



Engineering 2013-2014

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 designed so that, in most cases, it provides all of the basic subjects necessary for a smooth transfer to the candidate's chosen college or university.

Program Learning Outcomes:

- Formulate logical problem-solving approaches, generate solutions, and assess the reasonableness of the solutions for engineering type analysis problems.
- 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.
- 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.
- Demonstrate clear communication skills, responsible teamwork, professional attitudes and ethics.
- Demonstrate a preparation for the complex work environment and continuous learning.

Career Opportunities:

Engineering, and in particular, Electrical and Computer Engineering, continues to be an excellent choice for a career. It is, in fact, the second largest profession, being exceeded only by teaching. Salaries at the entry level begin at about \$30,000 and may go as high as \$40,000 for particular specializations.

Units required for Major: 83

Associate Degree Requirements:

- English proficiency: ENGL 1A, 1AH, 1S & 1T, ESLL 26 or equivalent.
- Mathematics proficiency: MATH 57, 105, 108 or equivalent.

A minimum of 90 units is required* to include:

- All Foothill General Education requirements (30 Units)
- Prerequisites (15 units)
- Core courses (58 Units)
- Support courses (10 Units)

*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 and the student must receive a grade of "C" or

higher in these courses.

Program Type:

AS = Associate in Science Degree.

Additional Information:

Prerequisites:

- MATH 48C(5 units) or equivalent;
- CHEM 25 (5 units) or equivalent;
- High school physics, PHYS 6, 2A(5 units) or equivalent.

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

Core Courses: 58 Unit(s)

C S 2A Object-Oriented Programming Methodologies in C++ (5 units)

CHEM 1A General Chemistry (5 units)

CHEM 1B General Chemistry (5 units)

MATH 1B Calculus (5 units)

MATH 1C Calculus (5 units)

MATH 1D Calculus (5 units)

MATH 2A Differential Equations (5 units)

MATH 2B Linear Algebra (5 units)

And select ONE option:

Option #1:

PHYS 4A General Physics (Calculus) (6 units)

PHYS 4B General Physics (Calculus) (6 units)

PHYS 4C General Physics (Calculus) (6 units)

Option #2:

PHYS 5A* General Physics (Calculus) Extended (5 units)

PHYS 5B* General Physics (Calculus) Extended (5 units)

PHYS 5C* General Physics (Calculus) Extended (5 units)

PHYS 4C General Physics (Calculus) (6 units)

*The PHYS 5A, 5B & 5C sequence is equivalent to PHYS 4A & 4B.

Support Courses: 10 Unit(s)

ENGR 10 Introduction to Engineering (4 units)

ENGR 35 Statics (5 units)

ENGR 45 Properties of Materials (5 units)

ENGR 37 Introduction to Circuit Analysis (5 units)

NANO 10 Introduction to Nanotechnology (5 units)

PHYS 4D General Physics (Calculus) (6 units)