Mechanical Engineering Planning Worksheet

Admitted to Engineering Fall 2022 Onwards

Required Courses

*subject to change

- 15 units of required mathematics, 12 units of physics, and 3 units of chemistry,
- 16 units of required lower division engineering courses and 35 units of required upper division courses
- 3 units of modular electives, 9 units of engineering elective courses and 36 units of General Education courses
- All SF State studies requirement need to be completed within the 36 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
101	Engineering Graphics	1					ENGR 100♥
102	Statics	3					MATH 227 & PHYS 220
103 or 214	Introduction to Computers or C Programming Laboratory*	1					MATH 226©
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♥

* = If taken in Fall 2026 or later, ENGR 214 can satisfy the requirement for ENGR 103 (a prerequisite waiver is required from the ENGR Office).

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					ENGR 201 & PHYS 240
307	Systems Dynamics and Mechanical Vibrations	3					ENGR 201©- & ENGR 205©- (students who entered SFSU prior to Fall 2022 can choose to take either Engr 305 or 307)
309	Mechanics of Solids	3					ENGR 102 & ENGR 200♥
364	Material & Manufacturing Processes	3					ENGR 201©- & ENGR 309©-
447+	Controls	3					ENGR 305©- or ENGR 307©-
446+	Controls Laboratory	1					ENGR 447♥
463	Thermal Power Systems	3					ENGR 467©- & ENGR 302©-

464 or 363	Mechanical Design	3					ENGR 364©-
467	Heat Transfer	3					ENGR 303©- & ENGR 304©-
696	Engineering Design Project I	1					Senior standing with 18 upper-division ENGR units & ENGR 300 & ENGR 302♥
697	Eng. Design Project II	2					GE Area A2; ENGR 696

** = If taken in Fall 2026 or later, ENGR 282 & ENGR 300 (1-unit version) can be taken to receive credit for ENGR 300 (3-unit version) + ENGR 271 (a prerequisite waiver may be required from the ENGR Office).

+ = If taken prior to Fall 2026, ENGR 410/411 can satisfy the controls requirement instead of ENGR 446/447. It cannot be double counted as an Upper Division Elective and the Controls Requirement.

Modular Electives (3 units total are required)

ENGR	Course Name	Units	Grade	SFSU or Transfer	Term	Yr	Prerequisite
271	Intro to MATLAB	1					MATH 226©
272	Engineering Project Management	1					Engineering students in sophomore year or later.
291	Intro to Creo Parametric (ProE)	1					
292	Intro to SolidWorks	1					
294	Intro to MicroControllers	1					
295	Design Methodology	1					
	Units Completed:						
	Minimum Required:	**3**					

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++	Process Instrumentation and Control	3					ENGR 300 & ENGR 305 or ENGR 307
411++	Instrument. and Process Control Lab.	1					ENGR 410♥
415	Mechatronics	4					ENGR 305©- or ENGR 307©-
462	Failure Mechanics and Prevention	3					ENGR 309©-
441	Fundamentals of Composite Materials	3					ENGR 309©- & Math 245©-
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					

++ = If taken prior to Fall 2026, ENGR 410/411 can satisfy an UD Elective **IF** ENGR 446/447 has also been taken to satisfy the controls requirement. Courses cannot double count towards controls and an UD Elective.

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

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