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 Science*	
Breadth _____	4	Breadth _____	4		
Humanities/Social Sciences		*Humanities/Social Sciences*			
SECOND YEAR					
CS 100*	5	MATH 010A	4	CS 105	4
Software Construction		*Multivariable Calculus*		*Data Analysis Methods*	
MATH 031	5	CS/MATH 011	4	CS 111*	4
Applied Linear Algebra		*Intro to Discrete Structures*		*Discrete Structures*	
STAT 010	5	STAT 011	5	Breadth _____	5
Introduction to Statistics		*Introduction to Statistics*		*Additional Nat Sci 2*	
Breadth _____	4	Breadth _____	5		
Biological Sciences		*Additional Nat Sci 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	Breadth _____	4	*Humanities/Social Sciences*	
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					

Total Units	179
Maximum Units:	262

*Highly Recommended Course

*Prerequisites to Upper Division Requirements

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 131 *	Edge Computing (4)	STAT 104	Decision Analysis and Management Science (4)
CS 144 *	Algorithms for Bioinformatics (4)	STAT 127	Introduction to Quality Improvements (4)
CS 166	Database Management Systems (4)	STAT 130	Sampling Surveys (4)
CS 167	Intro to BIG-DATA Management (4)	STAT 140	Nonparametric Techniques (4)
CS 170	Introduction to Artificial Intelligence (4)	STAT 146	Statistical Forecasting Techniques (4)
CS 172	Introduction to Information Retrieval (4)	STAT 157	Statistical Computer Packages (4)
CS 173 *	Intro to Natural Language Processing (4)	STAT 171	General Statistical Models (4)
CS 180	Introduction to Software Engineering (4)		
CS 181	Principles of Programming Languages (4)		
MATH 120	Optimization (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.

* Courses can be taken as Technical Electives with approval by DS undergraduate advisor

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 106 or EE 146 or EE 148)
Earth Science Sequence 2:	GEO 115 and GEO 147