

## UC San Diego Electrical & Computer Engineering Courses

This is a list of Electrical & Computer Engineering courses and common or related courses offerings at UCSD and UCSD Extension. This is a projected list of course offerings organized by department and quarter/term. Lower-division courses are numbered 1-99, upper-division courses are numbered 100-199 and graduate-level classes are numbered 200+. Course enrollment is based on space availability, instructor/department approval, and prior completion of pre-requisites.

Courses offered through the various departments can be found by searching the “[Schedule of Classes](#)” online. Descriptions of the courses can be found at <http://ucsd.edu/catalog/front/courses.html>. Courses offered through UC San Diego Extension can be found at [www.extension.ucsd.edu](http://www.extension.ucsd.edu) in the Data Analysis & Mathematics and Technology area of study.

During the summer, UC San Diego courses are offered in two 5-week summer sessions, listed in the table as Summer Session. During the summer, UC San Diego Extension courses are offered on a regular quarter schedule (not shorter sessions). Please note that the planned Summer Session schedule, subject to change, is posted in March.

In the chart below:

X = The class is typically offered during this quarter\term in a regular in-class course.

O = The class is typically offered during this quarter\term as an online course. Students on F-1 visas are permitted to enroll into 1 online course per term.

Undergraduate Classes					
Course	Title	Fall	Winter	Spring	Summer Session
ECE 5	Experience ECE: Making, Breaking, Hacking Stuff	x			
ECE 15	Engineering Computation	x	x		
ECE 16	Rapid Hardware and Software Design		x	x	

**Undergraduate Classes**

<b>Course</b>	<b>Title</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>	<b>Summer Session</b>
ECE 25	Introduction to Digital Design	x	x	x	
ECE 30	Introduction to Computer Engineering		x	x	
ECE 35	Introduction to Analog Design	x	x	x	
ECE 45	Circuits & Systems	x	x	x	
ECE 65	Components & Circuits Laboratory		x	x	
ECE 99H	Independent Study	x			
ECE 100	Linear Electronic Systems	x	x		
ECE 101	Linear Systems Fundamentals	x	x		
ECE 102	Introduction to Active Circuit Design	x	x		
ECE 103	Fundamentals of Devices & Materials	x	x	x	
ECE 107	Electromagnetism	x	x	x	
ECE 108	Digital Circuits				

Undergraduate Classes					
Course	Title	Fall	Winter	Spring	Summer Session
ECE 109	Engineering Probability & Statistics		x	x	
ECE 111	Advanced Digital Design Project	x	x		
ECE 115	Fast Prototyping		x		
ECE 120	Solar System Physics			x	
ECE 121A	Power Systems Analysis and Fundamentals	x			
ECE 121B	Energy Conversion		x		
ECE 123	Antenna Systems Engineering			x	
ECE 125A	Power Electronics I		x		
ECE 125B	Power Electronics II			x	
ECE 134	Electronic Materials Science of Integrated Circuits			x	
ECE 135A	Semiconductor Physics		x		
ECE 135B	Electronic Devices			x	

Undergraduate Classes					
Course	Title	Fall	Winter	Spring	Summer Session
ECE 136L	Microelectronics Laboratory		x		
ECE 145AL	Acoustics Laboratory	x			
ECE 145BL	Acoustics Laboratory		x		
ECE 145CL	Acoustics Laboratory			x	
ECE 153	Probability & Random Processes for Engineers	x		x	
ECE 154A	Communications Systems I	x			
ECE 154B	Communications Systems II		x		
ECE 154C	Communications Systems III			x	
ECE 156	Sensor Networks			x	
ECE 157A	Communications Systems Laboratory I	x			
ECE 158A	Data Networks I	x			
ECE 158B	Data Networks II			x	

Undergraduate Classes					
Course	Title	Fall	Winter	Spring	Summer Session
ECE 161A	Introduction to Digital Signal Processing	x			
ECE 161B	Digital Signal Processing I		x		
ECE 161C	Applications of Digital Signal Processing			x	
ECE 163	Electronic Circuits and Systems			x	
ECE 164	Analog Integrated Circuit Design	x			
ECE 165	Digital Integrated Circuit Design			x	
ECE 166	Microwave Systems and Circuits	x			
ECE 171A	Linear Control System Theory			x	
ECE 171B	Linear Control System Theory	x			
ECE 172A	Introduction to Intelligent Systems: Robotics and Machine Intelligence		x		
ECE 174	Introduction to Linear and Nonlinear Optimization with Applications	x			
ECE 175A	Elements of Machine Intelligence: Pattern Recognition and Machine Learning		x		

