

Required Courses

- 15 units of required mathematics, 12 units of physics, and 5 units of chemistry,
- 16 units of required lower division engineering courses and 35 units of required upper division courses
- 3 units of modular electives, 3 units of technical elective, 10 units of engineering elective courses and 33 units of General Education courses
- Course prerequisites are strictly enforced. Students not meeting the prerequisites are subject to being administratively dropped.

Required Math and Science Lower Division Courses

Course Number	Course Name	Units	Grade	SFSU or Transfer	Term Yr	Prerequisite
CHEM 115	General Chemistry I: Essential Concepts of Chemistry	5				550 or above on Entry Level Math (ELM) exam or approved exemption, or MATH 70© and satisfactory score on chemistry placement exam.
MATH 226	Calculus I	4				Successful completion of ELM requirement; MATH 109© or equivalent.
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				High school physics or equivalent; MATH 226©; PHYS 222♥; MATH 227♥
PHYS 230/232	General Physics with Calculus II & Lab	4				PHYS 220© and MATH 227©; PHYS 232♥
PHYS 240/242	General Physics with Calculus III & Lab	4				PHYS 220© and MATH 227©; PHYS 242♥

Required Lower Division Courses for Mechanical Engineering

ENGR	Course Name	Units	Grade	SFSU or Transfer	Term Yr	Prerequisite
100	Introduction to Engineering	1				High school algebra and trigonometry
101	Engineering Graphics	1				ENGR 100♥
102	Statics	3				MATH 227; PHYS 220
103	Introduction to Computers (Lab)	1				MATH 226
200	Materials of Engineering	3				CHEM 115
201	Dynamics	3				ENGR 102
205	Electric Circuits	3				PHYS 230; MATH 245♥
206	Circuits and Instrumentation	1				ENGR 205♥

Required Upper Division Courses for Mechanical Engineering

ENGR	Course Name	Units	Grade	SFSU or Transfer	Term Yr	Prerequisite
300	Engineering Experimentation	3				ENGR 200 or ENGR 206; ENGR 205
302	Experimental Analysis	1				ENGR 300, ENGR 304♥; ENGR 309
303+	Engineering Thermodynamics	3				PHYS 240
304+	Mechanics of Fluids	3				PHYS 240, ENGR 201
305	Systems Analysis	3				ENGR 205; MATH 245
309	Mechanics of Solids	3				ENGR 102, 200
364	Material & Manufacturing processes	3				ENGR 201, 309
4xx*	Controls	3				Refer to the Table for Elective Courses
4xx*	Controls Laboratory	1				Refer to the Table for Elective Courses
463	Thermal Power Systems	3				ENGR 467, ENGR 302
464	Mechanical Design	3				ENGR 364
467	Heat Transfer	3				ENGR 303, ENGR 304
696	Engineering Design Project I	1				Complete 21 upper division engineering units; JEPET or English 414♥ or 410♥ or 411♥
697	Engineering Design Project II	2				ENGR 696

* = ENGR 410 and ENGR 411 for Thermal-Fluids and ENGR 447 and ENGR 446 for other concentrations are required.

♥ = Course must either be completed or taken concurrently. © = Grade C or better

+ = It is strongly recommended not to take ENGR 303 and ENGR 304 concurrently.

Elective Courses

- 10 of the upper division engineering elective units are required.
- 3 units of modular electives are required. These are ENGR 290 courses that are offered in one unit modules.
- Students must complete 6.5 units of engineering science (ES) and 3.5 units of engineering design units among their electives.

Modular Electives (Refer to School of Engineering website for offerings each semester)

ENGR	Course Name	Units	Grade	SFSU or transfer	Term	Year	Prerequisite

Elective Upper Division Courses for Mechanical Engineering

ENGR	Course Name	Units			Grade	SFSU or Transfer	Year		Prerequisite
		Total	ES	ED			F	S	
306	Electromechanical Systems	3	2	1					ENGR 205
410	Process Instrumentation and Control	3	1	2					ENGR 300, 305
411	Instrument. and Process Control Lab.	1	0	1					ENGR 410♥
415	Mechatronics	3	2	1					ENGR 305
416	Mechatronics Laboratory	1	0	1					ENGR 415♥
428	Applied Stress Analysis	3	2	1					ENGR 302, 309
432	Finite Element Methods	3	2	1					MATH 245; ENGR 309
446	Control Systems Laboratory	1	0	1					ENGR 447♥
447	Automatic Control Systems	3	2	1					ENGR 305
461	Mech. And Structural Vibration	3	2.5	0.5					ENGR 201, 309; Math 245
465	Principles of HVAC	3	2	1					ENGR 303, 304
466	Gas Dynamics and B.L. Flow	3	2	1					ENGR 303, 304
468	Applied Fluid Mech. and Hydraulics	3	2	1					ENGR 303, 304
830	Finite Element Methods ♦	3	2	1					MATH 245; ENGR 309
868	Advanced Control Systems ♦	3	2	1					ENGR 447

Units Completed			
Minimum Required	10	6.5	3.5

♦ = GPA of 2.5 or better and consent of instructor are required to take graduate courses
♥ = Listed course should be taken concurrently

■ = The open space shows the semester course is offered

Technical Electives (3 units)

ENGR 610 Engineering Cost Analysis or three units of upper division Math, Phys, Chem., Computer Science, Decision Science, Design & Industry or non-major Engineering courses on approval of Program Head. A list of pre-approved courses is posted in engineering office in SCI-163.

Course Number	Course Name	Units	Grade	SFSU or Transfer	Year	Term
		3				

Program Planning

Fall 200__	Spring 200__	Fall 200__	Spring 200__
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
Fall 200__	Spring 200__	Fall 200__	Spring 200__
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Have you passes JEPET or taken ENG 414 Yes No Are you currently on academic probation Yes No
Have you completed GE worksheet Yes No

