

## Description

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### What Surveying and Mapping Technicians Do

Surveying and mapping technicians assist surveyors, cartographers, and photogrammetrists. Together, they collect data and make maps of the earth's surface. Surveying technicians visit sites to take measurements of the land. Mapping technicians use geographic data to create maps.

### Duties

- Operate surveying instruments, such as electronic distance-measuring equipment, to collect data on a location
- Visit sites to record survey measurements and other descriptive data
- Search for previous survey points, such as old stone markers
- Set out stakes and marks to conduct the survey, and then retrieve them
- Enter the data from surveying instruments into computers, either in the field or in an office
- Select needed information from relevant databases to create maps
- Produce maps showing boundaries, water locations, elevation, and other features of the terrain
- Update maps to ensure accuracy
- Assist photogrammetrists by laying out aerial photographs in sequence to identify areas not captured by aerial photography

### Training Opportunities Linked to Those Jobs

#### (Degree Types and Colleges/Universities)

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### How to Become a Surveying and Mapping Technician

Surveying technicians usually need only a high school diploma. However, mapping technicians often need formal education after high school to study advances in technology such as GIS.

### Education and Training

Surveying technicians generally need a high school diploma, but some have postsecondary training in survey technology. Postsecondary training is more common among mapping technicians. An associate's degree or bachelor's degree in a relevant field, such as geomatics, is beneficial for these workers.

High school students interested in working as a surveying or mapping technician should take courses in algebra, geometry, trigonometry, drafting, mechanical drawing, and computer science. Knowledge of these subjects will help in finding a job and in advancing.

Surveying technicians learn their job duties under the supervision of a surveyor or a surveying party chief. Initially, surveying technicians handle simple tasks, such as placing markers on land and entering data into computers. With experience, they help to decide where and how to measure the land. Eventually, technicians can get an apprenticeship or an associate's degree so that they can develop skills based on math, drafting, and technical drawing.

### Certification

Certification is becoming more common because of the growing need to make sure that data are of sufficient quality to be useful to other professionals. The [American Society for Photogrammetry and Remote Sensing](#) (ASPRS) offers certification for photogrammetric technologists, remote-sensing technologists, and geographic information system/land information system (GIS/LIS) technologists. The [National Society of Professional Surveyors](#) offers the Certified Survey Technician credential.

### Advancement

With experience and formal training in surveying, surveying technicians may advance to senior survey technician, then to party chief. Depending on state licensing requirements, they can become licensed surveyors.

## Important Qualities

**Decision-making skills.** As assistants to surveyors and cartographers, surveying technicians must be able to exercise some independent judgment in the field because they may be working away from team members and need to meet tight deadlines.

**Listening skills.** Surveying technicians work outdoors and must communicate with party chiefs and other team members across distances. Following spoken instructions from the party chief is crucial for saving time and preventing errors.

**Stamina.** Surveying technicians usually work outdoors, often in rugged terrain. Physical fitness is necessary to carry equipment and to stand most of the day.

**Teamwork.** Survey and mapmaking technicians work as part of a team, so they must be able to work well with other people.

**Technical skills.** Surveying and mapping technicians need to operate specialized equipment. They must be precise and accurate in their work.

**Troubleshooting skills.** Surveying and mapping technicians must be able to identify and fix problems with their equipment. Also, because party chiefs rely on them, they must note potential problems with the day's work plan.

## 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="#">Associated of Science in Engineering</a>		<a href="#">Bachelors of Science in Engineering Physics</a>	<a href="#">Bachelors of Science in Civil Engineering</a>

## Local Employers

<a href="#">Amaya Surveying CO</a>	Brownsville	<a href="#">J E Saenz &amp; Assoc Inc</a>	Brownsville
<a href="#">B &amp; B Svc</a>	La Feria	<a href="#">Mundo Engineering</a>	La Feria
<a href="#">Cornett Construction CO</a>	San Benito	<a href="#">Rios Surveying CO</a>	Dan Benito

## Career Options

(Specific Job Types)

- Mapping Technician
- Stereoplotter Operator
- Photogrammetric Compilation Specialist
- Photogrammetric Technician
- Computer Aided Design Technician
- Draftsman
- Hydrographic Surveyor
- Survey Party Chief
- Survey Technician
- Survey Crew Chief
- Instrument Man
- Engineering Assistant
- Chainman

