

# El Camino College



## AS Degree Program Guide



### Industry and Technology Division - Engineering Technology - Engineering Technology Option

## First Semester


15 units

-  Engineering Technology 12:  
*Introduction to Engineering Design (3 units)*
-  Engineering Technology 10:  
*Principles of Engineering (3 units)*
- ☐ Mathematics 80\*:  
*Intermediate Algebra for STEM (5 units)*
- ☐ English 1A\*:  
*Reading and Composition (4 units)*




## Second Semester

14 units

-  Engineering Technology 14:  
*Electronics for Engineering Technologists (3 units)*
- ☐ Chemistry 1A\*:  
*General Chemistry (5 units)*
- ☐ Social and Behavioral Sciences:  
*Choose one course from Area 2, A, B, or C (3 units)*
- ☐ Math 170\*:  
*Trigonometry (3 units)*

## Third Semester


16 units


-  Engineering Technology 16:  
*Computer Integrated Manufacturing (3 units)*
- ☐ Math 180\*:  
*Pre-Calculus (5 units)*
- ☐ Contemporary Health:  
*Personal and Community Health Issues (3 units)*
- ☐ Communication Studies 1:  
*Effective Speaking (3 units)*
- ☐ Manufacturing Technology 70:  
*Basic Robotics (2 units - elective)*



## Fourth Semester

15 units

-  Engineering Technology 18:  
*Engineering Design and Development (3 units)*
- ☐ Humanities:  
*Choose one course (3 units - general education)*
- ☐ Math 190\*:  
*Single Variable Calculus and Analytical Geometry (5 units)*
- ☐ Physics 2A\*:  
*General Physics (4 units)*

 Denotes a class that is available for college credit at some local high schools including California Academy of Math and Science, Da Vinci High School, El Segundo High School, Hawthorne High School, Lennox Academy, Palos Verdes Peninsula High School, Redondo Union High School and Torrance High School.

This guide sheet developed in conjunction with ECC counselors. The schedule is a sample only and does not take the place of a counselor. Courses with a \* require placement through the ECC placement assessment or a prerequisite course.

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# Engineering Technology - Course Descriptions

## Engineering Technology 10

Principles of Engineering Technology - 3 units; 2 hours lecture, 4 hours lab  
Credit, degree applicable - Transfer CSU

In this course, students will explore technology systems and engineering processes to learn how math, science, and technology impact our society. The topics introduced include the design process, communication and documentation, engineering systems, statics, properties of materials, quality assurance, materials testing, and engineering for reliability.

## Engineering Technology 12

Introduction to Engineering Design - 3 units; 2 hours lecture, 4 hours lab  
*Recommended Preparation: Engineering Technology 10*  
Credit, degree applicable - Transfer CSU

In this course, students will gain a basic understanding of the design process used in engineering fields and the application of computer modeling software. Emphasis is placed on the design process, geometric relationships, visualization, technical sketching, modeling, model documentation, assemblies, and production processes.

## Engineering Technology 14

Electronics for Engineering Technologists - 3 units; 2 hours lecture, 4 hours lab  
*Recommended Preparation: Engineering Technology 10*  
Credit, degree applicable - Transfer CSU

In this course, students are introduced to the application of electronics in engineering technology. The topics studied include safety, Ohm's Law, engineering notation, DC circuits, capacitance, inductance, reactance, impedance, analog and digital waveforms, basic motors, number systems, logic gates, Boolean algebra, flip-flops, shift registers, and micro-processors. Techniques in computer simulation and electrical measurements will be stressed.

## Engineering Technology 16

Computer Integrated Manufacturing - 3 units; 2 hours lecture, 4 hours lab  
*Recommended Preparation: Engineering Technology 10 and 12*  
Credit, degree applicable - Transfer CSU

This course covers the integration of engineering technology principles and automation in manufacturing environments. Students will create three-dimensional designs with modeling software and produce actual components of their designs on computer numerically controlled (CNC) machine tools. Additional topics covered include machine tool operations, simulations, rapid prototyping (RP), robotics, and manufacturing systems.