## Undergraduate Classes

Course	Title	Fall	Winter	Spring	Summer Session
ECE 175B	Elements of Machine Intelligence: Probabilistic Reasoning and Graphical Models			x	
ECE 180	Topics in Electrical and Computer Engineering	x	x		
ECE 181	Physical Optics and Fourier Optics			x	
ECE 182	Electromagnetic Optics, Guided-Wave, and Fiber Optics	x			
ECE 183	Optical Electronics		x		
ECE 184	Optical Information Processing and Holography		x		
ECE 185	Lasers and Modulators			x	
ECE 187	Introduction to Biomedical Imaging and Sensing	x			
ECE 188	Topics in Electrical and Computer Engineering with Laboratory	x	x	x	
ECE 190	Engineering Design	x			
ECE 191	Engineering Group Design Project	x	x	x	
ECE 193H	Honors Project	x			

**Undergraduate Classes**

<b>Course</b>	<b>Title</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>	<b>Summer Session</b>
ECE 196	Eng Hangs-on Group Project	x	x		
ECE 197	Field Study in Electrical and Computer Engineering/ECE Internship	x	x		
ECE 198	Directed Group Study	x			
ECE 199	Independent Study for Undergraduates	x	x		

Graduate Classes					
Course	Title	Fall	Winter	Spring	Summer Session
ECE 200	Research Conference	x	x		
ECE 201	Introduction to Biophysics	x			
ECE 202	Medical Devices and Interfaces		x		
ECE 203	Biomedical Integrated Circuits and Systems			x	
ECE 205	Complexity & Large-Scale System	x			
ECE 212AN	Principles of Nanoscience and Nanotechnology		x		
ECE 212BN	Nanoelectronics			x	
ECE 212CN	Nanophotonics			x	
ECE 221	Magnetic Materials: Principle & Application		x		
ECE 222A	Antennas and Their System Applications	x			
ECE 222B	Applied Electromagnetic Theory—Electromagnetics		x		
ECE 222D	Advanced Antenna Design			x	

Graduate Classes					
Course	Title	Fall	Winter	Spring	Summer Session
ECE 230A	Solid State Electronics I	x			
ECE 230C	Solid State Electronics III			x	
ECE 236B	Optical Processes in Semiconductors			x	
ECE 236C	Heterojunction Field Effect Transistors			x	
ECE 238B	Solid State Diffusion and Reaction Kinetics		x		
ECE 240A	Lasers and Optics	x			
ECE 240B	Optical Information Processing		x		
ECE 240C	Optical Modulation and Detection			x	
ECE 241A	Nonlinear Optics			x	
ECE 243B	Optical Fiber Communication			x	
ECE 244A	Statistical Optics			x	
ECE 247A	Advanced BioPhotonics	x			

Graduate Classes					
Course	Title	Fall	Winter	Spring	Summer Session
ECE 247B	BioElectronics		x		
ECE 247C	BioNanotechnology			x	
ECE 250	Random Processes	x	x		
ECE 251A	Digital Signal Processing I		x		
ECE 251B	Digital Signal Processing II			x	
ECE 251C	Filter Banks and Wavelets	x			
ECE 251D	Array Processing			x	
ECE 252A	Speech Compression		x		
ECE 252B	Speech Recognition			x	
ECE 253	Fundamentals of Digital Image Processing	x			
ECE 254	Detection Theory	x			
ECE 255A	Information Theory	x			

Graduate Classes					
Course	Title	Fall	Winter	Spring	Summer Session
ECE 255B	Source Coding			x	
ECE 255C	Network Information Theory		x		
ECE 257A	Multiuser Communication Systems		x		
ECE 257B	Principles of Wireless Networks				
ECE 257C	Stochastic Wireless Networks Models			x	
ECE 258A	Digital Communication		x		
ECE 258B	Digital Communication			x	
ECE 259A	Algebraic Coding	x			
ECE 259B	Probabilistic Coding		x		
ECE 259C	Advanced Topics in Coding	x		x	
ECE 260A	VLSI Digital System Algorithms and Architectures	x			
ECE 260B	VLSI Integrated Circuits and Systems Design		x		

Graduate Classes					
Course	Title	Fall	Winter	Spring	Summer Session
ECE 260C	VLSI Advanced Topics			x	
ECE 264A	CMOS Analog Integrated Circuits and Systems I		x		
ECE 264B	CMOS Analog Integrated Circuits and Systems II			x	
ECE 264C	CMOS Analog Integrated Circuits and Systems III	x			
ECE 265A	Communication Circuit Design I		x		
ECE 265B	Communication Circuit Design II			x	
ECE 265C	Power Amplifiers for Wireless Communications	x			
ECE 271A	Statistical Learning I	x			
ECE 271B	Statistical Learning II		x		
ECE 272A	Stochastic Processes in Dynamic Systems I			x	
ECE 273	Convex Optimization and Applications			x	
ECE 275A	Parameter Estimation I	x			

