



Electrical and Electronic Engineering Technicians

Cluster Overview: Planning, managing, and providing scientific research and professional and technical services including laboratory and testing services, and research and development services.

Career Goal (O*NET Code): (15-1041) - 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>Curricular Experiences***:</p> <ul style="list-style-type: none"> BEST Robotics, Inc. FIRST Robotics Competition Project Lead the Way Skills USA Technology Student Association The Infinity Project <p>Career Learning Experiences:</p> <ul style="list-style-type: none"> Career Preparation Job Shadowing Internship 	<p>Extracurricular Experiences:</p> <ul style="list-style-type: none"> Destination ImagiNation International Bridge Building Contest Marine Advanced Technology Education Center National Engineering Design Competition UIL Academic Competitions VEX Robotics Competition <p>Service Learning Experiences:</p> <ul style="list-style-type: none"> Campus Service Organizations Community Service Volunteer Peer Mentoring/Peer Tutoring
	High School	9th	Courses*:	English I Algebra I or Geometry Biology		
Career-Related Electives:			Concepts of Engineering & Technology			
10th		Courses:	English II Geometry or Algebra II Chemistry	World History Foreign Language II Elective		
		Career-Related Electives:	Engineering Design & Presentation			
11th		Core Courses:	English III Algebra II or Pre-Calculus Physics	United States History Foreign Language III ** Professional Communications or Speech		
		Career-Related Electives:	Advanced Engineering Design & Presentation			
12th	Core Courses:	English IV Pre-Calculus or Calculus 4th Science	Government/Economics Elective Elective			
	Career-Related Electives:	Practicum in STEM				
<p>How to Become an Electrical and Electronic Engineering Technicians Electrical and electronic engineering technicians typically need an associate's degree.</p>					<p>Carrer Options (Sample of reported job titles)</p> <ul style="list-style-type: none"> • Engineering Technician • Electronics Technician • Instrument and Controls Technician (I & C Technician) • Test Technician • Electrical Engineering Technician • Relay Tester • Electrical Technician • Results Technician • Test Specialist • Electronics Engineering Technician • Refurbish Technician (Refurb Tech) • Electronics Test Technician • Engineering Aide • Failure Analysis Technician (FA Technician) 	<p>Professional Associations:</p> <ul style="list-style-type: none"> • American Society for Engineering Education • Institute of Electrical and Electronics Engineers • Technology Student Association • ABET
Postsecondary		Texas Southmost College	South Texas College	Texas State Technical College		
		Electronic Technology Specialist (CERT)				
		The University of Texas at Brownsville	The University of Texas - Pan American			

* Students must meet local & state high school graduation requirements. ** Required course for the Distinguished Graduation Plan (in addition to other measures). *** Based on campus availability. 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 2009. All plans meet high school graduation requirements as well as college entrance requirements.



Electrical and Electronic Engineering Technicians

TEA Industry Cluster	STEM
SOC Code	17-3023
Identified by	TWC LMCI; Tech Prep Occupations
Projected Growth (2018)	0 %
BISD Magnet School Available	Yes

Source: Demand Occupations by Cluster, updated June 27, 2012

Description

What Electrical and Electronic 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 Electronic Engineering Technicians

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

Education

Programs for electrical and electronic engineering technicians usually lead to an associate's degree in electrical or electronic engineering technology. Vocational–technical schools include 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. These technicians must write reports on onsite construction, the results of testing, or problems they find when carrying out designs. Their writing must be clear and well organized so that the engineers they work with can understand the reports.

Texas Southmost College	South Texas College	Texas State Technical College	University of Texas at Brownsville	University of Texas - Pan American
	Electronic Technology Specialist (CERT)			

Local Employers

A & H Enterprises	Brownsville	J&H Surveying CO	Harlingen
Alpha Omega	Brownsville	Lewis Electric Motors Inc	Harlingen
Boeing CO	Harlingen	Montemayor Hansen Garcia/Assoc	Brownsville
Coastal Security & Protection	Los Fresnos	Office Communications Systems	Harlingen
Electrical Automation Supply	Brownsville	System Engineering & Atmtn	Harlingen

Career Options

(Specific Job Types)

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

Salary Ranges

Location	Pay Period	2011				
		10%	25%	Median	75%	90%
United States	Hourly	\$16.36	\$21.04	\$27.36	\$33.03	\$39.30
	Yearly	\$34,000	\$43,800	\$56,900	\$68,700	\$81,700
Texas	Hourly	\$16.09	\$20.59	\$27.04	\$32.81	\$36.97
	Yearly	\$33,500	\$42,800	\$56,200	\$68,200	\$76,900

Professional Associations linked to the Careers

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

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/>)