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 the 43-46-unit major and general education requirements. All courses for the major must be completed with a minimum grade of C 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 I	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
Required Major Total Units	**43-46**

List A: (select three courses)	**Units**
CIS 022 Introduction to Programming	3
DRFT 045 Introduction to Computer-Aided Drafting (CAD)	4
or	
DRFT 058 Solid Modeling with Solidworks	3
ENGR 017 Introduction to Electrical Engineering	5
ENGR 030 Engineering Mechanics: Statics	4
ENGR 045 Properties of Materials	4
ENGR 026 Mathematics and Engineering Problem Solving Using Matlab	4
or	
MATH 026 Mathematics and Engineering Problem Solving Using Matlab	4

CSU General Education or IGETC Pattern units	**37-39**
Total Degree Units CSU GE or IGETC	**68-75**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**0**
Total Degree Units Solano GE	**64-67**

** 10-12 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

Engineering

ENGR 001 Introduction to Engineering 2.0 Units
Course Advisory: ENGL 001 with a minimum grade of C
Transferable to UC/CSU
Hours: 16-18 lecture
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. Develops communication skills pertinent to the engineering profession. Possible field trips. *(C-ID ENGR 110)*

ENGR 003 3.0 Units
Introduction to Ethics in Engineering
General Education: Option B: Area 3B
Transferable to UC/CSU
Hours: 16-18 lecture
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. Develops communication skills pertinent to the engineering profession. Possible field trips. *(C-ID ENGR 110)*

ENGR 017 5.0 Units
Introduction to Electrical Engineering
Prerequisite: MATH 023 with a minimum grade of C (may enroll concurrently) and PHYS 007 with a minimum grade of C
Transferable to UC/CSU
Hours: 64-72 lecture, 48-54 lab
A study of basic DC circuit analysis techniques including Kirchhoff's laws, mesh-currents, node-voltages, Thevenin and Norton equivalent circuits, transient and steady-state response of AC passive circuits, power calculations, active circuit elements including operational amplifiers and semiconductor devices. Construction and measurement of electrical circuits using multimeters, oscilloscopes, power supplies, and function generators. Introduction to circuit simulation software.

ENGR 026 4.0 Units
Mathematics and Engineering Problem Solving Using Matlab
Prerequisite: MATH 021 with a minimum grade of C (may enroll concurrently)
Transferable to UC/CSU
Hours: 48-54 lecture, 48-54 lab
Covers methodologies for solving mathematics and engineering problems. Students will 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. *(C-ID ENGR 220)*

ENGR 030 Engineering Mechanics: Statics 4.0 Units
Prerequisite: A minimum grade of C in both MATH 021 and PHYS 006.
General Education: Option A: Area A; Option B: Area 5A
Transferable to UC/CSU
Hours: 64-72 lecture
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. *(C-ID ENGR 130)*

ENGR 045 Properties of Materials 4.0 Units
Prerequisite: A minimum grade of C in both PHYS 006 and CHEM 001.
General Education: Option B: Area 5A, 5C; Option C: Area B1, B3
Transferable to UC/CSU
Hours: 48-54 lecture, 48-54 lab
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. *(C-ID ENGR 140)*