



# Electrical and Electronics Engineering Technicians

SOC Code 17-3023 • Projected Growth (2020) 0 %

## Description

### What Electrical and Electronics Engineering Technicians Do

Electrical and electronic engineering technicians help engineers design and develop computers, communications equipment, medical monitoring devices, navigational equipment, and other electrical and electronic equipment. They often work in product evaluation and testing, using measuring and diagnostic devices to adjust, test, and repair equipment.

### Duties

Electrical engineering technicians typically do the following:

- Put together electrical and electronic systems and prototypes
- Build, calibrate, and repair electrical instruments or testing equipment
- Visit construction sites to observe conditions affecting design
- Identify solutions to technical design problems that arise during construction of electrical systems
- Inspect designs for quality control, report findings, and make recommendations
- Draw diagrams and write specifications to clarify design details of experimental electronics units
- Install and maintain electrical control systems and equipment
- Set up test equipment and evaluate the performance of developmental parts, assemblies, or systems under simulated conditions
- Analyze test information to resolve design-related problems
- Modify electrical prototypes, parts, and assemblies to correct problems

Electronic engineering technicians typically do the following:

- Under engineers' direction, design basic circuitry and draft sketches to clarify details of design documentation
- Build prototypes from rough sketches or plans
- Put together, test, and maintain circuitry or electronic components according to engineering instructions, technical manuals, and knowledge of electronics
- Adjust and replace defective circuitry and electronics components
- Make parts, such as coils and terminal boards, by using bench lathes, drills, or other machine tools
- Identify and resolve equipment malfunctions, working with manufacturers to get replacement parts
- Do preventative maintenance and calibration of equipment and systems
- Read blueprints, wiring diagrams, schematic drawings, and engineering instructions for putting together electronics units
- As assistants to engineers, write reports and record data on testing techniques, laboratory equipment, and specifications

## Training Opportunities Linked to Those Jobs

### (Degree Types and Colleges/Universities)

### How to Become an Electrical and Electronics Engineering Technician

Electrical and electronic engineering technicians typically need an associate's degree.

### Education and Training

Programs for electrical and electronic engineering technicians usually lead to an associate's degree in electrical or electronic engineering technology. Vocational–technical schools are postsecondary institutions that serve local students and emphasize training needed by local employers. Community colleges offer programs similar to those in technical institutes but include more theory-based and liberal arts coursework.

Prospective electrical and electronic engineering technicians usually take courses in C++ programming, physics, microprocessors, and circuitry. The Technology Accreditation Commission of [ABET](#) (formerly the Accreditation Board for Engineering and Technology) accredits programs that include at least college algebra, trigonometry, and basic science courses.

There are also bachelor's degree programs in electrical engineering technology. Graduates of these programs work as electrical engineering technologists, rather than technicians. In some cases, they are considered applied electrical or electronic engineers

because they put electrical engineering concepts to use in their work. Earning an associate’s degree in electronic engineering technology eases entry into a bachelor’s degree program.

**Important Qualities**

**Deductive-reasoning skills.** Electrical and electronic engineering technicians must isolate and then identify problems for the engineering staff to work on. They need good reasoning skills to figure out what the problems are to avoid losing time and money to fix them.

**Information-ordering skills.** To carry out engineers’ designs, inspect designs for quality control, and put together prototypes, technicians must be able to read instructions and to follow a logical sequence or specific set of rules.

**Manual dexterity.** Electronic engineering technicians in particular must be able to use handtools and soldering irons on small circuitry and electronic parts to create detailed electronic components by hand.

**Math skills.** Electrical and electronic engineering technicians use mathematics for analysis, design, and troubleshooting in their work.

**Monitoring skills.** Electrical engineering technicians sometimes visit a construction site to make sure that electrical engineers’ designs are being carried out correctly. They are responsible for evaluating the project onsite and reporting problems to the engineer.

**Problem-solving skills.** Electrical and electronic engineering technicians create what engineers have designed and often test the designs to make sure that they work. Technicians help to resolve any problems that come up in carrying out the engineers’ designs.

**Writing skills.** Technicians must write reports on onsite construction, the results of testing, or problems found when carrying out designs. Writing must be clear and well organized so the engineers they work with can understand the reports.

**Postsecondary Education**

Texas Southmost College	South Texas College	Texas State Technical College	The University of Texas at Brownsville	The University of Texas - Pan American
	<a href="#">Engineering (AS)</a>			
	Electronic Technology Specialist (CERT)			

**Local Employers**

<a href="#">Bio Chemical Laboratory</a>	<a href="#">Brownsville</a>	<a href="#">Lockheed Martin Corp</a>	<a href="#">Harlingen</a>
<a href="#">Climax Engineering</a>	<a href="#">Brownsville</a>	<a href="#">Blair Axiom Engineering</a>	<a href="#">Harlingen</a>
<a href="#">Corona Engineering &amp; Surveying</a>	<a href="#">Brownsville</a>	<a href="#">Casa Engineering</a>	<a href="#">Harlingen</a>
<a href="#">Hicks Oil &amp; Butane CO</a>	<a href="#">Brownsville</a>	<a href="#">Consolidated Electrical Distr</a>	<a href="#">Harlingen</a>
<a href="#">Kemet Electronics Corp</a>	<a href="#">Brownsville</a>	<a href="#">Lewis Electric Motors Inc</a>	<a href="#">Harlingen</a>

