

# DATA ANALYTICS, B.S.

The University of South Carolina's Bachelor of Science in Data Analytics is an interdisciplinary program that brings computer science, mathematics, and statistics together with a specific area of focus chosen from a variety of data generating majors and minors offered throughout campus. Based in the College of Arts and Sciences, its faculty are from the Departments of Mathematics and Statistics in that college, and from the Department of Computer Science and Engineering in the College of Engineering and Computing, and its major elective courses are taught by data expert faculty from across campus. Its curriculum features a strong foundation in all the stages of data analysis as well as a minor or second major in the field of knowledge that generate the research question and data. In addition to preparing students for a career in data analytics, the choice of minor or second major can help prepare students for a quantitative or methodological graduate program in that area.

Other data-centered programs at USC include those in the Departments of Computer Science and Engineering (<https://academicbulletins.sc.edu/undergraduate/engineering-computing/computer-science-engineering/computer-science-bscs/>), Mathematics (<https://academicbulletins.sc.edu/undergraduate/arts-sciences/mathematics/>), and Statistics (<https://academicbulletins.sc.edu/undergraduate/arts-sciences/statistics/>), and the interdisciplinary B.S. in Data Science (<https://academicbulletins.sc.edu/undergraduate/arts-sciences/data-science-bs/>) and Minor in Data Science (<https://academicbulletins.sc.edu/undergraduate/engineering-computing/computer-science-engineering/data-science-minor/>). Students who are unsure which program they wish to pursue should consult with their advisor or Exploratory Advising ([https://sc.edu/about/offices\\_and\\_divisions/advising/changing\\_majors/](https://sc.edu/about/offices_and_divisions/advising/changing_majors/)) immediately to make sure they take the correct MATH and STAT courses to allow for maximum flexibility.

## Learning Outcomes

1. Conduct purposeful, real-world data analysis in the student's specialty area using knowledge from core areas of data analytics
2. Manage complex real-world data sets and be able to extract useful information in the student's specialty area
3. Identify the ethical, policy, and security considerations and issues of working with data and how its use impacts society
4. Communicate effectively to a non-technical audience what is learned from data, using oral, written reports or data visualization techniques.

## Admissions

### 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 Data Analytics major from other programs within the University, or from other accredited colleges and universities, is required to have both:

- Earned a grade of B or higher in at least one of the following courses, or their equivalent: USC's STAT 201, STAT 205, STAT 206, STAT 301,

STAT 515, STAT 516, PSYC 220, or SOCY 392 (an AP or IB exam score that provides credit for STAT 206 also satisfies this requirement)

and

- Earned a grade of B or higher in at least one of the following courses, or their equivalent: USC's CSCE 106, MATH 122, MATH 141, MATH 170, or MATH 328 (an AP or IB exam score that provides credit for MATH 141 also satisfies this requirement).

## Degree Requirements (120 hours) Program of Study

Requirements	Credit Hours
1. Carolina Core	34-46
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 (32-45 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 (6-7 hours)

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

- MATH 122\* or MATH 141\*
- MATH 170\*

### 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)

- ITEC 101 or
- PHIL 325 or
- 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 (15-18 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*

- MATH 328\*
- CSCE 106\*

### 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 OR*
  - 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 (33-49 hours)

### Supporting Courses (3-6 hours)

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

Course	Title	Credits
<b>Select one of the following:</b>		<b>3</b>
STAT 201	Elementary Statistics	
STAT 205	Elementary Statistics for the Biological and Life Sciences	
STAT 206	Elementary Statistics for Business	
STAT 509	Statistics for Engineers	
STAT 515	Statistical Methods I	
PSYC 220	Psychological Statistics	
SOCY 392	Elementary Statistics for Sociologists	
<b>Ethics in Data Analysis</b>		<b>0-3</b>
If ITEC 101 or PHIL 325 were not taken to fulfill the Carolina Core VSR requirement with a grade of C or better, then one of the following must be taken:		
CYBR 390	Special Topics in Cyber 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

**Total Credit Hours** 3-6**Minor (18 hours)**

Students in the Data Analytics B.S. must complete a minor of at least 18 hours. In lieu of a minor, an additional major may be added to a student's program of study. A second major within the College of Arts and Sciences must include all major courses as well as any prescribed courses noted (\*) in the bulletin. Regulations on an additional degree for a second major in another college can be found under Degree/Certificate Conferral and Graduation Policies in the Undergraduate Academic Regulations. Prescribed courses noted in the bulletin may be shared with Carolina Core, College requirements, and Program requirements in the primary program.