## Salary Ranges

Wages for **Surveying and Mapping Technicians**

Location	Pay Period	2012				
		10%	25%	Median	75%	90%
United States	Hourly	\$11.62	\$14.83	\$19.07	\$25.34	\$31.67
	Yearly	\$24,200	\$30,800	\$39,700	\$52,700	\$65,900
Texas	Hourly	\$9.86	\$12.70	\$16.72	\$22.54	\$28.56

Location	Pay Period	2012				
		10%	25%	Median	75%	90%
	Yearly	\$20,500	\$26,400	\$34,800	\$46,900	\$59,400

### Professional Associations linked to the Careers

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For more information about surveying technicians, visit [American Congress on Surveying and Mapping](#)

For information about career opportunities, licensure requirements, and the surveying technician certification program, visit [National Society of Professional Surveyors](#)

For more information about photogrammetric technicians and geographic information system specialists, visit [American Society for Photogrammetry and Remote Sensing](#)

### 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/>)



# Surveying and Mapping 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):** (17-3031) - Surveying and mapping technicians assist surveyors, cartographers, and photogrammetrists. Together, they collect data and make maps of the earth's surface. Surveying technicians visit sites to take measurements of the land. Mapping technicians use geographic data to create maps.

**Student Name:** \_\_\_\_\_  
**Grade:** \_\_\_\_\_  
**School:** \_\_\_\_\_

## SUGGESTED COURSEWORK

## EXTENDED LEARNING EXPERIENCES

Middle School	8th	HS Courses:	(Local districts may list high school credit courses here)	<b>Curricular Experiences:</b> <a href="#">Camp SOAR-Aerospace Engineering-Texas A&amp;M University</a> <a href="#">Aerospace Academy-San Jacinto College</a> <a href="#">Project Lead the Way</a> <a href="#">Skills USA</a> <a href="#">Technology Student Association</a> <a href="#">The Infinity Project</a>	<b>Extracurricular Experiences:</b> Destination ImagiNation High School Students United with NASA International Bridge Building Contest Marine Advanced Technology Education Center National Engineering Design Competition UIL Academic Competitions Aerospace Summer Camps	
High School	9th	<b>Core Courses:</b>	English I Algebra I Biology			World Geography Languages other than English I Physical Education
		<b>Career-Related Electives:</b>	Introduction to Engineering Design			
	10th	<b>Core Courses:</b>	English II Geometry Chemistry			World History Languages other than English II
		<b>Career-Related Electives:</b>	Principles of Engineering			
	11th	<b>Core Courses:</b>	English III Algebra II Physics			United States History Professional Communications
	<b>Career-Related Electives:</b>	Digital Electronics				
	12th	<b>Core Courses:</b>	English IV Precalculus/Engineering Mathematics Engineering Design & Problem Solving	Government/Economics Fine Arts recommended	<b>Career Learning Experiences:</b> Career Preparation Job Shadowing Internship	<b>Service Learning Experiences:</b> Campus Service Organizations Community Service Volunteer Peer Mentoring/Peer Tutoring
	<b>Career-Related Electives:</b>	Engineering Design and Development, Civil Engineering Design and Architecture, Computer Integrated Manufacturing				

### COLLEGE CREDIT OPPORTUNITIES -- High School

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.

	<b>How to Become a Surveying and Mapping Technician</b> Surveying technicians usually need only a high school diploma. However, mapping technicians often need formal education after high school to study advances in technology such as GIS.			<b>Career Options:</b>	<b>Professional Associations:</b> <a href="#">American Congress on Surveying and Mapping</a> <a href="#">National Society of Professional Surveyors</a> <a href="#">American Society for Photogrammetry and Remote Sensing</a>
	<a href="#">Texas Southmost College</a> <a href="#">South Texas College</a> <a href="#">Texas State Technical College</a> <a href="#">Associated of Science in Engineering</a>				
Postsecondary	<a href="#">University of Texas at Brownsville</a> <a href="#">University of Texas - Pan American</a>			<ul style="list-style-type: none"> <li>• Mapping Technician</li> <li>• Stereoplotter Operator</li> <li>• Photogrammetric Compilation Specialist</li> <li>• Photogrammetric Technician</li> <li>• Computer Aided Design Technician</li> <li>• Draftsman</li> <li>• Hydrographic Surveyor</li> <li>• Survey Party Chief</li> <li>• Survey Technician</li> <li>• Survey Crew Chief</li> <li>• Instrument Man</li> <li>• Engineering Assistant</li> <li>• Chainman</li> </ul>	
		<a href="#">Bachelors of Science in Engineering Physics</a> <a href="#">Bachelors of Science in Civil Engineering</a>			

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.