

ENGINEERING

Program Description

Engineers apply the theories and principles of science and mathematics to practical technical problems. The engineering major provides a solid foundation in what is normally referred to as the "engineering core" at most colleges and universities. Mathematics, physics, chemistry and introductory engineering courses such as circuit analysis and statics make up the bulk of this core. The major is intended to provide, in most cases, all of the basic subjects necessary for a smooth transfer to the candidate's chosen college or university.

Learn more about the program on the [Engineering website](#).

Program Learning Outcomes

- Students will be able to formulate logical problem-solving approaches, generate solutions, and assess the reasonableness of the solutions for engineering-type analysis problems.
- Students will be able to design, construct, and produce creative solutions to engineering problems by applying the engineering design process and identifying pertinent design parameters based on the fundamental physics governing a system.
- Students will be able to demonstrate understanding of the fundamental knowledge necessary for the practice of, or for advanced study in, engineering, including scientific principles, rigorous analysis, and problem solving.
- Students will be able to demonstrate clear communication skills, responsible teamwork, professional attitudes and ethics.
- Students will be able to demonstrate a preparation for the complex work environment and continuous learning.

Career Opportunities

Engineering—in particular, electrical and computer engineering—continues to be an excellent choice for a career. It is the second largest profession, being exceeded only by teaching. Salaries at the entry level begin at about \$50,000 and may go as high as \$70,000 for particular specializations.

Award Type(s)

- AS = Associate in Science Degree

Units Required

- Major: 68

Additional Information

Suggested Preparation Courses:

Code	Title	Units
MATH 1A	CALCULUS (or equivalent)	5
MATH 48C	PRECALCULUS III (or equivalent)	5
CHEM 25	FUNDAMENTALS OF CHEMISTRY (or equivalent)	5
PHYS 2A	GENERAL PHYSICS	5
or PHYS 6	INTRODUCTORY PHYSICS	
	or equivalent	

Note: Students should check with the transfer institution for any additional required courses.

Associate Degree Requirements

Code	Title	Units
English Proficiency		
Select one of the following:		
ENGL 1A	COMPOSITION & READING	5
ENGL 1AH	HONORS COMPOSITION & READING	5
ENGL 1S & ENGL 1T	INTEGRATED COMPOSITION & READING and INTEGRATED COMPOSITION & READING	8
or equivalent		
Mathematics Proficiency		
Select one of the following:		
MATH 105	INTERMEDIATE ALGEBRA	5
MATH 180	QUANTITATIVE REASONING	5
or any MATH course approved for Foothill GE Area V, Communication & Analytical Thinking		

A minimum of 90 units is required¹ to include:

- Completion of one of the following general education patterns: Foothill General Education, CSU General Education Breadth Requirements or the Intersegmental General Education Transfer Curriculum (IGETC)
- Core courses (53 units)
- Support courses (15 units)

¹ Additional elective course work may be necessary to meet the 90-unit minimum requirement for the associate degree.

Note: All courses pertaining to the major must be taken for a letter grade. In addition, a grade of "C" or better is required for all core and support courses used for the degree.

Core and Support Courses

Code	Title	Units
Core Courses		
CHEM 1A	GENERAL CHEMISTRY	5
or CHEM 1AH	HONORS GENERAL CHEMISTRY	
CHEM 1B	GENERAL CHEMISTRY	5
or CHEM 1BH	HONORS GENERAL CHEMISTRY	
ENGR 10	INTRODUCTION TO ENGINEERING	5
MATH 1B	CALCULUS	5
or MATH 1BH	HONORS CALCULUS II	
MATH 1C	CALCULUS	5
MATH 1D	CALCULUS	5
MATH 2A	DIFFERENTIAL EQUATIONS	5
PHYS 4A	GENERAL PHYSICS (CALCULUS)	6
PHYS 4B	GENERAL PHYSICS (CALCULUS)	6
PHYS 4C	GENERAL PHYSICS (CALCULUS)	6
Support Courses		
Select 15 units from the following:		15
C S 1A	OBJECT-ORIENTED PROGRAMMING METHODOLOGIES IN JAVA	

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C S 2A	OBJECT-ORIENTED PROGRAMMING METHODOLOGIES IN C++
C S 3A	OBJECT-ORIENTED PROGRAMMING METHODOLOGIES IN PYTHON
C S 10	COMPUTER ARCHITECTURE & ORGANIZATION
ENGR 6	ENGINEERING GRAPHICS
ENGR 11	PROGRAMMING & PROBLEM-SOLVING IN MATLAB
ENGR 35	STATICS
ENGR 37	INTRODUCTION TO CIRCUIT ANALYSIS
ENGR 45	PROPERTIES OF MATERIALS
ENGR 47	DYNAMICS
MATH 2B	LINEAR ALGEBRA
PHYS 4D	GENERAL PHYSICS (CALCULUS)
Total Units	68