

# ENGINEERING

The Engineering program is to foster an environment that both challenges and supports its students. The department is committed to continuous revisions and improvements of the curriculum, making real world connections, and incorporating technology. The department employs an assortment of assessment techniques, provides a variety of teaching styles, and maintains intervention plans for students who might be having difficulty.

## Associate in Science Degrees

- Engineering - Associate in Science (<https://lbcc-public.courseleaf.com/degrees-certificates/engineering/engineering-as/>)

### ENGR 3A 3 units

#### Essential Engr Graphics & 3D CAD Drafting

##### 36 hours lecture, 72 hours laboratory

Prerequisite: MATH 120 or one year high school geometry.

Grading: letter grade.

This course will review the methods of graphic expression common to the various fields of engineering. It will follow engineering drafting standards and procedures through working drawings. The use of computers to prepare and study engineering drawings and solving engineering space problems by orthographic methods will be emphasized.

Transferable to both UC and CSU; see counselor for limitations

### ENGR 3B 3 units

#### Advanced Engr Graphics & 3D CAD Drafting

##### 36 hours lecture, 72 hours laboratory

Prerequisite: ENGR 3A and MATH 40.

Grading: letter grade.

This course will review the principles of graphic expression through working drawings. It will expand on the principles of descriptive geometry as studied in ENGR 3A. The use of computer drafting software as well as charts, diagrams and graphic solutions are discussed.

Transferable to both UC and CSU; see counselor for limitations

### ENGR 11 3.5 units

#### Digital Logic Design

##### 54 hours lecture, 36 hours laboratory

Prerequisite: MATH 130.

Grading: letter grade or pass/no pass.

A modern introduction to logic design and the basic building blocks used in digital systems, in particular digital computers. Discussion of combinational logic: logic gates, minimization techniques, arithmetic circuits, and modern logic devices such as field programmable logic gates. Sequential circuits: flip-flops, synthesis of sequential circuits, and case studies, including counters, registers, and random access memories. State machines are discussed and illustrated through case studies of more complex systems using programmable logic devices.

This course is intended for students transferring to an engineering program such as electrical, computer, or biomedical.

Transferable to CSU Only

### ENGR 17 3 units

#### Electrical Engineering Circuits

##### 54 hours lecture

Corequisite: MATH 70 and PHYS 3B.

Grading: letter grade.

This course provides an introduction to electrical circuits from an engineering perspective. This includes mesh and node equations, controlled sources, Thevenin and Norton equivalencies, natural response of RLC circuits, phasor analysis and other topics.

Transferable to both UC and CSU; see counselor for limitations

### ENGR 17L 1 units

#### Electrical Engineering Circuits Lab

##### 54 hours laboratory

Corequisite: ENGR 17.

Grading: letter grade.

This course provides a laboratory study of electrical circuits and instrumentation to accompany the lecture course.

Transferable to both UC and CSU; see counselor for limitations

### ENGR 35 3 units

#### Statics

##### 54 hours lecture

Prerequisite: MATH 60.

Corequisite: PHYS 3A.

Grading: letter grade.

This is a first course in mechanics that will enable engineering students to analyze any problem in a simple and logical manner and to apply to its solution a few, well-understood, basic principles. This course introduces students to statics of particles, rigid bodies, equilibrium of two- and three-dimensional force systems employing free-body diagrams. Topics that will be examined are centroids, center of gravity, analysis of structures, friction, and forces in beams and cables.

Transferable to both UC and CSU; see counselor for limitations

### ENGR 44 3 units

#### Materials Science and Engineering

##### 54 hours lecture

Prerequisite: CHEM 1A and PHYS 3A.

Grading: letter grade.

This course presents an introduction to atomic bonding, crystalline structure and microstructure, and how these structures determine the physical, mechanical, electrical and thermal properties of materials. The course covers metals, ceramics, polymers, composites and semiconductors. Topics include material imperfections, diffusion, mechanical properties, phase diagrams, material selection, processing, heat treatment and strengthening mechanisms. Corrosion phenomena, electrical properties and thermal properties are also covered.

Transferable to CSU Only

### ENGR 50 1 units

#### Introduction to Engineering

##### 18 hours lecture

Grading: pass/no pass.

This course is an introduction to engineering concepts from various branches of engineering.

Transferable to both UC and CSU; see counselor for limitations

**ENGR 54 3.5 units**

**Computer Methods**

**54 hours lecture, 36 hours laboratory**

Prerequisite: MATH 60 (may be taken concurrently)

Grading: letter grade or pass/no pass.

This course will introduce students to the nature of computers, algorithms, problem solving procedures and programming. This course is designed to explore computer methods used to solve various applications from engineering, computer science, physical sciences and math areas. C++ is the primary programming language. The course also introduces MATHEMATICA and MATLAB software with applications from Engineering, Science and Mathematics.

Transferable to both UC and CSU; see counselor for limitations