Graduate Classes					
Course	Title	Fall	Winter	Spring	Summer Session
ECE 275B	Parameter Estimation II		x		
ECE 279	Special Seminar			x	
ECE 280	Special Topics in Electronic Devices and Materials/Applied Physics			x	
ECE 284	Special Topics in Computer Engineering		x		
ECE 285	Special Topics in Signal and Image Processing/Robotics and Control Systems		x	x	
ECE 286	State-of-the-Art Topics in Computational Statistics and Machine Learning		x		
ECE 287	Special Topics in Communication Theory and Systems	x	x	x	
ECE 290	Graduate Seminar on Current ECE Research	x			
ECE 293	Graduate Seminar in Communication Theory and Systems	x			
ECE 294	Graduate Seminar in Electronic Devices and Materials/Applied Physics		x		
ECE 298	Independent Study	x	x	x	
ECE 299	Research	x	x	x	

Extension Classes					
Course	Title	Fall	Winter	Spring	Summer Session
EE-40129	Antenna Theory and Design	O		O	
EE-40129	Antenna Theory and Design	O		O	
ECE-40164	Applied DSP		O		
ECE-40164	Applied DSP		O		
ECE-40279	Computer Vision	Schedule Varies			
ECE-40275	Data Acquisition Systems	Schedule Varies			
ECE-40016	DSP I		O		O
ECE-40016	DSP I		O		O
ECE-40283	DSP in Wireless Communications	O		O	
EE-40171	Electrical Energy Storage	X			
ECE-40098	Embedded Computer Hardware Interfacing		O		O
ECE-40001	Embedded Controller Hardware Design	O		O	
ECE-40084	Embedded Controller Programming I: Introduction	O		O	

Extension Classes					
Course	Title	Fall	Winter	Spring	Summer Session
ECE-40084	Embedded Controller Programming I: Introduction	O		O	
ECE-40091	Embedded Controller Programming II: Embedded C		O		O
ECE-40091	Embedded Controller Programming II: Embedded C		O		O
ECE-40097	Embedded Controller Programming III: Real-Time Programming	O		O	
ECE-40097	Embedded Controller Programming III: Real-Time Programming	O		O	
ECE-40105	Embedded Linux	O		O	
ECE-40089	Embedded RTOS	O		O	
ECE-40089	Embedded RTOS	O		O	
ECE-40170	FPGA Design Fundamentals	O			
ECE-40260	FPGA Embedded Design			X	
EE-40034	Fundamentals of Digital Communication for Wireless Systems	O		O	
EE-40174	Fundamentals of Electric Power		X		X
ECE-40272	GIS Capstone Project	O		O	

Extension Classes					
Course	Title	Fall	Winter	Spring	Summer Session
ECE-40246	GIS II: Spatial Analysis		O		O
ECE-40247	GIS III: Geodatabase Design	O		O	
ECE-40248	GIS IV: 3-D Display and Analysis of Spatial Data		O		O
ECE-40153	Introduction to Embedded Systems		O		O
ECE-40153	Introduction to Embedded Systems		O		O
EE-40163	Introduction to OFDMA and 4G Systems		O		O
EE-40156	Introduction to Remote Sensors	Schedule Varies			
ECE-40194	Logistics I: Logistics Overview	O		O	
ECE-40274	LTE Networks and Air Interface				O
EE-40149	Microwave Test & Measurement		X		
EE-40153	Microwave Transmission Engineering				O
EE-40172	Power Electronics		X		
EE-40173	Power System Analysis and Control			X	

Extension Classes					
Course	Title	Fall	Winter	Spring	Summer Session
EE-40003	RF Circuit Design			O	
ECE-40175	RF PLL Synthesizers	Schedule Varies			
EE-40137	RF Principles and Applications	O		O	
EE-40098	RF System Design for Wireless Communications		O		
EE-40098	RF System Design for Wireless Communications		O		
ECE-40171	RFIC Design	O			
EE-40148	RFID Design and Applications				U
ECE-40051	Signals and Systems	O		O	
EE-40128	Software Defined Radios	Schedule Varies			
ECE-40039	Systems Engineering Software Overview	O		O	
EE-40060	Systems Hardware/Software Integration		O		O
EE-40106	WCDMA & IS-2000 in 3G Systems	O			
ECE-40267	Wireless Medical Devices	Schedule Varies			