

# Data Science

**Subject abbreviation: DTSE**  
**The Marlan and Rosemary Bourns College of Engineering**

**Subject abbreviation: DTSC**  
**The College of Natural and Agricultural Sciences**

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## Major

Data science studies the collection, management, and analysis of data to extract knowledge. It is a multidisciplinary program with core components from Computer Science and Statistics, and required application study in a variety of empirical disciplines. Courses span the discipline from theory to practice and prepare students for careers or graduate studies in data-intensive fields.

The B.S. in Data Science major is an intercollege major offered by the Marlan and Rosemary Bourns College of Engineering and the College of Natural and Agricultural Sciences. A B.S. degree in Data Science is offered by each college. When students declare the major, they choose from which college they wish to have their degree awarded. Students whose degrees are awarded by the Marlan and Rosemary Bourns College of Engineering are advised in and have their records maintained by the BCOE Office of Student Academic Affairs; students whose degrees are awarded by the College of Natural and Agricultural Sciences are advised in and have their records maintained by the CNAS Undergraduate Academic

Advising Center. Breadth requirements vary by college; and students must fulfill the breadth requirements of the college they choose.

All undergraduates in the Marlan and Rosemary Bourns College of Engineering must see an advisor at least annually. Visit [student.engr.ucr.edu](http://student.engr.ucr.edu) for details.

## University Requirements

See Undergraduate Students section.

## College Requirements

College breadth requirements vary depending on which college is chosen to award the degree. For details on breadth requirements, see the Colleges and Programs section of this catalog. Students are encouraged to consult their advisor regarding requirements.

## Transfer Admissions Requirements of Data Science Major

Minimum 2.80 cumulative GPA

Minimum 2.70 GPA in the calculus series

Minimum 2.5 in one of the following series:

1. Three courses from CS 010A, 010B, 010C and CS/MATH 011
2. MATH 010A, MATH 031, STAT 008

Minimum Preparation for Data Science:

1. CS 010A
2. CS 010B
3. MATH 009A or MATH 09HA, MATH 009B or MATH 09HB, MATH 009C or MATH 09HC

Must complete three of the following:

1. CS010C
2. CS/MATH 011
3. MATH 031
4. MATH 010A
5. STAT 008

## Change of Major Criteria for the BCOE track

All students who request a change of major to Data Science in BCOE must meet the following requirements:

- Be in good academic standing
- Have no less than a C- in any Statistics, Math, Science and Engineering Coursework
- Be able to complete the major within maximum allowable units
- Complete all the courses listed below, based on the total number of units earned, prior to submitting the major change request
- UCR transfer students interested in changing to a BCOE major must have been admissible to the major at point of entry, or must satisfy transfer admission and change of major requirements before earning 120 units
- If changing in the 90-119 units category, student must have the ability to complete major within 5 years of entry as a Freshmen or 3 years after entry as a Transfer student.

- Students who have earned 120 or more units are not eligible for a change of major in BCOE. NOTE: AP/IB units are excluded from maximum unit calculation.

## Completed 0 to less than 45 units

Completion of ENGL 001A with C or better, and completion of the following with at least 2.70 GPA:

- CS 010A
- CS 010B
- MATH 007A or MATH 009A or MATH 09HA (MATH 009A is strongly recommended)

## Completed 45 to less than 90 units

Completion of ENGL 001A with C or better, and completion of the following with at least 2.70 GPA:

- CS 010A
- CS 010B
- MATH 007A or MATH 009A or MATH 09HA (MATH 009A is strongly recommended)
- MATH 007B or MATH 009B or MATH 09HB (MATH 009B is strongly recommended)
- MATH 009C or MATH 09HC

An introductory statistics course

(STAT 010 or equivalent) is recommended.

## Completed 90 to less than 120 units

Completion of ENGL 001A and ENGL 001B with C or better, and completion of the following with at least 2.70 GPA:

- CS 010A
- CS 010B
- CS 010C
- MATH 011/CS 011
- MATH 007A or MATH 009A or MATH 09HA (MATH 009A is strongly recommended)
- MATH 007B or MATH 009B or MATH09HB (MATH 009B is strongly recommended)
- MATH 009C or MATH 09HC
- One of MATH 031 or MATH 010A

An introductory statistics course

(STAT 010 or equivalent) is recommended.

