

Computer Engineering Planning Worksheet

Required Courses

*subject to change

- 15 units of mathematics, 8 units of physics, 3 units of chemistry
- 20 units of lower division engineering and computer science courses and 40 units of required upper division courses,
- 6 units of elective courses and 36 units of General Education courses (for Engineering Track)
- All SF State studies requirement need to be completed within the 36 units. If not, additional units of GE may be required to satisfy this requirement
- Course prerequisites are strictly enforced. Students not meeting the prerequisites can be administratively dropped.
- All required lower division courses must be passed before upper division courses can be taken

Required Math and Science Lower Division Courses

Course Number	Course Name	Units	Grade	SFSU or Transfer	Term Yr	Prerequisite
CHEM 180 or CHEM 115	Chemistry for the Energy and the Environment or General Chemistry	3				Category I or II placement for QR/Math or Category III or IV need MATH 197© (see bulletin for full details)
MATH 226	Calculus I	4				MATH 198© or 199© or equivalent or etc. (see bulletin for full details)
MATH 227	Calculus II	4				MATH 226©
MATH 228	Calculus III	4				MATH 227©
MATH 245	Elementary Differential Equations & Linear Algebra	3				MATH 228©
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© & MATH 227© & PHYS 232♥ (MATH 228♥ recommended)

Required Lower Division Courses for Computer Engineering

Course #	Course Name	Units	Grade	SFSU or Transfer	Term Yr	Prerequisite
ENGR 100	Introduction to Engineering	3			F,S	High school algebra and trigonometry
ENGR 121	Gateway to Computer Engineering	1			F,S	High school algebra and trigonometry
ENGR 205	Electric Circuits	3			F,S	PHYS 230 & MATH 245♥
ENGR 206	Circuits and Instrumentation Lab	1			F,S	ENGR 205♥
CSC 210	Introduction to Computer Programming	3			F,S	CSC 211♥
ENGR 212	Introduction to Unix/Linux for Engineers	2			F,S	Restricted to computer majors only
ENGR 213	Introduction to C Programming for Engineers	3			F,S	MATH 226©
CSC 220	Data Structures	3			F,S	CSC 210© or CSC 306© or CSC 309 ©
CSC 230	Discrete Mathematics	3			F,S	CSC 210© & MATH 227♥©

Required Upper Division Courses for Computer Engineering

Course #	Course Name	Units	Grade	SFSU or Transfer	Term Yr	Prerequisite
ENGR 300	Engineering Experimentation	3			F,S	ENGR 200©- or ENGR 205©- or 206©-
ENGR 301	Electronics Laboratory	1			F,S	ENGR 353♥
ENGR 305	Linear Systems Analysis	3			F,S	ENGR 205©- & MATH 245
CSC 340	Programming Methodology	3			F,S	CSC 220© & CSC 230©
ENGR 353	Microelectronics	3			F,S	ENGR 205©- & 206©-
ENGR 356	Digital Design	3			F,S	ENGR 205©-
ENGR 357	Digital Design Laboratory	1			F,S	ENGR 356♥
ENGR 378	Digital Systems Design	3			F,S	ENGR 356©-
CSC 413	Software Development	3			F,S	CSC 220©

ENGR 451	Digital Signal Processing	4			F,S	ENGR 305©- & ENGR 213©- or 271©- or CSC 210©-
ENGR 456	Computer Systems	3			F,S	ENGR 356©- & ENGR 213©- or CSC 210©-
ENGR 476	Computer Communication Networks	3			F,S	ENGR 356©- & ENGR 213©- or CSC 210©-
ENGR 478	Design with Microprocessors	4			F,S	ENGR 356©-; ENGR 213©- or CSC 210©-
ENGR 696	Engineering Design Project I	1			F,S	Senior standing with 18 upper-division ENGR units or ENGR 323 & ENGR 300 & ENGR 301♥ or ENGR 302♥ (see SFSU Bulletin for GWAR information)
ENGR 697	Engineering Design Project II	2			F,S	GE Area A2 & ENGR 696

