

Telecommunications Specialist

STEM

TEA Industry Cluster	STEM
SOC Code	49-9052
Identified by	TWC LMCI
Projected Growth (2018)	17 %
BISD Magnet School Available	Yes

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

Description

What Telecommunications Equipment Installers and Repairers Do

Telecommunications equipment installers and repairers, also known as *telecom technicians*, set up and maintain devices or equipment that carry communications signals, connect to telephone lines, or access the Internet.

Duties

Telecommunications equipment installers and repairers typically do the following:

- Install communications equipment in offices, private homes, and buildings that are under construction
- Set up, rearrange, or replace routing and dialing equipment
- Perform equipment maintenance, such as inspecting wiring and phone jacks
- Repair or replace faulty, damaged, or malfunctioning parts
- Test repaired, newly installed, or updated equipment to ensure that it works properly
- Adjust or modify equipment to improve its performance
- Demonstrate and explain the use of equipment to customers

Telephone, computer, and cable telecommunications systems rely on sophisticated equipment to process and transmit vast amounts of information. Telecommunications equipment installers and repairers—often called *telecom technicians*—install and service this equipment.

To inspect equipment and diagnose problems, telecom technicians use many different tools. For instance, to locate distortions in signals, they may use spectrum analyzers and polarity probes. They also commonly use handtools, including screwdrivers and pliers, to take equipment apart and repair it. In addition, telecom technicians frequently install and update software and programs for some devices.

Equipment installers who work mainly outdoors are classified as telecommunications line installers and repairers. For more information, see the profile on [line installers and repairers](#).

Telecom technicians do many tasks, often depending on their specialization and where they work. The following are examples of the types of telecommunications equipment installers and repairers:

Central office technicians set up and maintain switches, routers, fiber-optic cables, and other equipment at switching hubs, called central offices. These hubs send, process, and amplify data from thousands of telephones, Internet connections, and other sources. Increasingly reliable, self-monitoring switches alert central office repairers to malfunctions, and might allow repairers to correct problems remotely.

Headend technicians do almost the same work as central office installers and repairers, but work at distribution centers for cable and television companies, called headends.

PBX installers and repairers set up and service private branch exchange—or PBX—switchboards. This equipment relays incoming, outgoing, and interoffice telephone calls at a single location. Some systems use voiceover Internet protocol—or VoIP—technology, which functions like PBX systems, but uses computers to run Internet access, network applications, and telephone communications.

PBX installers connect telecom equipment to communications cables. They install frames, supports, power systems, alarms, and telephone sets. They test the connections to ensure that adequate power is available and communication links work properly. Because switches and switchboards are now computerized, PBX installers often need to also install software or program the equipment to provide specific features.

Station installers and repairers—sometimes known as home installers and repairers—set up and repair telecommunications equipment in customers' homes and businesses. They install telephone, Internet, and cable television services, often setting up modems and other computer hardware and software. When customers have problems, station repairers test the customer's lines to determine if the problem is inside or outside. If the problem is inside, they try to repair it. If the problem is outside, they refer the repair to line repairers.

Training Opportunities Linked to Those Jobs

(Degree Types and Colleges/Universities)

How to Become a Telecommunications Equipment Installer and Repairer

Postsecondary education in electronics and computer technology is important for telecommunications equipment technicians. For more complex work, a 4-year degree may be the best preparation. Industry certification is required for some positions.

Education

To keep pace with rapidly expanding telecommunications technology, telecom technicians increasingly need advanced training. As a result, many employers prefer candidates with formal postsecondary education in electronics and a familiarity with computers.

Telecom technicians may get training through a certificate or 2-year associate's degree program in electronics repair, computer science, or related subjects. Equipment and software manufacturers also offer educational and training programs on specific products.

Central office technicians, headend technicians, and those working with commercial communications systems are increasingly expected to have a bachelor's degree. By contrast, educational requirements are generally lower for workers such as station installers and repairers.

Because technology in this field evolves quickly, telecom technicians must continue to educate themselves over the course of their careers. They may attend manufacturers' training classes, read equipment manuals, or get hands-on experience with the latest equipment.

Training

Most telecom technicians complete some on-the-job training. Generally, this training involves informal hands-on work with an experienced technician. Training may last several weeks to a few months. Workers who have completed postsecondary training often require less on-the-job instruction than those who have not.

Large companies also may send new employees to training sessions to learn about new equipment, procedures, and technology offered by equipment manufacturers or industry organizations.

Certification

Some technicians must be certified to do certain tasks or to work on specific equipment. Certification requirements vary by jurisdiction, employer and specialization.