## Change of Major Criteria for the CNAS track

All students who request a change of major to Data Science in CNAS must meet the following requirements:

- Be in good academic standing
- Have no less than a C- in any Statistics, Math, Science and Engineering coursework
- Be able to complete the major within maximum allowable units
- Complete all the courses listed below, based on the total number of units earned, prior to submitting the major change request
- UCR transfer students interested in changing to a CNAS major must have been admissible to the major at point of entry, or must satisfy transfer admission and change of major requirements before earning 135 units
- Changing to the Data Science Major at senior level (greater than or equal to 135 units) is not allowed

### Completed 0 to less than 45 units

Completion of ENGL 001A with C or better, and completion of the following with at least 2.70 GPA:

- CS 010A
- CS 010B
- MATH 007A or MATH 009A or MATH 09HA (MATH 009A is strongly recommended)

### Completed 45 to less than 90 units

Completion of ENGL 001A with C or better, and completion of the following with at least 2.70 GPA:

- CS 010A
- CS 010B
- MATH 007A or MATH 009A or MATH 09HA (MATH 009A is strongly recommended)
- MATH 007B or MATH 009B or MATH 09HB (MATH 009B is strongly recommended)
- MATH 009C or MATH 09HC

An introductory statistics course (STAT 010 or equivalent) is recommended.

### Completed 90 to less than 135 units

Completion of ENGL 001A and ENGL 001B with C or better, and completion of the following with at least 2.70 GPA:

- CS 010A
- CS 010B
- CS 010C
- MATH 011/CS 011
- MATH 007A or MATH 009A or MATH 09HA (MATH 009A is strongly recommended)
- MATH 007B or MATH 009B or MATH 09HB (MATH 009B is strongly recommended)
- MATH 009C or MATH 09HC
- One of MATH 031 or MATH 010A

An introductory statistics course (STAT 010 or equivalent) is recommended.

## Major Requirements

1. Lower-division requirements (37 units):
  - a) CS 010A, CS 010B, CS 010C
  - b) MATH 007A or MATH 009A or MATH 09HA, MATH 007B or MATH 009B or MATH 09HB, MATH 009C or MATH 09HC, MATH 010A, MATH 031 (MATH 009A and MATH 009B are strongly recommended)
  - c) MATH 011/CS 011
2. Upper-division requirements (60 units):
  - a) CS 105, CS 141
  - b) STAT 107, STAT 156A, STAT 156B, STAT 169, STAT 170
  - c) ENGR 170 or PBPL 170
  - d) CS 166 or CS 167
  - e) STAT 167 or CS 171
  - f) STAT 183 or CS 179 (E-Z)
  - g) Four courses (at least 16 units) from the following list, none of which can also be used to satisfy other major requirements: CS 166, CS 167, CS 170, CS 172, CS 180, CS 181, MATH 120, MATH 135A, STAT 104, STAT 127, STAT 130, STAT 140, STAT 146, STAT 157, STAT 171.

### 3. Major Breadth requirement (8 units)

One two-course sequence, chosen from the course sequences listed below:

- i. BIOL 005B, BIOL 005C
- ii. BIOL 005B, BIOL 102
- iii. BUS 103 and BUS 115
- iv. BUS 103 and BUS 119
- v. BUS 105 and BUS 129
- vi. ECON 108 and ECON 136
- vii. EE 142 and EE 146
- viii. GEO 111 and GEO 161
- ix. GEO 115 and GEO 147

### Note

An introductory Statistics class, such as STAT 010 and STAT 011, is strongly recommended.

## Minor

The Data Science minor is designed to provide students with practical knowledge of the concepts and techniques used in data analysis, including statistical methodology, data-oriented computing, and data ethics. The minor will provide students from a wide array of majors with the foundational skills to design, implement, and think critically about inferential analysis within their respective disciplines. Students with majors in Computer Science, Computer Science with Business Applications, Computer Engineering, Data Science, and Statistics are not eligible.

### The following are the requirements for the Data Science minor.

1. Lower-division requirements (13 units):
  - CS 009A; CS 009B; STAT 008 or STAT 010
2. Upper-division requirements (20 units):
  - a) CS 105
  - b) STAT 156A
  - c) CS 108/STAT 108
  - d) Eight (8) units of the upper-division courses selected from the list below: CS 100, CS 166, CS 167, CS 170, CS 171, CS 172, STAT 107, STAT 130, STAT 140, STAT 146, STAT 156B, STAT 167

No more than 4 units may be in courses numbered 190 through 199.

Completion of CS 009A and CS 009B with a C- or better and completion of the minor requirements with at least 2.700 GPA.