



Chemical Technologist

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) - Chemical technicians use special instruments and techniques to help scientists and engineers in researching, developing, and producing chemical products and processes.

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***: BEST Robotics, Inc. FIRST Robotics Competition Project Lead the Way Skills USA Technology Student Association The Infinity Project</p> <p>Career Learning Experiences: Career Preparation Job Shadowing Internship</p> <p>Service Learning Experiences: Campus Service Organizations Community Service Volunteer Peer Mentoring/Peer Tutoring</p>	<p>Extracurricular Experiences: 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			World Geography Foreign Language I Physical Education or Athletics	<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>	
		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 Chemical Technician Chemical technicians need an associate's degree or 2 years of postsecondary training for most jobs. Most chemical technicians receive on-the-job training.</p>						<p>Carrer Options (Sample of reported job titles)</p>	<p>Professional Associations: • American Chemical Society</p>	
Postsecondary		Texas Southmost College	South Texas College			Texas State Technical College	<ul style="list-style-type: none"> • Laboratory Technician (Lab Tech) • Laboratory Analyst (Lab Analyst) • Research Technician • Analytical Lab Technician • Laboratory Tester (Lab Tester) • Research and Development Technician • Analytical Technician • Chemical Technician • Environmental Lab Technician • Formulation Technician 	
						Chemical-Environmental Technology (AAS)		
		The University of Texas at Brownsville		The University of Texas - Pan American				
		Chemistry (BS)		Chemistry (BS)				

* 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.



Chemical Technologist

TEA Industry Cluster	STEM
SOC Code	19-4031
Identified by	TWC LMCI; Tech Prep Occupations
Projected Growth (2018)	33 %
BISD Magnet School Available	No

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

Description

What Chemical Technicians Do

Chemical technicians use special instruments and techniques to help scientists and engineers in researching, developing, and producing chemical products and processes.

Duties

Chemical technicians typically do the following:

- Monitor chemical processes and test the quality of products to make sure that they meet standards and specifications
- Set up and maintain laboratory instruments and equipment
- Prepare chemical solutions for use in their work
- Conduct chemical and physical experiments, tests, and analyses for a variety of purposes, including research and development
- Compile and interpret results of tests and analyses
- Prepare technical reports, graphs, and charts, and give presentations that summarize their results

Most chemical technicians work on teams. Typically, they are supervised by chemists or chemical engineers who direct their work and evaluate their results. For example, some chemical technicians help chemists and other scientists develop new medicines. Others help chemical engineers develop more efficient production processes.

Chemical technicians' duties and titles often depend on where they work. The following are the two main types of chemical technicians:

Laboratory technicians typically help scientists conduct experiments and analyses. For example, they prepare chemical solutions, test products for quality and performance, and analyze compounds produced through complex chemical processes. Other laboratory technicians analyze samples of air and water to monitor pollution levels. Laboratory technicians usually set up and maintain laboratory equipment and instruments.

Processing technicians monitor the quality of products and processes at chemical manufacturing facilities. For example, they adjust processing equipment to improve production efficiency and output. They collect samples from production batches, which then are tested for impurities and other defects. Processing technicians also test product packaging to make sure it is well designed, will hold up well, and will be good for the environment.

Training Opportunities Linked to Those Jobs

(Degree Types and Colleges/Universities)

How to Become a Chemical Technician

Chemical technicians need an associate's degree or 2 years of postsecondary training for most jobs. Most chemical technicians receive on-the-job training.

Education

For most jobs, chemical technicians need an associate's degree in applied science or chemical technology or 2 years of postsecondary training.

Many technical and community colleges offer programs in applied sciences or chemical technology. Students typically take classes in mathematics, physics, and biology in addition to chemistry courses. Coursework in statistics and computer science is also useful because technicians routinely do data analysis and modeling.

One of the most important aspects of any degree program is laboratory time. Laboratory coursework provides students with hands-on experience in conducting experiments and using various instruments and techniques properly. Many schools also offer internships and cooperative-education programs that help students gain employment experience while attending school. That experience can enhance students' job prospects.

Important Qualities

Analytical skills. Chemical technicians must be able to conduct scientific experiments with accuracy and precision.

Critical-thinking skills. Chemical technicians reach their conclusions through sound reasoning and judgment. They also must be able to evaluate the work of others.

Interpersonal skills. Chemical technicians must be able to work well with others as part of a team, because they often work with scientists, engineers, and other technicians.

Observation skills. Chemical technicians must carefully monitor chemical experiments and processes. They must keep complete records of their work, including conditions, procedures, and results.

Speaking skills. Chemical technicians must explain their work to scientists and engineers and to workers who may not have a technical background.

Technical skills. Chemical technicians must be able to set up and operate sophisticated equipment and instruments. They also may need to adjust the equipment to ensure that experiments and processes are running properly.

Time-management skills. Chemical technicians often work on multiple tasks and projects at the same time and must be able to prioritize their assignments.

Writing skills. Chemical technicians must write reports that summarize their findings and results.

Training

Most chemical technicians receive on-the-job training. Typically, experienced technicians teach new employees proper methods and procedures for conducting experiments and operating equipment. Length of training varies with the new employee's level of experience and education and the industry the worker is employed in.

Advancement

Technicians who have a bachelor's degree are often able to advance to positions as chemists and chemical engineers.

Texas Southmost College	South Texas College	Texas State Technical College	The University of Texas at Brownsville	The University of Texas - Pan American
		Chemical-Environmental Technology (AAS)	Chemistry (BS)	Chemistry (BS)

Local Employers

Employer	City	Employer	City
Acetylene Oxygen CO	Harlingen	Intertek Testing Svc	Brownsville
Aloe Laboratories	Harlingen	L & S Supervisory Engrg Inc	Brownsville
Brown Leal & Assoc	Harlingen	L A Lubricants Llc	LA Feria
Ecological Services Intl Inc	Los Fresnos	Rike-Ogden-Figueroa Architects	Harlingen
Homeland Surveying CO	Brownsville	University-TX Costal Stds Lab	South Padre Island

Career Options

(Specific Job Types)

- Laboratory Technician (Lab Tech)
- Laboratory Analyst (Lab Analyst)
- Research Technician
- Analytical Lab Technician
- Laboratory Tester (Lab Tester)
- Research and Development Technician
- Analytical Technician
- Chemical Technician
- Environmental Lab Technician
- Formulation Technician

Salary Ranges

Location	Pay Period	2011				
		10%	25%	Median	75%	90%
United States	Hourly	\$12.50	\$15.66	\$20.23	\$26.43	\$32.86
	Yearly	\$26,000	\$32,600	\$42,100	\$55,000	\$68,300
Texas	Hourly	\$12.41	\$16.61	\$24.95	\$32.35	\$36.08
	Yearly	\$25,800	\$34,500	\$51,900	\$67,300	\$75,000

Professional Associations linked to the Careers

For more information about chemical technicians, visit

[American Chemical Society](#)

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/>)