



Engineering 2014-2015

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.

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 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.

Units required for Major: 68

Units required for Certificate: 23-25

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:

- 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)

*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 Types:

AS = Associate in Science Degree.

CP = Certificate of Proficiency.

Additional Information:

Suggested Preparation Courses for Degree::

- MATH 48C or equivalent;
- CHEM 25 or equivalent;
- PHYS 6, 2A or equivalent.

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

Core Courses: 53 Unit(s)

- CHEM 1A General Chemistry (5 units)
- CHEM 1B General Chemistry (5 units)
- ENGR 10 Introduction to Engineering (5 units)
- MATH 1B Calculus (5 units)
- MATH 1C Calculus (5 units)
- MATH 1D Calculus (5 units)
- MATH 2A Differential Equations (5 units)
- PHYS 4A General Physics (Calculus) (6 units)
- PHYS 4B General Physics (Calculus) (6 units)
- PHYS 4C General Physics (Calculus) (6 units)

Support Courses: 15 Unit(s)

- C S 2A Object-Oriented Programming Methodologies in C++ (5 units)
- ENGR 6 Engineering Graphics (4 units)
- ENGR 12 Computer Architecture & Organization (5 units)
- ENGR 35 Statics (5 units)
- ENGR 37 Introduction to Circuit Analysis (5 units)
- ENGR 45 Properties of Materials (5 units)
- ENGR 62A Introduction to 3-D Printing & Rapid Prototype Design (4 units)
- ENGR 62B 3-D Printing: Basic Model Making (5 units)
- ENGR 62C 3-D Printing: Advanced Model Making (5 units)
- ENGR 62D 3-D Rapid Model Making & Prototype Development (5 units)
- ENGR 83A Introduction to Biomedical Engineering (5 units)
- ENGR 83B Design & Manufacturing in the Biomedical Engineering Field (5 units)
- ENGR 83C Introduction to Medical Device Regulations (5 units)
- ENGR 83E Introduction to Documentation (5 units)
- MATH 2B Linear Algebra (5 units)
- NANO 10 Introduction to Nanotechnology (5 units)
- PHYS 4D General Physics (Calculus) (6 units)

Certificates:

Certificate of Proficiency in Biomedical Devices 25 Unit(s)

- ENGR 83A Introduction to Biomedical Device Industry (5 units)
- ENGR 83B Design & Manufacturing in the Medical Device



Industry (5 units)

ENGR 83C Introduction to Medical Device Regulations (5 units)

ENGR 83D Introduction to Quality Assurance (5 units)

ENGR 83E Introduction to Documentation (5 units)

Certificate of Proficiency in Rapid Prototyping

23 Unit(s) [Non-Transcriptable]

ENGR 6 Engineering Graphics (4 units)

ENGR 62A Introduction to 3-D Printing & Rapid Prototype Design (4 units)

ENGR 62B 3-D Printing: Basic Model Making (5 units)

ENGR 62C 3-D Printing: Advanced Model Making (5 units)

ENGR 62D 3-D Rapid Model Making & Prototype Development (5 units)