Curriculum for B.S. Degree in Electrical Engineering (122 units)

CALIFORNIA STATE UNIVERSITY, LOS ANGELES

(Effective Spring 2020)

General Education (21 units)

Lower Division General Education Requirements (21 units)

	Oral Communication (3)
	Written Communication (3)
	United States History (3) *
	United States Constitution and State/Local Government (3)
BLOCK C – Humanities	Select 1 course in C1 (3) *
BLOCK D – Social Sciences	Select 1 course (3) *
BLOCK E – Life Long Learning	First-time freshmen need to take ENGR 1500 Introduction to Engineering and Technology (3); Transfer students without equivalent credit need to select 1 course (3) in Block E

Upper Division General Education Requirements (0 units)

*Students need to select the ***US History, C1, and D*** courses to fulfill the requirement of one race/ethnicity (***re***) and one diversity (***d***) course, or two ***re*** courses.

Lower Division Major Requirements (42 units)

CHEM 1040	**General Chemistry for Engineers (4)** *Prerequisites*: Completion of GE Math (B4) or GE Math supported instruction is not required (Math Placement Category I or II). Must be an engineering major.
EE 2040	**Circuit Analysis I (3)** *Co-requisite*: MATH 2120, PHYS 2200
EE 2049	**Electrical Measurements and Circuits Laboratory (1)** *Prerequisites*: EE 2040
EE 2440	**Digital Engineering (3)** *Prerequisites*: None
EE 2449	**Digital Logic Laboratory (1)** *Co-requisites*: EE 2440
EE 2450	**Embedded System Programming I (3)** *Prerequisites*: ENGR 1500
MATH 2110	**Calculus I (4)** *Prerequisites*: MATH 1040 with a minimum C grade, or MATH 1081 and MATH 1083 both with a minimum C grade, or MATH 1082 and MATH 1083 both with a minimum C grade, or ESM 1082 and MATH 1083 both with a minimum C grade, or satisfactory score on placement examination; students with a grade of less than B- in either MATH 1040, or in one of MATH 1081 or MATH 1083, or in one of MATH 1082 or MATH 1083, or in one of ESM 1082 or MATH 1083 must enroll concurrently in MATH 2111.
MATH 2120	**Calculus II (4)** *Prerequisites*: MATH 2110 with a minimum C grade; students with a grade of less than B- in MATH 2110 must enroll concurrently in MATH 2121.
MATH 2130	**Calculus III (3)** *Prerequisites*: MATH 2120 with a minimum C grade; students with a grade of less than B- in MATH 2120 must enroll concurrently in MATH 2131
MATH 2150	**Differential Equations (3)** *Prerequisites*: MATH 2130
PHYS 2100	**General Physics I, Mechanics (5)** *Prerequisites*: MATH 2110 with a minimum C grade
PHYS 2200	**General Physics II, Electromagnetism and Circuits (5)** *Prerequisites*: PHYS 2100 with a minimum C grade
ENGL 2030	**Introduction to Technical Writing (3)** *Prerequisites*: ENGL 1010

Upper Division Major Requirements (42 units)

EE/ME/CE 3000	**Economics for Engineers (3)** *Prerequisites*: Junior or Senior Standing
ENGR 3010	**Ethics and Professionalism in Engineering (3)** *Prerequisites*: Junior or Senior Standing
EE 3020	**Signals and Systems (3)** *Prerequisites*: EE 2040, *Co-req*: MATH 2150
EE 3030	**Circuit Analysis II (3)** *Prerequisites*: EE 3020
EE 3040	**Probability, Random Variable, and Random Processes (3)** *Co-requisites*: MATH 2130
EE 3050	**Electric and Magnetic Fields (3)** *Prerequisites*: EE 2040
EE 3200	**Analog Communication Systems (3)** *Prerequisites*: EE 3020
EE 3300	**Electric Machines (3)** *Prerequisites*: EE 2040
EE 3450	**Embedded Systems Programming II (3)** *Prerequisites*: EE 2450, EE 2449
EE 3600	**Control Systems I (3)** *Prerequisites*: EE 3020
EE 3700	**Electronics I (3)** *Prerequisites*: EE 2040
EE 3810	**Sensors, Data Acquisition, & Instrumentation w/ App. in Biomedical Engr. (3)** *Prerequisites*: EE 2049

EE 4961	**Senior Design I (3)** *Prerequisites*: Completion of blocks A and B4, an additional course from block B, and at least one course each from blocks C and D;EE3020;EE3450;EE3000;ENGR3010. *Co-requisite*: EE3810
EE 4962	**Senior Design II (3)** *Prerequisites*: EE 4961 with grade of C or higher

Upper Division Technical Electives (17 units)

Select 5 lecture courses from the following.