©- = Courses must have been passed with a grade of C- or better ♥ = Course may be taken concurrently
 © = Courses must have been passed with a grade of C or better

Elective Courses

- A minimum of 6 upper division elective units is required and must be completed at SFSU.
- Upper division courses must have been taken within five years of graduation.
- Students with GPA of 3.0 or better may take graduate courses from this list with approval from advisor or Program Head: ENGR 844, 845, 848, 849, 850, 852, 853, 856, 858.
- ENGR 844, 845, 850 & 852 will be offered regularly as they are required MS courses. (844, 852 in Fall; 845, 850 in Spring)

Elective Upper Division Courses for Computer Engineering

Course #	Course Name	Units	Grade	SFSU or Transfer	Term Yr	Prerequisite
ENGR 415	Mechatronics	4			F, S	
ENGR 442	Operational Amplifier Systems Design	3			F, S	ENGR 305◎-
ENGR 446	Control Systems Laboratory	1			F,S	ENGR 447♥
ENGR 447	Control Systems	3			F,S	ENGR 305◎-
ENGR 449	Communication Systems	3			F	ENGR 305◎-
ENGR 453	Digital Integrated Circuit Design	4				ENGR 301◎- & ENGR 353◎- & ENGR 356◎-
ENGR 454	ASIC Design	4				ENGR 356◎-
ENGR 492	Hardware for Machine Learning	3			S	ENGR 213◎- & ENGR 353◎- & ENGR 356◎-
CSC 415	Operating Systems Principles	3				PHYS 230◎ & CSC 340◎ & CSC 256◎ & MATH 324◎
CSC 510	Analysis of Algorithm I	3				CSC 340◎ & MATH 324◎
CSC 648	Software Engineering	3				CSC 413◎ & CSC 317◎ & GPA 3.0 or higher or consent of instructor
CSC 650	Secured Networked Systems	3				CSC 415◎ or consent of instructor
CSC 667	Internet Application Design and Development	3				CSC 413◎ & GPA 3.0 or higher or instructor consent
CSC 668	Object Oriented Programming	3				CSC 413◎ & GPA 3.0 or higher & senior or graduate standing, or consent of instructor
ENGR 844	Embedded Systems	3			F	Graduate Standing or consent of instructor
ENGR 845	Neural-Machine Interfaces: Design and Applications	3			S	Graduate Standing or consent of instructor
ENGR 848	Digital VLSI Design	3				Graduate Standing or consent of instructor
ENGR 849	Advance Analog IC Design	3				Graduate Standing or consent of instructor
ENGR 850	Digital Design Verification	3			S	Graduate Standing or consent of instructor
ENGR 851	Advance Microprocessor Architecture	3				Graduate Standing & ENGR 456 or instructor consent
ENGR 852	Advance Digital Design	3			F	Graduate Standing or consent of instructor
ENGR 853	Advance Topics in Computer Communication and Network	3				Graduate Standing or consent of instructor
ENGR 854	Wireless Data Communication Standards	3				Graduate Standing or consent of instructor
ENGR 855	Advance Wireless Communication Technologies	3				Graduate Standing & ENGR449 & ENGR 451 or consent of instructor
ENGR 856	Nanoscale Circuits and Systems	3				Graduate Standing or consent of instructor
ENGR 858	Hardware Security and Trust	3				Graduate Standing & ENGR 356 or consent of instructor
ENGR 859	On-Device Machine Learning	3				See SFSU Bulletin
ENGR 868	Advance Control Systems	3				Graduate Standing or consent of instructor
ENGR 869	Robotics	3				Graduate Standing or consent of instructor
ENGR 870	Robot Control	3				Graduate Standing or consent of instructor
ENGR 871	Advance Electrical Power Systems	3				Graduate Standing & MATH 245 or consent of instructor
ENGR 890	RF Devices & Transceiver Principles of Design	3				Graduate Standing & ENGR 350 or consent of instructor
		Units Completed				
		Minimum Required	6			

It is intended to be used as a guideline for advising purposes. See SFSU Academic Bulletin for most recent major curriculum, course information & prerequisites.