The minor or second major may not be from fields closely aligned to data science theory, and the following programs are excluded:

- Actuarial Mathematics and Statistics Minor
- Computer Engineering, B.S.E
- Computer Information Systems, B.S.
- Computer Science, B.S.C.S;
- Data Science, B.S.
- Data Science, Minor
- Mathematical Biology Minor
- Mathematics B.S.,
- Mathematics, Minor
- Statistics, B.S.
- Statistics Minor

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 (9-28 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*

**Major Courses (12 hours)**

Course	Title	Credits
STAT 301 or STAT 516	Statistical Methods for Data Analytics Statistical Methods II	3
STAT 530 or STAT 587	Applied Multivariate Statistics and Data Mining Big Data Analytics	3

or CSCE 587	Big Data Analytics	
STAT 542	Computing for Data Science	3
CSCE 567	Visualization Tools	3
<b>Total Credit Hours</b>		<b>12</b>

**Major Electives (12 hours)**

- Select four courses from the list below, or from STAT 530, or CSCE 587/STAT 587 that was not taken as a major course.
- Some of these courses have prerequisites not required in the program but may be taken as electives, as part of some minors, or to satisfy other requirements.

Course	Title	Credits
ANTH 323	Field School in Ethnography <sup>2</sup>	3
BIOL 588	Genomic Data Science	3
STAT 588	Genomic Data Science	3
CRJU 512	Information-Based Management in Criminal Justice	3
CRJU 582	Computer Applications in Criminal Justice	3
CSCE 556	Data Analysis in Python: Application to Neuroscience	3
CSCE 585	Machine Learning Systems	3
EPID 410	Principles of Epidemiology	3
GEOG 345	Introduction to Remote Sensing	3
GEOG 263	Geographic Information Systems	3
GEOG 551	Remote Sensing of the Environment	3
GEOG 563	Advanced Geographic Information Systems	3
GEOG 564	GIS-Based Modeling	3
ISCI 310	Information Science Data Analysis and Evaluation	3
ISCI 560	Data Visualization	3
MATH 529	Introduction to Deep Neural Networks	3
MATH 572	Mathematical Foundation of Network Science	3
POLI 475	Survey Research	3
SOCY 391	Sociological Research Methods	3
SOCY 562	Advanced Sociological Research Methods	3
STAT 506	Introduction to Experimental Design	3
STAT 540	Computing in Statistics	3
STAT 541	Advanced SAS Programming	3
Courses that require prerequisite courses in that subject area:		
ANTH 550	Archaeological Laboratory Methods <sup>3</sup>	3
ECON 336	Introduction to Data Science for Economists	3
ECON 436	Introductory Econometrics	3
ECON 594	Advanced Econometrics	3
ISCI 301	Text Mining in Big Data Analytics	3
ITEC 370	Database Systems in Information Technology	3
SOCY 561	Real World Research Experience	3
Courses that may require a Minor in Business Administration and/or MGSC 291:		
MGMT 425	Analytics for the Human Resources Professional	3
MGSC 390	Business Information Systems	3
MGSC 391	Applied Statistical Modeling	3
MGSC 394	Data Analytics for Business	3

MKTG 448	Data Science for Business Decision-Making	3
MKTG 470	Digital Marketing & Social Media Analytics	3

<sup>2</sup> This course may only be taken for 3 applicable credit hours.

<sup>3</sup> This course may only be taken once.

## 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.

Data Analytics, B.S. ([https://sc.edu/about/offices\\_and\\_divisions/advising/documents/major\\_maps/2024-2025/2024\\_data\\_analytics\\_map.pdf](https://sc.edu/about/offices_and_divisions/advising/documents/major_maps/2024-2025/2024_data_analytics_map.pdf))