Organizations such as the [Society of Cable and Telecommunications Engineers](#) and the [Telecommunications Industry Association](#) offer certifications for telecom technicians. Some manufacturers also provide certifications for working with specific equipment.

Advancement

Experienced repairers with advanced training may become specialists or troubleshooters who help other repairers diagnose difficult problems.

Because of their familiarity with equipment, repairers are particularly well qualified to become manufacturers' sales workers.

Home installers may advance to wiring computer networks or working as a central office installer and repairer.

Important Qualities

Bookkeeping skills. When working at clients' locations, telecom technicians must often track hours worked, parts used, and bills collected.

Color vision. Installers and repairers must be able to distinguish different colors because the wires they work with are color coded.

Customer-service skills. Many telecom technicians work in customers' homes and offices, so it is important that they be friendly and polite. Also, they often must explain how to maintain and operate complicated equipment to people who have little or no technical knowledge.

Manual dexterity. Many telecom technician tasks, such as repairing small devices, connecting or attaching components, and using handtools, require a steady hand and good hand–eye coordination.

Technical skills. Telecom technicians frequently work with computers, sophisticated diagnostic equipment, and specialized hardware. Therefore, they must be familiar with these devices, their internal parts, and the appropriate tools needed to use, install, or fix them.

Troubleshooting skills. As telecommunications equipment becomes more sophisticated, malfunctions become more difficult to identify. As a result, technicians must be able to devise solutions to complex problems that are not immediately apparent.

Texas Southmost College	South Texas College	Texas State Technical College	University of Texas at Brownsville	University of Texas - Pan American
	Telecommunications Technology (CERT)	Telecommunications Technology (CERT)		
	Electronic and Computer Maintenance Technology (AAS)	Telecommunications Technology (AAS)		

Local Employers

A & B Electric & Plumbing	Brownsville	Janitrol Distributors	Harlingen
Action Air Inc	Brownsville	Pike Electric Corp	Harlingen
American Tv & Appliances	Brownsville	Rick's Plumbing	Brownsville
Cellular Solutions	Brownsville	Ricoy Computer Svc	Brownsville
Digital Communications	Harlingen	Security International Inc	Harlingen

Career Options

(Specific Job Types)

- Combination Technician
- Service Technician
- Installation and Repair Technician (I & R Technician)
- Cable Splicer
- Cable Technician
- Installer
- Outside Plant Technician
- Construction Technician
- Construction Worker
- Lineman

Salary Ranges

Wages for Telecommunications Line Installers and Repairers

Location	Pay Period	2011				
		10%	25%	Median	75%	90%
United States	Hourly	\$13.21	\$17.00	\$24.87	\$32.37	\$36.01
	Yearly	\$27,500	\$35,400	\$51,700	\$67,300	\$74,900
Texas	Hourly	\$12.83	\$16.06	\$22.59	\$30.89	\$34.53
	Yearly	\$26,700	\$33,400	\$47,000	\$64,300	\$71,800
Brownsville-Harlingen, TX MSA	Hourly	\$11.02	\$13.16	\$16.25	\$29.53	\$34.10
	Yearly	\$22,900	\$27,400	\$33,800	\$61,400	\$70,900
McAllen-Edinburg-Mission, TX MSA	Hourly	\$8.91	\$10.77	\$17.33	\$31.49	\$34.72
	Yearly	\$18,500	\$22,400	\$36,000	\$65,500	\$72,200

Professional Associations linked to the Careers

For information on career, training and certification opportunities, visit

[International Brotherhood of Electrical Workers](#)

[Communications Workers of America](#)

[National Coalition for Telecommunication Education and Learning](#)

[Society of Cable Telecommunications Engineers](#)

[Telecommunications Industry Association](#)

Sources

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

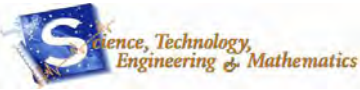
- Occupational Outlook Handbook (<http://www.bls.gov/ooh/>)
- O*NET OnLine (<http://www.onetonline.org/>)
- Texas CARES (<http://www.texascaresonline.com/>)
- CareerOneStop (<http://www.careeronestop.org/>)

Local Employers

A & B Electric & Plumbing	Brownsville	Janitrol Distributors	Harlingen
A & H Enterprises	Brownsville	Jefferson Electric Inc	Brownsville
A A Puente Plumbing & Repairs	Combes	Jim Ginther Wholesale Ac	Harlingen
A Square Mechanical	Brownsville	Jorably's	Brownsville
Acs	Brownsville	K K Busters Plumbing	Brownsville
Action Air Inc	Brownsville	Kelteck Heating & Cooling Inc	Harlingen
Add-A-Line Communications	Olmito	L O Gonzalez Central Air & Htg	Rio Hondo

