Electrical Engineering Planning Worksheet

Admitted to Engineering Fall 2026 Onwards

Required Courses

*subject to change

- 15 units of required mathematics, 12 units of physics, 3 units of chemistry
- 19 units of required lower division engineering courses and 38 units of required upper division courses,
- 9 units of elective courses, and 33 units of General Education courses (for Engineering Track)
- Course prerequisites are strictly enforced. Students not meeting the prerequisites are subject to being administratively dropped.
- All required lower division courses must be passed before upper division courses can be taken.

Required Lower Division Math and Science Courses (minimum 26 units)

Course Number	Course Name	Units	Grade	SFSU or Transfer	Term	Yr	Prerequisite
CHEM 180	Chemistry for the Energy and the Environment	3					Category I or II QR/Math placement; or Category III or IV QR/Math placement; MATH 197© or GE Area 2/B4♥. HS Chemistry is recommended.
MATH 226	Calculus I	4					One of the following: MATH 198© or 199© or HS pre-calculus with B or better; or HS calculus ©
MATH 227	Calculus II	4					MATH 226©
MATH 228	Calculus III	4					MATH 227©
MATH 245	Elementary Differential Equations & Linear Algebra	3					MATH 227©
PHYS 220/222	General Physics with Calculus I & Lab	4					MATH 226©; PHYS 222♥; (MATH 227♥ recommended)
PHYS 230/232	General Physics with Calculus II & Lab	4					PHYS 220© and MATH 227©; PHYS 232♥ (MATH 228♥ recommended)

Required Lower Division Electrical Engineering Courses (20 units)

ENGR	Course Name	Units	Grade	SFSU or Transfer	Term	Yr	Prerequisite
100	Introduction to Engineering	3					High school algebra and trigonometry
205	Electric Circuits	3					PHYS 230©- and MATH 245♥
206	Circuits and Instrumentation Lab	1					ENGR 205♥
212	Introduction to Unix/Linux for Engineers	2					ENGR Majors & Minors
213	Introduction to C Programming for Engineers	3					MATH 226©; ENGR 212©- or ENGR 104©-
214	C Programming Laboratory	1					ENGR 213♥
221	Data Structures and Algorithms in Python	4					ENGR 213©-
282	Probability and Statistics for Engineers	3					MATH 226©

Required Upper Division Electrical Engineering Courses (38 units)

ENGR	Course Name	Units	Grade	SFSU or Transfer	Term	Yr	Prerequisite
301	Microelectronics Laboratory	1					ENGR 353♥
305	Linear Systems Analysis	3					ENGR 205©- and MATH 245©-
306	Electromechanical Systems	3					ENGR 205©-
350	Intro. Engineering Electromagnetics	3					MATH 228©-; MATH 245©- and PHYS 230©-
353	Microelectronics	3					ENGR 205©- and ENGR 206©-
356	Digital Design	3					ENGR 205©-
357	Digital Design Laboratory	1					ENGR 356♥
442	Op. Amplifier System Design	3					ENGR 305©-
446	Control Systems Laboratory	1					ENGR 447♥
447	Control Systems	3					ENGR 305©- or ENGR 307©-
449	Communication Systems	3					ENGR 305©-
451	Digital Signal Processing	4					ENGR 305©-; ENGR 213©- or ENGR 281©- or ENGR 282©-
478	Design with Microprocessors	4					ENGR 205©- & ENGR 213©-
696	Engineering Design Project I	1					ENGR 478©-; 18 upper division ENGR units
697	Engineering Design Project II	2					GE Area 1A/A2 & ENGR 696

©- = Course must be passed with a grade of C- or better © = Course must be passed with a grade of C or better

♥ = Course must either be completed or taken concurrently

Elective Courses

- A minimum of nine upper division engineering elective units is required.
- Upper division courses must have been taken within five years of graduation.
- Students with a GPA of at least 3.0 and the required prerequisites may take graduate courses (numbered 800 and above) with the approval of their advisor or the program head.

Elective Upper Division Courses for Electrical Engineering (9 units)

ENGR	Course Name	Units	Grade	SFSU or Transfer	Term	Yr	Prerequisite
378	Digital Systems Design	3					ENGR 356©-
410	Process Instrumentation and Control	3					ENGR 447♥
415	Mechatronics	4					ENGR 305©- or ENGR 307©-
445	Analog Integrated Circuit Design	4					ENGR 301©-; ENGR 353©-
448	Electrical Power Systems	3					ENGR 306©-
453	Digital Integrated Circuit Design	4					ENGR 301©- or ENGR 354©-; ENGR 356©-
454	ASIC Design	4					ENGR 356©-
455	Power Electronics	4					ENGR 354©- or both ENGR 301©- & ENGR 353©-; & ENGR 305©-
456	Computer Systems	3					ENGR 356©-; ENGR 213©-
458	Renewable Electrical Power Systems and Smart Grid	3					ENGR 306©-
476	Computer Communication Networks	3					ENGR 356©-; ENGR 213©-
492	Hardware for Machine Learning	3					ENGR 213©-; ENGR 353©- or ENGR 354©-; ENGR 356©-
498	Advanced Design with Microcontrollers	4					ENGR 478©-
610	Engineering Cost Analysis	3					ENGR 281©- or ENGR 282©-
844	Embedded Systems	3					Graduate Standing or consent of instructor
845	Neural-Machine Interfaces: Design and Applications	3					Graduate Standing or consent of instructor
848	Digital VLSI Design	3					Graduate Standing or consent of instructor
849	Advance Analog IC Design	3					Graduate Standing or consent of instructor
850	Digital Design Verification	3					Graduate Standing or consent of instructor
851	Advanced Microprocessor Architecture	3					Graduate Standing & ENGR 456 or instructor consent
852	Advanced Digital Design	3					Graduate Standing or consent of instructor
853	Advanced Topics in Computer Communication and Network	3					Graduate Standing or consent of instructor
854	Wireless Data Communication Standards	3					Graduate Standing or consent of instructor
856	Nanoscale Circuits and Systems	3					Graduate Standing or consent of instructor
858	Hardware Security and Trust	3					Graduate Standing or consent of instructor
859	On-Device Machine Learning	3					Computer Programing (Python recommended); familiarity with command-line tools in Mac, Windows, or Linux; college calculus, linear algebra (matrix-vector operations), basic probability, and statistics.
868	Advanced Control Systems	3					Graduate Standing or consent of instructor
869	Robotics	3					Graduate Standing or consent of instructor
870	Robot Control	3					Graduate Standing or consent of instructor
890	Static Timing Analysis for Nanometer Designs	3					Graduate Standing or consent of instructor

Units Completed	
Minimum Required	**9**

©- = Course must have been passed with a grade of C- or better

♥ = Listed course should be taken concurrently