Mechanical Engineering Planning Worksheet

Admitted to Engineering Fall 2026 Onwards

Required Courses

*subject to change

- 15 units of required mathematics, 12 units of physics, and 3 units of chemistry,
- 26 units of required lower division engineering courses and 27 units of required upper division courses
- 3 units of focus area elective, 9 units of upper division engineering elective courses and 33 units of General Education courses
- All SF State studies requirement need to be completed within the 33 units. If not, additional GE units may be required to satisfy this requirement
- Course prerequisites are strictly enforced. Students not meeting the prerequisites are subject to being administratively dropped.

Legend:

© = Grade C or better ©- = Course passed with Grade C- or better ♥ = Course must either be completed or taken concurrently

Required Math and Science Lower Division Courses

Course Number	Course Name	Units	Grade	SFSU or Transfer	Term	Yr	Prerequisite
CHEM 180 or CHEM 115	Chem. for Energy and the Environment or Gen. Chem.	3 or 4					Category I or II placement for QR/Math or Category III or IV need MATH 197© (see bulletin for details)
MATH 226	Calculus I	4					MATH 198© or 199© 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 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© & MATH 227© & PHYS 232♥ (MATH 228♥ recommended)
PHYS 240/242	General Physics with Calculus III & Lab	4					PHYS 220© & MATH 227© & PHYS 242♥ (MATH 228♥ recommended)

Required Lower Division Courses for Mechanical Engineering

ENGR	Course Name	Units	Grade	SFSU or Transfer	Term	Yr	Prerequisite
100	Introduction to Engineering	3					High school algebra and trigonometry
102	Statics	3					MATH 227© & PHYS 220©
104	Engineering Design and Digital Fabrication	3					High school algebra and trigonometry
200	Materials of Engineering	3					CHEM 115©- or CHEM 180©-
201	Dynamics	3					ENGR 102©-
205	Electric Circuits	3					PHYS 230©- & MATH 245♥
206	Circuits and Instrumentation Lab	1					ENGR 205♥
213	Introduction to C Programming for Engineers	3					MATH 226© & (ENGR 212©- or ENGR 104©-)
214	C Programming Laboratory	1					ENGR 213♥
282	Probability and Statistics for Engineers	3					MATH 226©

Required Upper Division Courses for Mechanical Engineering

ENGR	Course Name	Units	Grade	SFSU or Transfer	Term	Yr	Prerequisite
300	Engineering Experimentation	1					PHYS 230©- & ENGR 200©- & ENGR 282©-
302	Experimental Analysis	1					ENGR 300©- & ENGR 309©- & ENGR 304♥
303	Engineering Thermodynamics	3					PHYS 240©-
304	Mechanics of Fluids	3					ENGR 201©- & PHYS 240©-
307	Systems Dynamics and Mechanical Vibrations	3					ENGR 201©- & ENGR 205©- & ENGR 213©-
309	Mechanics of Solids	3					ENGR 102©- & ENGR 200©-
363	Mechanical Design	3					ENGR 309©-
447	Control Systems	3					ENGR 305©- or ENGR 307©-
446	Control Systems Laboratory	1					ENGR 447♥
467	Heat Transfer	3					ENGR 303©- & ENGR 304©-

696	Engineering Design Project I	1					Senior standing with 18 upper-division ENGR units & ENGR 302♥
697	Eng. Design Project II	2					GE Area A2; ENGR 696

Focus Area Elective (Take ONE course from the following list)

ENGR	Course Name	Units	Grade	SFSU or Transfer	Term	Yr	Prerequisite
364	Material & Manufacturing Processes	3					ENGR 201©- & ENGR 309©-
414	Applied Robotics	3					ENGR 305©- or ENGR 307©-
463	Thermal Power Systems	3					ENGR 302©- & ENGR 303©- & ENGR 304©-
	Units Completed:						
	Minimum Required:	**3**					

Students are encouraged to take their Focus Area Elective in their career field of interest:

- Students interested in Manufacturing or Design careers should take ENGR 364
- Students interested in Robotics or Controls careers should take ENGR 414
- Students interested in Energy, Thermal Fluids, or HVAC careers should take ENGR 463

Elective Upper Division Courses for Mechanical Engineering (9 units total are required)

ENGR	Course Name	Units	Grade	SFSU or Transfer	Term	Yr	Prerequisite
306	Electromechanical Systems	3					ENGR 205©-
410	Practical Process Instrumentation and Control	3					ENGR 447♥
415	Mechatronics	3					ENGR 305©- or ENGR 307©-
441	Fundamentals of Composite Materials	3					ENGR 309©- & Math 245©-
462	Failure Mechanics and Prevention	3					ENGR 309©-
465	Principles of HVAC	3					ENGR 303©-
469	Renewable Energy Systems	3					ENGR 303©-
470	Biomechanics	3					ENGR 200©-
610	Engineering Cost Analysis	3					ENGR 281©- or ENGR 282©-
820	Energy Resources & Sustainability ♦	3					Graduate standing and consent of instructor
860	Applied Engineering Analysis ♦	3					Graduate standing and consent of instructor (See SFSU Bulletin)
863	Applied Thermal Fluids ♦	3					Graduate standing and consent of instructor
864	Transport Phenomena ♦	3					Graduate standing and consent of instructor & ENGR 860©-
865	Energy-Efficient Buildings ♦	3					Graduate standing and consent of instructor
867	Energy Auditing, Measurement, and Verification	3					Graduate standing and consent of instructor & ENGR 205 & ENGR 467
868	Advanced Control Systems ♦	3					Graduate standing and consent of instructor
869	Robotics and Haptics ♦	3					Graduate standing and consent of instructor
870	Robot Control ♦	3					Graduate standing and consent of instructor
	Units Completed:						
	Minimum Required:	9					

♦ = GPA of 3 or better and consent of instructor are required to take graduate courses (in addition to prerequisites listed)

Note: Students may take additional "Focus Area Electives" to count towards their Upper Division Electives. However, credits may not be double counted across requirements. Meet with your engineering Faculty Advisor for approval.

Students are encouraged to take their Upper Division Electives in their career field of interest:

- Students interested in Manufacturing or Design careers should choose from the following: ENGR 410, ENGR 441, ENGR 462, ENGR 610
- Students interested in Robotics or Controls careers should choose from the following: ENGR 410, ENGR 415, ENGR 868, ENGR 869, ENGR 870
- Students interested in Energy, Thermal Fluids, or HVAC careers should choose from the following: ENGR 306, ENGR 410, ENGR 465, ENGR 469, ENGR 610, ENGR 820, ENGR 863, ENGR 864, ENGR 865, ENGR 867

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