## Engineering Technology 18

Engineering Design and Development - 3 units; 2 hours lecture, 4 hours lab  
*Prerequisite: Engineering Technology 12, 14, and 16 with a minimum grade of C in prerequisite*  
Credit, degree applicable - Transfer CSU

In this capstone course, teams of students will work together to design and construct solutions to engineering problems. Emphasis will be placed on research methods, design problem statements, continuous improvement, cost analysis, prototyping, testing methods, project construction, and project presentation.

For more information visit:

[www.elcamino.edu/academics/indtech/](http://www.elcamino.edu/academics/indtech/)

or contact:

Naomi Tokuda, Director of Career Pathways  
El Camino College • Community Advancement Division  
310-660-3589 • [ntokuda@elcamino.edu](mailto:ntokuda@elcamino.edu)





## First Semester

13 units

- ☐ Manufacturing Technology 70:  
*Basic Robotics (2 units - elective)*
- ☒ Engineering Technology 12:  
*Introduction to Engineering Design (3 units)*
- ☒ Engineering Technology 10:  
*Principles of Engineering (3 units)*
- ☐ Language and Rationality:  
*Choose one course from Area A (4 units - general education)*
- ☐ Human Development 8:  
*Orientation to College and Educational Planning (1 unit - elective)*



## Second Semester

15 units

- ☒ Engineering Technology 14:  
*Electronics for Engineering Technologists (3 units)*
- ☐ Mathematics 80\*:  
*Intermediate Algebra for STEM (5 units - general education)*
- ☐ Machine Tool Technology 101abcd:  
*Introduction to Conventional and CNC Machining (4 units)*
- ☐ Social and Behavioral Sciences:  
*Choose one course from Area 2, A, B, or C (3 units - general education)*

## Third Semester

14 units

- ☐ Welding 15ab:  
*Basic Welding for Allied Fields (3 units - elective)*
- ☐ Computer Aided Design/Drafting 28:  
*Parametric Solid Modeling and Assemblies (2 units - elective)*
- ☐ Language and Rationality:  
*Choose one course from Area B (3 units)*
- ☐ Health and Physical Education:  
*Choose one course (3 units - general education)*
- ☐ Electronics and Computer Hardware Technology 11:  
*Basic Electronic Fabrication (3 units - elective)*

## Fourth Semester

18 units

- ☒ Engineering Technology 18:  
*Engineering Design and Development (3 units)*
- ☒ Engineering Technology 16:  
*Computer Integrated Manufacturing (3 units)*
- ☐ Humanities:  
*Choose one course (3 units - general education)*
- ☐ Natural Sciences:  
*Choose one course from Area 1 (3 units - general education)*
- ☐ Elective: (3 units)      ☐ Elective: (3 units)



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# El Camino College

## Industry and Technology Division—Engineering Technology

[www.elcamino.edu/academics/indtech](http://www.elcamino.edu/academics/indtech)

### Certificates of Accomplishment: Electrical and Electronics Engineering Technician

(Requires 14-15 Units)

A Certificate of Accomplishment will be granted upon the completion of all program requirements.

At least 50% of the courses required for the Certificate of Accomplishment must be completed at El Camino College.

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#### First Semester:

\*Engineering Technology 12A (1.5 units)

*Introduction to Engineering Design I*

\*Engineering Technology 12B (1.5 units)

*Introduction to Engineering Design II*

Total 3 units



2

#### Second Semester:

\*Engineering Technology 10A (1.5 units)

*Principles of Engineering Technology I*

\*Engineering Technology 10B (1.5 units)

*Principles of Engineering Technology II*

Total 3 units



3

#### Third Semester:

\*Engineering Technology 14A (1.5 units)

*Electronics for Engineering Technologists I*

\*Engineering Technology 14B (1.5 units)

*Electronics for Engineering Technologists II*

Total 3 units



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#### Fourth Semester:

\*Computer Aided Design/Drafting 5 (3 units)

*Introduction to Mechanical Drafting*

And one course from the following:

\*Electronics and Computer Hardware Technology 95abcd (2-4units)

*Cooperative Work Experience Education*

\*Electronics and Computer Hardware 22 (3 units)

*Basic Electronic Fabrication*

Total 5-6 units



For more information visit [www.elcamino.edu/academics/indtech/](http://www.elcamino.edu/academics/indtech/)

Or contact: Tiffany Miller, Interim Director of Career Pathways

El Camino College-Community Advancement Division

(310) 660-3589-tsmiller@elcamino.edu