





# Bachelor of Science in Electrical and Computer Engineering

## Student Planning Guide: Fall 2019 (with AP credit for COEN 10)

	Fall	Winter	Spring
FIRST YEAR	MATH 11 Calculus I	MATH 12 Calculus II	MATH 13 Calculus III
	ENGR 1 Intro to Eng. (2 unit)	PHYS 31 Physics for Engineers I	PHYS 32 Physics for Engineers II
	COEN 11 Advanced Programming	COEN 12 Data Structures	ELEN 21 Introduction to Logic Design
	Cultures and Ideas I	Cultures and Ideas II	Critical Thinking and Writing II
	Critical Thinking and Writing I	ELEN 20 Emerging Areas	
	Fall	Winter	Spring
SOPHOMORE	ELEN 50 Circuits I	ELEN 100 Circuits II	ELEN 115 Electronics
	ELEN 120 Microprocessor System Design	ELEN 122 Computer Architecture	ELEN 121 Real-time Embedded Systems
	MATH 14 Calculus IV	AMTH 106 Differential Equations	Math 51 Discrete Math
	PHYS 33 Physics for Engineers III	Math 53 Linear Algebra	University Core
	Fall	Winter	Spring
JUNIOR	COEN 177 Operating Systems	ELEN 142 Networks and Communications	ELEN 133 Digital Signal Processing
	CSCI 163A Algorithms	AMTH 108 Probability and Statistics	ELEN 192 Intro to Sr. Design (2 units)
	ELEN Elective 1 (Note 2)	ELEN Elective 2	ELEN Elective 3
	University Core	University Core	ENGL 181 Eng. Comm. (4 units)
		Fall	Winter
SENIOR	ELEN 194 Design Project I (2 units)	ELEN 195 Design Project II (2 units)	ELEN 196 Design Project III (1 unit)
	Optional Elective or BS/MS option (Note 4)	Professional Development (Note 3)	Optional Elective or BS/MS option
	Math Science Elective (Note 1)	Optional Elective or BS/MS option	University Core
	Optional Elective or BS/MS option	Optional Elective or BS/MS option	University Core

 Humanities & Social Science	 Math & Science	 Major	 Technical Electives
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If a **study abroad** or **COOP** experience is selected in the junior year, courses may be moved to senior year. Minimum requirement of units for Electrical and Computer Engineering Degree is **191 units**.

**Note 1:** Math Science Elective may be one of the following:

CHEM 11, CHEM 12, NEURO 1, BIOL 1A, PHYS 113, PHYS 121, MATH 105, or MATH 123

**Note 2:** Three electives: At least one elective must be selected from group D – “Digital and Embedded Systems”.

With advisor approval at most one may be selected from COEN courses.

<b>Digital and Embedded Systems (D)</b>	
123	Mechatronics
124	Introduction to Hardware Security and Trust
127	Advanced Logic Design
180	Introduction to Information Storage

<b>RF and Communications (C)</b>	
104	Electromagnetics I
105	Electromagnetics II
141	Communication Systems
144	Microwave Circuit Analysis and Design

<b>Power Systems (P)</b>	
164	Introduction to Power Electronics
183	Power Systems Analysis
184	Power System Stability and Control

<b>IC Design (I)</b>	
116	Analog Integrated Circuit Design
151	Semiconductor Devices
152	Semiconductor Devices and Technology
153	Digital Integrated Circuit Design
156	Introduction to Nanotechnology

<b>Systems (S)</b>	
110	Linear Systems
118	Fundamentals of Computer Aided Circuit Simulation
130	Control Systems
134	Applications of Signal Processing
160	Chaos Theory, Metamathematics and the Limits of Knowledge
161	Information Theory and Quantum Computing
167	Medical Imaging Systems

**Note 3: Professional Development**

Four or more units in study abroad program that does not duplicate other coursework.

Two units in ENGR 110.

Preparation for graduate study in electrical engineering with completion of two or more additional units of upper-division or graduate-level courses.

Completion of an approved minor or second major in any field of engineering or science.

Two units of Peer education experience.

Two units of undergraduate research, ELEN 199

Cooperative education experience with enrollment in ELEN 188 and ELEN 189.

**Note 4: Optional Elective or BS/MS Option**

These slots will be given as extra credits to be used in the 5 year BS/MS program.