Lecture Electives (15 units): *Select 3 lecture and 1 lab courses in one specialty with advisor's approval.*

EE 3710	**Electronics II (3)** *Prerequisites*: EE 3700
EE 3720	**Digital Electronics (3)** *Prerequisites*: EE 2440, EE 3700
EE 4130	**Systems Engineering (3)** *Prerequisites*: EE 3600
EE 4200	**Digital Communication Systems (3)** *Prerequisites*: EE 3200, EE 3040
EE 4210	**Coding for Communications (3)** *Prerequisites*: EE 3200
EE 4220	**Digital Signal Processing (3)** *Prerequisites*: EE 3200
EE 4230	**Antennas (3)** *Co-requisites*: EE 3050
EE 4240	**Fiber Optics (3)** *Prerequisites*: EE 3200
EE 4250	**Digital Image Processing (3)** *Prerequisites*: EE 3200
EE 4300	**Introduction to Power Systems Engineering (3)** *Prerequisites*: EE 3300
EE 4310	**Power Systems Analysis (3)** *Prerequisites*: EE 4300
EE 4320	**Electric Power Distribution (3)** *Co-requisites*: EE 4300
EE 4330	**Power Electronics (3)** *Prerequisites*: EE 3700
EE 4340	**Electromagnetic Energy Conversion (3)** *Prerequisites*: EE 3300
EE 4400	**Data Communications and Networking (3)** *Prerequisites*: EE 3200
EE 4420	**Multimedia Networking (3)** *Prerequisites*: EE 4400, Knowledge of MATLAB
EE 4440	**Computer Organization (3)** *Prerequisites*: EE 3450
EE 4450	**Embedded Architectures (3)** *Prerequisites*: EE 3450
EE 4480	**Advanced Digital Design (3)** *Prerequisites or Co-requisites*: EE 4440
EE 4600	**Control Systems II (3)** *Prerequisites*: EE 3600
EE 4610	**Digital Control Systems (3)** *Prerequisites*: EE 3600
EE 4620	**Modern Control Systems (3)** *Prerequisites*: EE 3020
EE 4630	**Machine Learning Principles and Applications (3)** *Prerequisites*: EE 3020, EE 3040
EE 4710	**Analog Integrated Circuits (3)** *Prerequisites*: EE 3700
EE 4720	**CMOS VLSI Design (3)** *Prerequisites*: EE 3720
EE 4730	**Optoelectronics (3)** *Prerequisites*: EE 3700
EE 4810	**Biomedical Devices (3)** *Prerequisites*: EE 2040
EE 4820	**Biomedical Signal Processing (3)** *Prerequisites*: EE 3020

Laboratory Electives (2 units):

EE 3209	**Communications Laboratory (1)** *Prerequisites*: EE 3200
EE 3309	**Electromagnetic Energy Conversion Laboratory (1)** *Prerequisites*: EE 3300, EE 2049
EE 3709	**Electronics Laboratory (1)** *Co-requisites*: EE 3710
EE 4229	**Digital Signal Processing Laboratory (1)** *Prerequisites*: EE 3020, *Co-req*: EE 4220
EE 4689	**Control Systems Laboratory (1)** *Co-requisites*: EE 3600

Additional Courses That May Count Towards Major with Department Approval:

EE 2801	**Intro to Biomed Engineering (3)** *Prerequisites or Co-requisites*: Biol 2800
EE 3001	**Numerical Analysis and Modeling Using MATLAB (1)** *Prerequisites*: EE 2040
EE 3445	**Computer Organization (3)** *Prerequisites*: CS2013 or permission from instructor
EE 3540	**Special Topics in Electrical Engineering (1-3)** *Prerequisites*: Department Permission
EE 4009	**Professional Engineering Practice (1)** *Prerequisites*: Department Permission under the conditions: acceptance by the corresponding worksite; junior, senior, or graduate standing; min 2.5 GPA for undergraduates and 3.0 for graduates.
EE 4540	**Special Topics in Electrical Engineering (1-3)** *Prerequisites*: Senior standing or graduate standing in EE, enrollment subject to approval of instructor in charge. Permission needed by the EE Department.
EE 4990	**Undergraduate Directed Study (1–3)** *Prerequisites*: Department Permission