**UCR** Marlan and Rosemary Bourns College of Engineering

# Data Science

| Fall Quarter | Units | Winter Quarter | Units | Spring Quarter | Units |
|---|---|---|---|---|---|
| **FIRST YEAR** | | | | | |
| CS 010A | 4 | CS 010B | 4 | CS 010C | 4 |
| *C++ Programming I* | | *C++ Programming II* | | *Intro to Data Structures & Algorithms* | |
| ENGL 001A | 4 | ENGL 001B | 4 | MATH 009C | 4 |
| *Beginning Composition* | | *Intermediate Composition* | | *First Year Calculus* | |
| MATH 009A | 4 | MATH 009B | 4 | Breadth _____ | 5 |
| *First Year Calculus* | | *First Year Calculus* | | *Physical Sciences* | |
| Breadth _____ | 4 | Breadth _____ | 4 | | |
| *Humanities/Social Sciences* | | *Humanities/Social Sciences* | | | |
| | | | | | |
| CS 100 | 4 | MATH 010A | 4 | MATH 031 | 5 |
| *Software Construction* | | *Multivariable Calculus* | | *Applied Linear Algebra* | |
| CS 105 | 4 | CS/MATH 011 | 4 | CS 111 | 4 |
| *Data Analysis Methods* | | *Intro to Discrete Structures* | | *Discrete Structures* | |
| STAT 010 | 5 | STAT 011 | 5 | Breadth _____ | 5 |
| *Introduction to Statistics* | | *Introduction to Statistics* | | *Additional Sciences 2* | |
| Breadth _____ | 4 | Breadth _____ | 5 | | |
| *Biological Sciences* | | *Additional Sciences 1* | | | |
| **THIRD YEAR** | | | | | |
| STAT 156A | 4 | STAT 156B | 4 | STAT 167 or CS 171/EE 142 | 4 |
| *Statistics for Data Science I* | | *Statistics for Data Science II* | | *Intro to Data Science or* | |
| CS 141 | 4 | CS 166 or CS 167 | 4 | *Intro to Mach Lrning&Data Mining* | |
| *Interm. Data Structures & Algorithms* | | *Database Management or BIG Data* | | DS Technical Elective** | 4 |
| STAT 107 | 4 | CS 108/STAT 108 | 4 | _____ | |
| *Intro Stat Computing w/R* | | *Data Science Ethics* | | Breadth _____ | 4 |
| Breadth _____ | 4 | | | *Humanities/Social Sciences* | |
| *Humanities/Social Sciences* | | | | | |
| **FOURTH YEAR** | | | | | |
| STAT 170 | 4 | Breadth _____ | 4 | STAT 183 or CS 179 (E-Z) | 4 |
| *Regression Analysis* | | *Humanities/Social Sciences* | | *Stat Consulting or Project in CS* | |
| DS Technical Elective** | 4 | DS Technical Elective** | 4 | STAT 169 | 4 |
| _____ | | _____ | | *Design Experiments* | |
| Application Course Sequence*** | 4 | Application Course Sequence*** | 4 | DS Technical Elective** | 4 |
| *Course 1* | | *Course 2* | | _____ | |
| ENGL 001C or ENGR 180W | 4 | | | | |
| *Technical Communications* | | | | | |

*Highly Recommended Course

Minimum Units to Graduate **175**

Maximum Units: 216

To earn a B.S., you must complete all College and University requirements and earn a minimum of 180 units. For a complete list: catalog.ucr.edu.

**ENGLISH COMPOSITION**

A C or better is required in three quarters of English Composition courses to satisfy the graduation requirement. ENGR 180W fulfills third quarter English Composition.

**BREADTH REQUIREMENTS**

For an approved list of Breadth courses: http://student.engr.ucr.edu/policies/requirements/breadth.html.

Humanities: (3 courses)
 A. World History: _____
 B. Fine Arts/Lit./Phil./Rlst: _____
 C. Human Persp. on Sci: _____
Social Sciences: (3 courses)
 A. Econ or Posc: _____
 B. Anth, Psyc, or Soc: _____
 C. General Social Science: _____
Ethnicity: _____
Biological Science: _____
Physical Science: _____
Science 1: _____
Science 2: _____

Upper Division 1: _____
Upper Division 2: _____

Please note that Technical Electives may be offered throughout the Academic Year. Consult with your Academic Advisor about potential offerings. See approved technical electives on back.

Course Plan is subject to change.

# Data Science Technical Electives

You must complete at least four upper division courses (16 units) from the list below, none of which can be used to satisfy other major requirements:

| | | | |
|---|---|---|---|
| CS 166 | Database Management Systems (4) | STAT 104 | Decision Analysis and Management Science (4) |
| CS 167 | Intro to BIG-DATA Management (4) | STAT 127 | Introduction to Quality Improvements (4) |
| CS 170 | Introduction to Artificial Intelligence (4) | STAT 130 | Sampling Surveys (4) |
| CS 172 | Introduction to Information Retrieval (4) | STAT 140 | Nonparametric Techniques (4) |
| CS 180 | Introduction to Software Engineering (4) | STAT 146 | Statistical Forecasting Techniques (4) |
| CS 181 | Principles of Programming Languages (4) | STAT 157 | Statistical Computer Packages (4) |
| MATH 120 | Optimization (4) | STAT 171 | General Statistical Models (4) |
| MATH 135A | Numerical Analysis (4) | | |

** Technical Electives may require that you complete additional courses as prerequisites that are not accounted for in the undergraduate program. Please go to www.catalog.ucr.edu for course descriptions and prerequisite information.

# Data Science Application Course Sequences

***One two-course sequence, chosen from the course sequences listed below. Courses must be taken in sequence and cannot be combined to create new sequences.

| | |
|---|---|
| Biology/Bioinformatics Sequence1 : | BIOL 005B and BIOL 005C |
| Biology/Bioinformatics Sequence 2: | BIOL 005B and BIOL 102 |
| Business Sequence 1: | BUS 103 and BUS 115 |
| Business Sequence 2: | BUS 103 and BUS 119 |
| Business Sequence 3: | BUS 105 and BUS 129 |
| Earth Science Sequence 1: | GEO 111 and GEO 161 |
| Earth Science Sequence 2: | GEO 115 and GEO 147 |
| Economics Sequence: | ECON 108 and ECON 136 |
| Economics Sequence: | ECON 108 and ECON 136 |
| Electrical Engineering Sequence: | EE 142 and EE 146 |
| Earth Science Sequence 2: | GEO 115 and GEO 147 |