

Engineering

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Program Description

Solano Community College offers a two-year lower division Engineering Program that is designed to prepare students to transfer to a four-year university. The lower division Engineering Core Courses recommended by the Engineering Liaison Committee of the State of California have been coordinated between community colleges and the four-year colleges and universities throughout California. As part of our Engineering Program, an Associate in Science Degree in Engineering is available. Although most engineering students transfer to a four-year university, those with an AS degree can also be employed in entry-level jobs that require two years of college-level science and math.

Associate in Science Degree

The Associate in Science Degree in Engineering can be obtained by completing a total of 68-75 units, including the requirements listed below, the general education requirements, and electives. All courses for the major must be completed with a grade of C or better, or a grade of P if the course is taken on a Pass / No Pass basis.

Program Outcomes

1. Demonstrate analytical problem solving skills in Math, Physics, Chemistry and Engineering.
2. Conduct experiments and critically assess the data.
3. Write professional laboratory reports and/or give oral presentations.

REQUIRED COURSES Units

CHEM 001 General Chemistry	5
MATH 020 Analytic Geometry and Calculus I	5
MATH 021 Analytic Geometry and Calculus II	5
MATH 022 Analytic Geometry and Calculus III	4
MATH 023 Differential Equations	4
PHYS 006 Physics for Science and Engineering	5
PHYS 007 Physics for Science and Engineering	5
Three courses from List A	10-13
Total Units	43-46

List A: (select three courses)..... Units

CIS 022 Introduction to Programming	3
DRFT 045 Introduction to Computer-Aided Drafting (CAD)	3
ENGR 017 Introduction to Electrical Engineering	5
ENGR 026 Mathematics and Engineering Problem Solving Using Matlab	4
OR	
MATH 026 Mathematics and Engineering Problem Solving Using Matlab	4
ENGR 030 Engineering Mechanics: Statics	4
ENGR 045 Properties of Materials	4

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ENGR 001**1.0 Units****Introduction to Engineering**

Course Advisory: Successful completion of ENG 001 and SCC minimum Math standard. A first, non-technical course for engineering students and students considering majoring in engineering. Introduction to different engineering fields, the campus life of engineering students, schedule guidelines, opportunities in engineering, engineers' roles in society, ethics in engineering, and strategies and approaches required to survive math, science, and engineering courses. Possible field trips. *One hour lecture.*

ENGR 017**5.0 Units****Introduction to Electrical Engineering**

Prerequisite: MATH 023 with a minimum grade of C (may be taken concurrently), and PHYS 007 with a minimum grade of C. Course Advisory: Eligibility for ENG 001. Required for engineering majors, the course presents a study of basic circuit analysis techniques including Kirchhoff's laws, mesh-current, node-voltage, Thevenin and Norton equivalent; transient and steady-state responses of passive circuits; sinusoidal steady-state analysis; power calculations; operational amplifier; semiconductor devices. Weekly homework assignments and written tests, including a comprehensive final examination and lab reports, will be used to evaluate student success. *Four hours lecture, three hours lab.*

ENGR 026**4.0 Units****Mathematics and Engineering Problem Solving Using Matlab**

Prerequisite: MATH 021 with a minimum grade of C (may be taken concurrently). This course covers methodologies for solving mathematics and engineering problems. Students will also learn to perform mathematics and engineering computation and visualization using the MATLAB language. Students will write a variety of programs in the MATLAB language. Same as MATH 026. *Three hours lecture, three hours lab.*

ENGR 030**4.0 Units****Engineering Mechanics: Statics**

Prerequisite: A minimum grade of C in both MATH 021 and PHYS 006. Course Advisory: Eligibility for ENG 001. This course, which is required for engineering majors, presents a study of the principles of statics of particles and rigid bodies as applied to equilibrium problems of two and three-dimensional structures, and the principles of friction, virtual work, and stability of equilibrium. *Four hours lecture.*

ENGR 045**4.0 Units****Properties of Materials**

Prerequisite: PHYS 006 with a minimum grade of C and CHEM 001 with a minimum grade of C. Course Advisory: Eligibility for ENG 001. This required course for engineering majors covers the application of basic principles of physics and chemistry to the structure and properties of engineering materials. Special emphasis is devoted to the relationship between microstructure and the mechanical properties of metals, polymers and ceramics, and the electrical, magnetic, and optical properties of materials. *Possible field trips. Three hours lecture, three hours lab.*