DATA SCIENCE, B.S.

Program of Study

Requirements	Credit Hours
1. Carolina Core	32-46
2. College Requirements	15-18
3. Program Requirements	32-47
4. Major Requirements	24

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 (32-46 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[1] (0-3 hours)

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

INF – Information Literacy[1] (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[1] (0-3 hours)

- ITEC 101 or
- PHIL 325 or
- any overlay or stand-alone CC-VSR course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

[1] **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 (15-18 hours)

Foreign Language (0-3 hours)

- only if needed to meet 122-level proficiency

Analytical Reasoning (6 hours)

must be passed with a grade of C or higher

- CSCE 106*
- MATH 241*

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
- **Fine Arts/Humanities (3 Hours)**
  - ENGL 363*, ENGL 462* or ENGL 463* must be passed with a grade of C or higher
  - A student who has passed MGMT 250* with a grade of C or higher may use another 3-hour Fine Arts/Humanities course (https://academicbulletins.sc.edu/undergraduate/arts-sciences/courses-acceptable-fine-arts-humanities/) to satisfy this requirement.

3. Program Requirements (32-49 hours)

Supporting Courses (7-10 hours)

Supporting courses must be passed with a grade of C or higher

Course	Title	Credits
MATH 344	Applied Linear Algebra	3
or MATH 544	Linear Algebra	
MATH 344L	Applied Linear Algebra Lab	1
STAT 515	Statistical Methods I	3
or STAT 509	Statistics for Engineers	
Ethics in Data Science		**0-3**
If ITEC 101 or PHIL 325 were not taken to fulfill the Carolina Core VSR requirement with a grade of C or higher, then one of the following must be taken:		
CSCE 390	Professional Issues in Computer Science and Engineering	
CSCE 581	Trusted Artificial Intelligence	
CYBR 392	Special Topics in Cyber Society and Ethics	
ISCI 315	Cyberethics and Information Policy	
ISCI 415	Social Issues in Information and Communications Technologies	
ITEC 101	Thriving in the Tech Age	
PHIL 323	Ethics of Science and Technology	
PHIL 325	Engineering Ethics	

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 the 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 (4-30 hours)

120 (or 128) degree applicable credits are required to complete any degree at USC. 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 (24 hours)

a minimum grade of C is required in all major courses

Course	Title	Credits
Major Courses (18 hours)		
STAT 516	Statistical Methods II	3
STAT 542	Computing for Data Science	3
CSCE 567	Visualization Tools	3
MATH 374	Discrete Structures	3
or MATH 574	Discrete Mathematics I	
Select one of the following:		3
STAT 530	Applied Multivariate Statistics and Data Mining	

CSCE 587	Big Data Analytics	
STAT 587	Big Data Analytics	
Select one of the following:		3
MATH 511	Probability	
STAT 511	Probability	
MATH 528	Mathematical Foundation of Data Science and Machine Learning	
MATH 572	Mathematical Foundation of Network Science	
Total Credit Hours		**18**

Course	Title	Credits
Major Electives (6 hours)		
Select two courses from the list below or from any of STAT 530, CSCE 587/STAT 587, MATH 511/STAT 511, MATH 528, or MATH 572 that were not taken as Major Courses.		6
BIOL 588	Genomic Data Science	
STAT 588	Genomic Data Science	
CSCE 556	Data Analysis in Python: Application to Neuroscience	
CSCE 569	Parallel Computing	
CSCE 580	Artificial Intelligence	
CSCE 582	Bayesian Networks and Decision Graphs	
STAT 582	Bayesian Networks and Decision Graphs	
CSCE 585	Machine Learning Systems	
MATH 524	Nonlinear Optimization	
MATH 529	Introduction to Deep Neural Networks	
STAT 512	Mathematical Statistics	
STAT 517	Advanced Statistical Models	
STAT 519	Sampling	
STAT 535	Introduction to Bayesian Data Analysis	
STAT 540	Computing in Statistics	
STAT 541	Advanced SAS Programming	
Total Credit Hours		**6**

The following courses have prerequisites not required in the program: CSCE 580, STAT 512, STAT 535 and STAT 541.