

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING 5 YEAR ROADMAP – QUANTITATIVE REASONING CATEGORY I/II

125 Total Units Required
 Minimum Number of Units in Major: 95

This roadmap is a suggested plan of study and does not replace meeting with an advisor. Please note that students may need to adjust the actual sequence of courses based on course availability. Please consult an advisor in your major program for further guidance.

Course	Title	Units
First Semester		
Select One (Major Core):		3-4
CHEM 115	General Chemistry I	
CHEM 180	Chemistry for Energy and the Environment	
MATH 226	Calculus I (Major Core, GE 2) ¹	4
ENGR 100	Introduction to Engineering (Major Core)	3
ENGR 101	Engineering Graphics (Major Core)	1
GE Area 1A: English Composition ²		3
		Units 14-15
Second Semester		
ENGR 200	Materials of Engineering (Major Core)	3
MATH 227	Calculus II (Major Core)	4
PHYS 220 & PHYS 222	General Physics with Calculus I and General Physics with Calculus I Laboratory (Major Core, GE 5A, GE 5C)	4
GE Area 1C: Oral Communication		3
		Units 14
Third Semester		
ENGR 102	Statics (Major Core)	3
ENGR 103	Introduction to Computers (Major Core)	1
MATH 228	Calculus III (Major Core)	4

PHYS 230 & PHYS 232	General Physics with Calculus II and General Physics with Calculus II Laboratory (Major Core)	4
		Units 12
Fourth Semester		
ENGR 201	Dynamics (Major Core) ³	3
ENGR 205	Electric Circuits (Major Core) ³	3
ENGR 206	Circuits and Instrumentation Laboratory (Major Core)	1
MATH 245	Elementary Differential Equations and Linear Algebra (Major Core)	3
PHYS 240 & PHYS 242	General Physics with Calculus III and General Physics with Calculus III Laboratory (Major Core)	4
		Units 14
Fifth Semester		
ENGR 300	Engineering Experimentation (Major Core) ⁴	3
ENGR 304	Mechanics of Fluids (Major Core)	3
ENGR 309	Mechanics of Solids (Major Core)	3
Modular Elective - Take Three ⁵		3
GE Area 4: Social and Behavioral Sciences ⁶		3
		Units 15
Sixth Semester		
ENGR 302	Experimental Analysis (Major Core) ⁴	1
ENGR 304	Mechanics of Fluids (Major Core)	3
ENGR 364	Materials and Manufacturing Processes (Major Core)	3
GE Area 5B: Biological Science		3
GE Area 6: Ethnic Studies (https://bulletin.sfsu.edu/undergraduate-education/general-education/areasix/)		3
		Units 13
Seventh Semester		
ENGR 467	Heat Transfer (Major Core)	3
ENGR 464	Mechanical Design (Major Core)	3

Select One Set of Courses (Major Controls Elective):		4
ENGR 410 & ENGR 411	Process Instrumentation and Control and Instrumentation and Process Control Laboratory	
ENGR 447 & ENGR 446	Control Systems and Control Systems Laboratory	
GE Area 3: Arts and Humanities		3
GE Area 4: Social and Behavioral Sciences ⁶		3
Units		16
Eighth Semester		
ENGR 307	Systems Dynamics and Mechanical Vibrations (Major Core)	3
ENGR 463	Thermal Power Systems (Major Core)	3
ENGR 696	Engineering Design Project I (Major Core)	1
Major Upper-Division Electives ⁷		3
GE Area 3: Arts and Humanities		3
Units		13
Ninth Semester		
ENGR 697GW	Engineering Design Project II - GVAR (Major Core)	2
Major Upper-Division Electives - Take Two ⁷		6
GE Area 3UD: Upper-Division Arts or Humanities ⁸		3
GE Area 4UD: Upper-Division Social and Behavioral Sciences ⁸		3
Units		14
Total Units		125-126

⁶ First-time freshmen must take one lower-division Area 4 course that meets US History (USH).

⁷ **Upper-Division Major Electives (9 units)**

A full list of courses that can fulfill this requirement can be found in the Degree Requirements (<https://bulletin.sfsu.edu/colleges/science-engineering/engineering/bs-mechanical-engineering/#degreerequirementstext>).

⁸ To avoid taking additional units, it is recommended that you meet **U.S. and California Government** (USG/CSLG) within Upper-Division GE.

¹ Students should use their Pathway/Category (<https://gatorsmartstart.sfsu.edu/pathways/>) to determine the appropriate GE 2 course option. For directions on how to view your Pathway/Category, visit [how to find your pathway \(https://gatorsmartstart.sfsu.edu/howtofindyourpathways/\)](https://gatorsmartstart.sfsu.edu/howtofindyourpathways/). Questions? Contact Gator Smart Start. (<https://gatorsmartstart.sfsu.edu/>)

² Students should use their Pathway/Category (<https://gatorsmartstart.sfsu.edu/pathways/>) to determine the appropriate GE 1A course option. For directions on how to view your Pathway/Category, visit [how to find your pathway \(https://gatorsmartstart.sfsu.edu/howtofindyourpathways/\)](https://gatorsmartstart.sfsu.edu/howtofindyourpathways/). Questions? Contact Gator Smart Start. (<https://gatorsmartstart.sfsu.edu/>)

³ GE Area 1C: Critical Thinking is satisfied upon completion of ENGR 205 and either ENGR 201 or ENGR 213.

⁴ GE Area 5UD: Upper-Division Science is satisfied upon completion of ENGR 300 and either ENGR 301 or ENGR 302.

⁵ **Lower-Division Modular Electives (3 units)**

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