COMPUTER ENGINEERING

Marlan and Rosemary Bourns College of Engineering

Catalog Year: 2023

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 Struc. & Algorithms*	
ENGL 001A	4	ENGL 001B	4	MATH 009C	4
Beginning Composition		*Intermediate Composition*		*First Year Calculus*	
ENGR 001G	1	MATH 009B	4	MATH/CS 011	4
Professional Dev. & Mentoring		*First Year Calculus*		*Intro to Discrete Structures*	
MATH 009A	4	PHYS 040A	5	PHYS 040B	5
First Year Calculus		*Physics (Mechanics)*		*Physics (Heat/Waves/Sound)*	
SECOND YEAR					
CS 061	4	CS 111	4	CS 100	4
Machine Org. & Assembly Lang. Prog.		*Discrete Structures*		*Software Construction*	
EE 020A/MATH 045	4	EE 030A & EE 030LA	4	CS/EE 120B	4
Intro Ordinary Differential Equations		*Fund Electric Circuits I & Lab*		*Embedded Systems*	
EE 020B	4	EE/CS 120A	5	EE 030B	4
Linear Methods for Engr. Analysis		*Logic Design*		*Engr. Circuit Analysis II & Lab*	
PHYS 040C	5	CHEM 001A and 01LA or ME 010	4	MATH 010A	4
Physics (Electricity/Magnetism)		*Gen. Chemistry or Statics*		*Multivariable Calculus*	
THIRD YEAR					
CS 141	4	EE 111	4	CS 153	4
Interm. Data Structures & Algorithms		*Digital & Analog Signals & Systems*		*Design of Operating Systems*	
CS/EE 168	4	ENGR 101G	1	CS 161 & CS 161L	6
VLSI Design		*Professional Dev. & Mentoring*		*Design & Arch. of Comp. Sys.and Lab*	
EE 100A	4	ENGR 180W*	4	Technical Elective**	4
Electronic Circuits		*Technical Communications*		_____	
Breadth _____	4	Breadth _____	4	Breadth _____	4
Humanities/Social Sciences		*Biol Sci(Biol 002 or 003 or 005A/LA)*		*Humanities/Social Sciences*	
FOURTH YEAR					
EE 114 or STAT 155	4	Technical Elective**	4	Technical Elective**	4
Prob., RV & Proc. or Stat		_____		_____	
EE 128	4	Technical Elective**	4	Technical Elective**	4
(or CS 122A, if offered)		_____		_____	
Technical Elective**	4	Breadth _____	4	Breadth _____	4
_____		*Humanities/Social Sciences*		*Humanities/Social Sciences*	
Breadth _____	4			Breadth _____	4
Humanities/Social Sciences				*Humanities/Social Sciences*	

To earn a B.S., you must complete all College and University requirements. 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 the third quarter of English Composition.

BREADTH REQUIREMENTS

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

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

TECHNICAL ELECTIVES **

Please note that Technical Electives may be offered throughout the Academic Year. Consult with your Academic Advisor about potential offerings.

Minimum Units to Graduate: 180
Maximum Units to Graduate: 216

Computer Engineering Technical Electives

You must complete six courses (at least 24 units) as technical electives from the following set of Computer Science, Engineering, or Electrical Engineering upper-division courses. The technical electives selected must include either CS 178A and CS 178B, or CS 179 (E-Z) or EE 175A and EE 175B. The technical electives must be distinct from those used to satisfy major requirements. Units are listed in ().

CS 110	Principles of Web Development (4)		EE 100B	Electronic Circuits (4)
CS 122A	Interm. Embedded & Real-Time Systems (5)		EE 106	Programming Practical Robots (4)
CS 122B	Adv. Embedded & Real-Time Systems (5)		EE 105	Modeling & Simulation of Dynamic Systems (4)
CS 130	Computer Graphics (4)		EE 115	Intro to Communication Systems (4)
CS 131	Edge Computing (4)		EE 123	Power Electronics (4)
CS 133	Computational Geometry (4)		EE 128	Data Acquisition, Instrum., & Process Control (4)
CS 134	Video Game Creation & Design (4)		EE 132	Automatic Control (4)
CS 135	Virtual Reality (4)		EE 133	Solid-State Electronics (4)
CS 142	Algorithm Engineering (4)		EE 135	Analog integrated Circuit Layout and Design (4)
CS 145	Combinatorial Optimazation Algorithms (4)		EE 136	Semiconductor Device Processing (4)
CS 147	GPU Programming (4)		EE 137	Intro to Semiconductor Optoelectronic Devices (4)
CS 150	Theory of Automata & Formal Languages (4)		EE 141	Digital Signal Processing (4)
CS 152	Compiler Design (4)		EE 144	Intro to Robotics (4)
CS 160	Concurrent Prog. & Parallel Systems (4)		EE 146	Computer Vision (4)
CS 162	Computer Architecture (4)		EE 147	Graphics Processing Unit Computing & Prog. (4)
CS 164	Computer Networks (4)		EE 150	Digital Communication (4)
CS 165	Computer Security (4)		EE 151	Intro to Digial Control (4)
CS 166	Database Management Systems (4)		EE 152	Image Processing (4)
CS 169	Mobile Wireless Networks (4)		EE 162	Intro to Nanoelectronics (4)
CS 170	Intro to Artificial Intelligence (4)		EE 165	Design for Reliability of Integ. Circuits & Systems (4)
CS 171	Intro to Machine Learning & Data Mining (4)		EE 175A	Senior Design Project (4)
CS 172	Intro to Information Retrieval (4)		EE 175B	Senior Design Project (4)
CS 175	Entrepreneurship in Computing (4)			
CS 177	Modeling & Simulation (4)			
CS 178A	Project Sequence in CS (4)		ENGR 160	Intro to Engineering Optimization Techniques (4)
CS 178B	Project Sequence in CS (4)			
CS 179 E-Z	Proj. in Computer Science (4 units max)			
CS 180	Intro to Software Engineering (4)			
CS 181	Principles of Programming Languages (4)			
CS 182	Software Testing & Verification (4)			
CS 183	UNIX System Administration (4)			
CS 193	Design Project (4 units maximum)			