate students must take a 3-credit course or its equivalent with a passing grade in the subject areas of History, Political Science, or African American Studies that covers the founding documents including the United State Constitution, the Declaration of Independence, the Emancipation Proclamation and one or more documents that are foundational to the African American Freedom struggle, and a minimum of five essays from the Federalist papers. This course may count as a requirement in any part of the program of study including the Carolina Core, the major, minor or cognate, or as a general elective. Courses that meet this requirement are listed here (<https://academicbulletins.sc.edu/undergraduate/founding-document-courses/>).

## 1. Carolina Core Requirements (34-46 hours)

### CMW – Effective, Engaged, and Persuasive Communication: Written (6 hours)

*must be passed with a grade of C or higher*

- any CC-CMW courses (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

### ARP – Analytical Reasoning and Problem Solving (8 hours)

*must be passed with a grade of C or higher*

- MATH 141\*
- MATH 142\*

### SCI – Scientific Literacy (8 hours)

- Two 4-credit hour CC-SCI courses (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

## GFL – Global Citizenship and Multicultural Understanding: Foreign Language (0-6 hours)

Demonstration of proficiency in one foreign language equivalent to the minimal passing grade on the exit examination in the 122 course is required. Students can demonstrate this proficiency by successfully completing Phase II of the Proficiency Test or by successfully completing the 122 course, including the exit exam administered as part of that course.

- CC-GFL courses (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

*It is strongly recommended that students continuing the study of a foreign language begin college-level study of that language in their first semester and continue in that language until their particular foreign language requirement is completed.*

## GHS – Global Citizenship and Multicultural Understanding: Historical Thinking (3 hours)

- any CC-GHS course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

## GSS – Global Citizenship and Multicultural Understanding: Social Sciences (3 hours)

- any CC-GSS course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

## AIU – Aesthetic and Interpretive Understanding (3 hours)

- any CC-AIU course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

## CMS – Effective, Engaged, and Persuasive Communication: Spoken Component <sup>1</sup> (0-3 hours)

- any overlay or stand-alone CC-CMS course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

## INF – Information Literacy <sup>1</sup> (0-3 hours)

- any overlay or stand-alone CC-INF course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

## VSR – Values, Ethics, and Social Responsibility <sup>1</sup> (0-3 hours)

- any overlay or stand-alone CC-VSR course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

<sup>1</sup> **Carolina Core Stand Alone or Overlay Eligible Requirements** — Overlay-approved courses offer students the option of meeting two Carolina Core components in a single course. A maximum of two overlays is allowed. The total Carolina Core credit hours must add up to a minimum of 31 hours. Some programs may have a higher number of minimum Carolina Core hours due to specified requirements.

## 2. College Requirements (15-19 hours)

### Foreign Language (0-3 hours)

- only if needed to meet 122-level proficiency

### Analytical Reasoning (6-7 hours)

*must be passed with a grade of C or higher*

- MATH 344\* or MATH 544\*
- CSCE 145\* or CSCE 206\*

### History (3 hours)

The College of Arts and Sciences requires one additional GHS course beyond the Carolina Core GHS requirement.

- If the Carolina Core GHS requirement is fulfilled by a **U.S. history** course, the College of Arts and Sciences history requirement must be fulfilled by a **non-U.S. history** course.
- If the Carolina Core GHS requirement is fulfilled by a **non-U.S. history** course, the College of Arts and Sciences history requirement must be fulfilled by a **U.S. history** course.

Please select the College of Arts and Sciences history requirement from the approved list of U.S. and non-U.S. history courses (<https://academicbulletins.sc.edu/undergraduate/arts-sciences/history-requirement/>).

### Social Science and Fine Arts or Humanities (6 hours)

- **Social Science (3 hours)**
  - The College of Arts and Science requires one 3- hour Social Science Course (<https://academicbulletins.sc.edu/undergraduate/arts-sciences/courses-acceptable-social-science/>)
- **Fine Arts/Humanities (3 Hours)**
  - ENGL 363\*, ENGL 462\* or ENGL 463\* *must be passed with a grade of C or higher*
  - A Bachelor of Science from the College of Arts and Sciences requires one 3-hour Fine Arts/Humanities Course (<https://academicbulletins.sc.edu/undergraduate/arts-sciences/courses-acceptable-fine-arts-humanities/>)

## 3. Program Requirements (28-44 hours)

### Supporting Courses (3 hours)

*must be passed with a grade of C or higher*

- MATH 241\*

### Cognate or Minor (12-18 hours)

Students must complete a cognate (12 hours) or a minor as part of this program. In lieu of a cognate or minor, an additional major may be added to a student's program of study. **Additional majors must include all major courses as well as any prescribed courses noted (\*) in the bulletin.** Prescribed courses noted in the bulletin may be shared with Carolina Core, College requirements, and Program requirements in the primary program.

### Cognate (12 hours)

The cognate must consist of twelve (12) hours of courses at the advanced level, outside of but related to the major. The cognate may be taken in one or more departments or programs.

Courses offered by departments and programs that are acceptable for cognate credit are outlined in the section titled Courses Acceptable for Cognate Credit in Degree Programs in the College of Arts and Sciences (<https://academicbulletins.sc.edu/undergraduate/arts-sciences/courses-acceptable-cognate/>). Some major programs have specific cognate

requirements. It should be emphasized that the cognate is not a second set of elective courses to be chosen at random by the student. Students are urged to consult their major advisors for specific requirements in their major.

