

# BACHELOR OF SCIENCE IN CIVIL ENGINEERING - QUANTITATIVE REASONING CATEGORY III/IV AND STRETCH ENGLISH

127 Total Units Required  
Minimum Number of Units in Major: 93

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
<b>First Semester</b>		
ENG 104	Writing the First Year: Finding Your Voice Stretch I <sup>1</sup>	3
ENGR 100	Introduction to Engineering (Major Core)	1
ENGR 101	Engineering Graphics (Major Core)	1
MATH 197	Prelude to Calculus I (Prerequisite for MATH 226) <sup>2,3</sup>	3
GE Area A: Oral Communication (A1) <sup>4,5</sup>		3
GE Area C		3
	Units	14
<b>Second Semester</b>		
Select One (Major Core):		3-5
CHEM 115	General Chemistry I: Essential Concepts of Chemistry	
CHEM 180	Chemistry for the Energy and the Environment (B1, B3, ES)	
ENG 105	Writing the First Year: Finding Your Voice Stretch II (A2) <sup>1</sup>	3
MATH 198	Prelude to Calculus II (Prerequisite for MATH 226, B4) <sup>2,3</sup>	3
GE Area C		3
GE Area D		3
	Units	15-17
<b>Third Semester</b>		
ENGR 200	Materials of Engineering (Major Core)	3

MATH 226	Calculus I (Major Core, B4) <sup>2,3</sup>	4
GE Area B: Life Science (B2)		3
GE Area D		3
GE Area E		3
	Units	16
<b>Fourth Semester</b>		
ENGR 235	Surveying (Major Core)	3
ENGR 271	Introduction to MATLAB (Major Core)	1
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, B1, B3)	4
GE Area C		3
	Units	15
<b>Fifth Semester</b>		
ENGR 102	Statics (Major Core)	3
ENGR 429	Construction Management (Major Core)	3
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
GE Area D		3
	Units	17
<b>Sixth Semester</b>		
ENGR 201	Dynamics (Major Core) <sup>5</sup>	3
ENGR 205	Electric Circuits (Major Core) <sup>5</sup>	3
ENGR 309	Mechanics of Solids (Major Core)	3
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	16

**Seventh Semester**

ENGR 300	Engineering Experimentation <sup>6</sup>	3
ENGR 304	Mechanics of Fluids	3
ENGR 323	Structural Analysis	3
ENGR 430	Soil Mechanics	3
Major Upper-Division Electives - Take One <sup>7</sup>		3
	Units	15

**Eighth Semester**

ENGR 302	Experimental Analysis <sup>6</sup>	1
ENGR 436	Transportation Engineering	3
ENGR 425	Reinforced Concrete Structures	3
ENGR 434	Principles of Environmental Engineering	3
ENGR 696	Engineering Design Project I <sup>8</sup>	1
Major Upper-Division Electives - Take Two <sup>7</sup>		6
	Units	17

**Ninth Semester**

ENGR 697GW	Engineering Design Project II - GVAR	2
Major Upper-Division Electives - Take One <sup>7</sup>		3
GE Area UD-C: Upper-Division Arts and/or Humanities (Consider SF State Studies Course)		3
GE Area UD-D: Upper-Division Social Sciences (Consider SF State Studies Course)		3
	Units	11
	<b>Total Units</b>	<b>136-138</b>

<sup>6</sup> GE Area UD-B: Upper-Division Physical and/or Life Sciences is satisfied upon completion of ENGR 300 and either ENGR 301 or ENGR 302.

<sup>7</sup> **Major Electives (12 units)**  
 ENGR 303 Engineering Thermodynamics (3 units) (Prerequisite for ENGR 469)  
 ENGR 426 Steel Structures (3 units)  
 ENGR 427 Wood Structures (3 units)  
 ENGR 431 Foundation Engineering (3 units)  
 ENGR 432 Finite Element Methods in Structural and Continuum Mechanics (3 units)  
 ENGR 435 Environmental Engineering Design (3 units)  
 ENGR 439 Construction Engineering (3 units)  
 ENGR 441 Fundamentals of Composite Materials (3 units)  
 ENGR 461 Mechanical and Structural Vibrations (3 units)  
 ENGR 468 Applied Fluid Mechanics and Hydraulics (3 units)  
 ENGR 469 Alternative and Renewable Energy Systems (3 units)  
 ENGR 610 Engineering Cost Analysis (3 units)  
 ENGR 699 Independent Study (1-3 units)  
 ENGR 826 Seismic Hazard Analysis (3 units)  
 ENGR 827 Structural Design for Fire Safety (3 units)  
 ENGR 829 Advanced Topics in Structural Engineering (3 units)  
 ENGR 831 Advanced Concrete Structures (3 units)  
 ENGR 832 Advanced Topics in Seismic Design (3 units)  
 ENGR 833 Principles of Earthquake Engineering (3 units)  
 ENGR 835 Advanced Steel Structures (3 units)  
 ENGR 836 Structural Design for Earthquakes (3 units)  
 ENGR 837 Geotechnical Earthquake Engineering (3 units)

<sup>8</sup> You must complete 21 units of upper-division Engineering units before registering for ENGR 696.

<sup>1</sup> ENG 114 can only be taken if you complete Directed Self-Placement (DSP) and select ENG 114; if you choose ENG 104/ENG 105 through DSP you will satisfy A2 upon successful completion of 105 in the second semester; multilingual students may be advised into alternative English courses.

<sup>2</sup> Depending on courses completed through Early Start, students in Pathway/Category III or IV may be required to enroll in a support course to complement their Quantitative Reasoning/B4 requirement. There are multiple course options for this pathway. Before enrolling in a B4 course, students should verify their MATH Pathway/Category in their Student Center (<http://cms.sfsu.edu/content/student-center/>). Information regarding the courses that correspond with your MATH Pathway/Category can be found on the Developmental Studies Office Website (<http://developmentalstudies.sfsu.edu/>).

<sup>3</sup> QR Category III students with a grade of B or higher in high school pre-calculus in the past year may be able to enroll in MATH 226. Please see a department advisor.

<sup>4</sup> To avoid taking additional units, it is recommended that you meet **SF State Studies** (AERM, GP, ES, SJ) and **Ethnic Studies requirements** within your GE or major.

<sup>5</sup> GE Area A: Critical Thinking (A3) is satisfied upon completion of ENGR 205 and ENGR 201 or ENGR 213.