**Career Options**

(Specific Job Types)

- Electronics Technician
- Engineering Aide
- Instrument and Controls Technician (I & C Technician)
- Electronics Engineering Technician
- Refurbish Technician
- Relay Tester
- Test Technician, Technician
- Failure Analysis Technician (FA Technician)
- Results Technician

## Salary Ranges

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### Wages for Electrical and Electronic Engineering Technicians

Location	Pay Period	2012				
		10%	25%	Median	75%	90%
United States	Hourly	\$16.62	\$21.39	\$27.81	\$33.45	\$39.96
	Yearly	\$34,600	\$44,500	\$57,800	\$69,600	\$83,100
Texas	Hourly	\$16.26	\$20.47	\$27.14	\$33.09	\$37.46
	Yearly	\$33,800	\$42,600	\$56,500	\$68,800	\$77,900
Brownsville-Harlingen, TX MSA	Hourly	\$14.44	\$19.95	\$25.86	\$31.28	\$34.11
	Yearly	\$30,000	\$41,500	\$53,800	\$65,100	\$70,900

## Professional Associations linked to the Careers

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For information about general engineering education and career resources, visit

[American Society for Engineering Education](#)

[Institute of Electrical and Electronics Engineers](#)

[Technology Student Association](#)

For information about accredited programs, visit

[ABET](#)

## Sources

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The information provided in this document was collected from the following sources:

- Occupational Outlook Handbook (<http://www.bls.gov/ooh/>)
- O\*NET OnLine (<http://www.onetonline.org/>)
- Texas CARES (<http://www.texascaresonline.com/>)
- CareerOneStop (<http://www.careeronestop.org/>)



**Course Overview:** Planning, managing, and performing the processing of materials into intermediate or final products and related professional and technical support activities.

# Electrical and Electronics Engineering Technicians

**Career Goal (O\*NET Code):** (17-3023) - Electrical and electronic engineering technicians help engineers design and develop computers, communications equipment, medical monitoring devices, navigational equipment, and other electrical and electronic equipment. They often work in product evaluation and testing, using measuring and diagnostic devices to adjust, test, and repair equipment.

**Student Name:** \_\_\_\_\_

**Grade:** \_\_\_\_\_

**School:** \_\_\_\_\_

## SUGGESTED COURSEWORK

## EXTENDED LEARNING EXPERIENCES

Middle School	8th	HS Courses:	(Local districts may list high school credit courses here)	<p><b>Curricular Experiences:</b>  <a href="#">BEST Robotics, Inc</a>  <a href="#">FIRST High School Robotics Competition</a>  <a href="#">SkillsUSA</a>  <a href="#">Technology Student Association</a>                      TSTC Summer Technology Camps                      UTB Summer Robotics Camp</p> <p><b>Career Learning Experiences:</b>                      Apprenticeship                      Career Preparation                      Internship                      Job Shadowing</p>	<p><b>Extracurricular Experiences:</b>                      National Engineering Design Competition                      School Newspaper                      Student Government                      UIL Academic Competitions                      Yearbook</p> <p><b>Service Learning Experiences:</b>                      Campus Service Organizations                      Community Service Volunteer                      Habitat for Humanity                      Peer Mentoring / Peer Tutoring</p>	
High School	9th	<b>Core Courses:</b>	English I Algebra I or Geometry Biology			World Geography Languages other than English I Physical Education
		<b>Career-Related Electives:</b>	Principles of Manufacturing			
	10th	<b>Core Courses:</b>	English II Geometry or Algebra II Chemistry			World History Languages other than English II
		<b>Career-Related Electives:</b>	Precision Metal Manufacturing or Welding			
	11th	<b>Core Courses:</b>	English III Algebra II or Pre-Calculus Physics/Principles of Technology I			United States History Professional Communications Languages other than English III
		<b>Career-Related Electives:</b>	Advanced Precision Metal Manufacturing or Advanced Welding			
12th	<b>Core Courses:</b>	English IV Precalculus/Engineering Mathematics/Calculus Engineering Design and Problem Solving	Government/Economics Fine Arts	<p><b>COLLEGE CREDIT OPPORTUNITIES -- High School</b></p> <p>Students should take Advanced Placement (AP), International Baccalaureate (IB), dual credit, Advanced Technical Credit (ATC), or locally articulated credit courses, if possible. List those courses that count for college credit on your campus.</p>		
	<b>Career-Related Electives:</b>	Practicum in Manufacturing or Problems and Solutions or Career Preparation I				

**How to Become an Electrical and Electronics Engineering Technician**  
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**Career Options:**

**Professional Associations:**  
[American Society for Engineering Education](#)  
[Institute of Electrical and Electronics Engineers](#)  
[Technology Student Association](#)

Postsecondary	<a href="#">Texas Southmost College</a> <a href="#">South Texas College</a> <a href="#">Texas State Technical College</a>		
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		<a href="#">University of Texas at Brownsville</a>	<a href="#">University of Texas - Pan American</a>

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- Failure Analysis Technician (FA Technician)

Students may select other elective courses for personal enrichment purposes.

This plan of study serves as a guide, along with other career planning materials, for pursuing a career path and is based on the most recent information as of 2012. All plans meet high school graduation requirements as well as college entrance requirements.