Advanced Air Conditioning CO	Harlingen	Lewis Electric Motors Inc	Harlingen
Advanced Cooling	LA Feria	Lopez Electric Svc	Brownsville
Affinia Inc	Brownsville	Marathon Electric	Brownsville
Air Control A/C & Heating	Harlingen	Marine Electric Svc	Port Isabel
Airs CO	Harlingen	Medical Third Party Resources	Harlingen
Alfa Electric	Brownsville	Metro Cable Svc Inc	Harlingen
Alfaro Electric	Brownsville	Metro Electric Inc	Brownsville
American Radio Systems	Brownsville	Metro Electric Inc	Harlingen
American Tv & Appliances	Brownsville	Mota's Refrigeration	Brownsville
Amf Mechanical Corp	Brownsville	Mpc	Harlingen
Antique Street Lamps	Brownsville	Mr Rooter Plumbing & Septic	Brownsville
Atkinson Electric	Brownsville	Muzak Business Music	Harlingen
Ballenger Construction CO	Harlingen	Norman's Air Conditioning	Brownsville
Benny's Aire Inc	Harlingen	Page Z	Harlingen
Borchers Electric	Harlingen	Patx Inc	Brownsville
Brewer Office Systems	LA Feria	Pesa Sales CO	Brownsville
Bud's Quality Plumbing	Harlingen	Pike Electric Corp	Harlingen
Burton Bearing & Ind Inc	Brownsville	Pipe's Plumbing	Harlingen
Bush Supply CO	Harlingen	Pizana Plumbing CO	Brownsville
C 3	Harlingen	Porta Systems Corp	Brownsville
Carnesi CO Inc	Brownsville	Professional Plumbing	Harlingen
Cellular One	Brownsville	Puente Fire Extinguisher Inc	Olmito
Cellular One	Harlingen	Quality Electric Primera	Harlingen
Cellular One	South Padre Island	Quick Compute	Harlingen
Cellular Solutions	Brownsville	Ramos Electric	Brownsville
Central Air & Heating Svc Inc	Harlingen	Ranco Inc	Brownsville
Champion Wireless	Brownsville	Reliable Electric	Port Isabel
Chubb Security Systems Inc	Brownsville	Rgblaw.com	Harlingen
Cingular Wireless	Brownsville	Rgv Wireless Comm Number	Brownsville
Cingular Wireless	Brownsville	Rgv Wireless Communication	Brownsville
Cingular Wireless	Harlingen	Rick's Plumbing	Brownsville
Cingular Wireless	Harlingen	Ricoy Computer Svc	Brownsville
Cingular Wireless	Harlingen	Rio Mechanical Inc	Harlingen
Circle Industries Inc	Harlingen	Rios Air Conditioning	Brownsville
Coastal Mechanical Svc Ltd	San Benito	Roman's Plumbing	Harlingen
Coastal Security & Protection	Los Fresnos	Royal Refrigeration & Air Cond	Brownsville
Commercial Electric	Harlingen	Ruben's Electric	Harlingen
Communications Systems Inc	Harlingen	Sais Commercial Systems	Brownsville
Community Phone Book	Harlingen	Schumacher Electric	Brownsville
Computer Network Group	Harlingen	Schumacher Electric Corp	Brownsville
Consolidated Electrical Distr	Harlingen	Schumacher Electric Corp	Brownsville
Contract Service & Supply Inc	South Padre Island	Security International Inc	Harlingen
Copy Fax	Harlingen	Serv-All Sales & Svc	Brownsville
Copyfax	Harlingen	Shorty & Sons Electric	Brownsville
Cpu Data Inc	Harlingen	Snyder Air Conditioning	Harlingen
Cto Inc	Harlingen	Snyder Commercial Svc CO	Harlingen
D I Longoria Svc CO	Brownsville	Sol Communications	Brownsville
Data Logic Consulting Inc	Harlingen	South Texas Parks	Harlingen
Dave's Service Tech	Brownsville	South Texas Security & Alarms	Harlingen
Dealers Electrical Supply	Harlingen	Southwind Media	Harlingen
Diamond Telco	Brownsville	Spellman High Voltage Elec	Brownsville