Unless otherwise noted, for Bachelor of Science degrees, cognate courses passed with a grade of D or higher are acceptable.

### Minor (18 hours)

In place of the cognate a student in the College of Arts and Sciences may choose a minor consisting of at least 18 credit hours of prescribed courses.

The minor is intended to develop a coherent basic preparation in a second area of study. It differs from the cognate inasmuch as the courses must follow a structured sequence.

Courses applied toward general education requirements cannot be counted toward the minor. No course may satisfy both major and minor requirements. **All minor courses must be passed with a grade of C or higher.** At least half of the courses in the minor must be completed in residence at the University.

A list of minor programs of study can be found at Programs A-Z (<https://academicbulletins.sc.edu/undergraduate/programs-az/>).

### Electives (7-29 hours)

120 (or 128) degree applicable credits are required to complete any degree at UofSC. After the cognate, minor or second major is complete, any additional credits needed to reach 120 (or 128) total credits can be fulfilled by electives. No courses of a remedial, developmental, skill-acquiring, or vocational nature may apply as credit toward degrees in the College of Arts and Sciences. The College of Arts and Sciences allows the use of the Pass-Fail option on elective courses. Further clarification on inapplicable courses can be obtained from the College of Arts and Sciences.

## 4. Major Requirements (27 hours)

*a minimum grade of C is required in all major courses*

### Major Courses (15 hours)

Course	Title	Credits
<b>Theory</b>		
STAT 511	Probability <sup>1</sup>	3
STAT 512	Mathematical Statistics	3
<b>Methods and Computation</b>		
STAT 509 or STAT 515	Statistics for Engineers <sup>2</sup> Statistical Methods I	3
STAT 516	Statistical Methods II	3
STAT 540	Computing in Statistics	3
<b>Total Credit Hours</b>		<b>15</b>

<sup>1</sup> A student double majoring in Mathematics and Statistics may use STAT 511 [=MATH 511] to satisfy a major requirement in both programs.

<sup>2</sup> Major credit will be given for only one of STAT 509 or STAT 515. Neither STAT 509 nor STAT 515 may be taken concurrently with, or after, STAT 513. A student who has started the Statistics major after taking STAT 512 may replace the STAT 509/STAT 515 requirement with an

additional 3 hour advanced application course chosen from STAT 500 or above.

### Major Electives (12 hours)

- Select four courses from STAT 500<sup>1</sup> or above, at least one of which must be selected from STAT 513, STAT 517, STAT 520, or STAT 535, which are the options for the Carolina Core integrative course for the Statistics major.

<sup>1</sup> Major credit will be given for only one of STAT 509 or STAT 515. Neither STAT 509 nor STAT 515 may be taken concurrently with, or after, STAT 513. A student who has started the Statistics major after taking STAT 512 may replace the STAT 509/STAT 515 requirement with an additional 3 hour advanced application course chosen from STAT 500 or above.

### Major with Actuarial Science Concentration (27 hours)

The Concentration in Actuarial Science requires the Risk Management and Insurance Minor (<https://academicbulletins.sc.edu/undergraduate/business/risk-management-insurance-minor/>) (18 hours).

Course	Title	Credits
<b>Theory</b>		
STAT 511	Probability <sup>1</sup>	3
STAT 512	Mathematical Statistics	3
STAT 513	Theory of Statistical Inference	3
<b>Methods and Computation</b>		
STAT 509 or STAT 515	Statistics for Engineers <sup>2</sup> Statistical Methods I	3
STAT 516	Statistical Methods II	3
STAT 540	Computing in Statistics	3
<b>Advanced Applications</b>		
STAT 520	Forecasting and Time Series	3
STAT 521	Applied Stochastic Processes	3
Select one course from STAT 500 <sup>2</sup>		3
<b>Total Credit Hours</b>		<b>27</b>

<sup>1</sup> A student double majoring in Mathematics and Statistics may use STAT 511 [=MATH 511] to satisfy a major requirement in both programs.

<sup>2</sup> Major credit will be given for only one of STAT 509 or STAT 515. Neither STAT 509 nor STAT 515 may be taken concurrently with, or after, STAT 513. A student who has started the Statistics major after taking STAT 512 may replace the STAT 509/STAT 515 requirement with an additional 3 hour advanced application course chosen from STAT 500 or above.

Note: A student double majoring in Economics (in the College of Arts and Sciences) and Statistics may use the combination of both ECON 436 and STAT 506 in place of the combination of both STAT 516 and one of the STAT 500 or above advanced application courses for the Statistics major. In this case ECON 436 may satisfy a major requirement in both programs. ECON 436 and STAT 516 may not both be used to satisfy major requirements in Statistics.

## Major Map

A major map is a layout of required courses in a given program of study, including critical courses and suggested course sequences to ensure a clear path to graduation.

Major maps are only a suggested or recommended sequence of courses required in a program of study. Please contact your academic advisor for assistance in the application of specific coursework to a program of study and course selection and planning for upcoming semesters.

**Statistics, B.S. No Concentration**

**Statistics, B.S. Actuarial Science Concentration**