Digital Communications	Harlingen	Spellman High Voltage Elect	Brownsville
Digital Quest	Brownsville	Sprint	Brownsville
Diviaene	Olmito	Sprint	Brownsville
Don Brown Business Systems	Harlingen	Sprint	Harlingen
Dps Alarms	Brownsville	Sprint	Harlingen
E Is Inc	Harlingen	Sun Tex Mechanical	San Benito
Eagles II Svc	Brownsville	Suncoast Air Cond & Refrig	Harlingen
Eba Corp	Brownsville	Sunwave Air Conditioning & Htg	Olmito
El Mundo Cellular	Brownsville	T-Mobile	Brownsville
Electric Fixture Supply Inc	Brownsville	T-Mobile	Brownsville
Frontier Communications	Harlingen	T-Mobile	Harlingen
Frontier Communications	Harlingen	Telcor Electronics	Brownsville
Gallegos Electric Inc	Brownsville	Tele-Care Communications	Brownsville
Garcia's Electric	Brownsville	Temp Control Inc	Brownsville
George Cunningham CO Inc	Harlingen	Texas Security Fence	Brownsville
Global Electric	Brownsville	Toromont Energy Systems	Brownsville
Gomez Basilio	Brownsville	Tropical Air Conditioning CO	Los Fresnos
Gonzalez Electric & Plumbing	Harlingen	Two Seasons Air Conditioning	Brownsville
Gonzalez Plumbing	Brownsville	U Computers	Brownsville
Graham James	Harlingen	USA Wireless	Brownsville
Gulf Coast Mechanical Contrs	LA Feria	USA Wireless	Brownsville
H & S Computer Svc	Harlingen	Valley Radio Ctr	Harlingen
Hamilton Electric	San Benito	Valley Rio Enterprises Inc	Brownsville
Harlingen Plumbing	Harlingen	Valley Weathermakers	Harlingen
Harlingen Plumbing	Harlingen	Verizon Wireless	Brownsville
Hess Air Inc	Harlingen	Verizon Wireless	Harlingen
Hinotel	Harlingen	Viking Cooling & Heating	Brownsville
Holt Power Systems	Brownsville	Villarreal Manuel	Harlingen
Home Audio Systems	Harlingen	Western Wireless	South Padre Island
Houston Stafford Electric Inc	LA Feria	White Electric	Harlingen
Hurley's Dock Mgmt & Constr CO	Brownsville	Williams Communications Group	Harlingen
Imperial Electric Motor Svc	Brownsville	Wireless Express	Brownsville
Innovative Electrical Tech	Harlingen	Wireless Toyz	Brownsville
International Wireless	Brownsville	Worldwide Digital	Brownsville
J & L Commercial & Residential	Port Isabel	X Cell Communications	Port Isabel
J D Electric	Harlingen	Z Wireless	Brownsville
J R's Electric	Harlingen		



Telecommunication Specialist

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): (49-9052) - Telecommunications equipment installers and repairers, also known as telecom technicians, set up and maintain devices or equipment that carry communications signals, connect to telephone lines, or access the Internet.

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> <p>BEST Robotics, Inc. FIRST Robotics Competition Project Lead the Way Skills USA Technology Student Association The Infinity Project</p>	<p>Extracurricular Experiences:</p> <p>Destination ImagiNation International Bridge Building Contest Marine Advanced Technology Education Center National Engineering Design Competition UIL Academic Competitions VEX Robotics Competition</p>
	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 a Telecommunications Equipment Installer and Repairer</p> <p>Postsecondary education in electronics and computer technology is important for telecommunications equipment technicians. For more complex work, a 4-year degree may be the best preparation. Industry certification is required for some positions.</p>					<p>COLLEGE CREDIT OPPORTUNITIES -- High School</p> <p>Students should take Advanced Placement (AP), International Baccalaureate (IB), dual credit, Advanced Technical Credit (ATC), or locally articulated courses (Tech Prep), if possible. List those courses that count for college credit on your campus.</p>	
Postsecondary	<p>Texas Southmost College South Texas College Texas State Technical College</p>			<p>Professional Associations:</p> <ul style="list-style-type: none"> • International Brotherhood of Electrical Workers • Communications Workers of America • National Coalition for Telecommunication Education and Learning • Society of Cable Telecommunications Engineers • Telecommunications Industry Association 		
			<p>Telecommunications Technology (CERT) Telecommunications Technology (CERT)</p> <p>Electronic and Computer Maintenance Technology (AAS) Telecommunications Technology (AAS)</p>	<p>Career Options:</p> <ul style="list-style-type: none"> • Combination Technician • Service Technician • Installation and Repair Technician (I & R Technician) • Cable Splicer • Cable Technician • Installer • Outside Plant Technician • Construction Technician • Construction Worker 		
			<p>The University of Texas at Brownsville The University of Texas - Pan American</p>	<ul style="list-style-type: none"> • Lineman 		
						<p>Career Options:</p>

* 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.