



## Lay-Out Workers, Metal and Plastic

SOC Code 51-4192 • Projected Growth (2020) 0 %

### Description

---

#### What Metal and Plastic Lay-Out Workers Do

Metal and plastic machine workers set up and operate machines that cut, shape, and form metal and plastic materials or pieces.

#### Duties

Metal and plastic machine workers typically do the following:

- Set up machines and monitor them for unusual sound or vibration
- Lift material onto machines, manually or with a hoist
- Operate metal or plastic molding, casting, or coremaking machines
- Adjust the machines' speed and other settings
- Adjust cutting machine settings to account for irregularities
- Stop machines and remove finished products
- Test and measure finished products
- Remove and replace dull cutting tools
- Document production numbers in a computer database

#### Training Opportunities Linked to Those Jobs

(Degree Types and Colleges/Universities)

---

#### How to Become a Lay-Out Worker, Metal and Plastic

A few weeks of on-the-job training are enough for most workers to learn basic machine operations, but 1 year or more is required to become highly skilled.

#### Education and Training

For jobs as machine setters, operators, and tenders, employers generally prefer workers who have a high school diploma. Those interested in this occupation can improve their employment opportunities by completing high school courses in shop and blueprint reading and by gaining a working knowledge of the properties of metals and plastics. A solid math background, including courses in algebra, geometry, trigonometry, and basic statistics, also is useful, along with experience working with computers.

Some community colleges and other schools offer courses and certificate programs in operating metal and plastics machines. Machine operator trainees usually begin by watching and helping experienced workers on the job, often through informal apprenticeships. Under supervision, they may start by supplying materials, starting and stopping the machines, or removing finished products from it. Then they advance to more difficult tasks that operators perform, such as adjusting feed speeds, changing cutting tools, or inspecting a finished product for defects. Eventually, some develop the skills and experience to set up machines and help newer operators.

It is largely the complexity of the equipment that determines the time required to become an operator. Most operators learn the basic machine operations and functions in a few weeks, but they may need a year or more to become skilled operators or to advance to the more highly skilled job of setter.

In addition to providing on-the-job training, employers may pay for some machine operators to attend classes. Other employers prefer to hire workers who have completed or are enrolled in a training program.

As the manufacturing process continues to advance with computerized machinery, knowledge of computer-aided design (CAD), computer-aided manufacturing (CAM), and computer numerically controlled (CNC) machines also can be helpful.

#### Certification

A growing number of employers prefer that applicants become certified. Certification can show competence and professionalism and can be helpful for advancement. The [National Institute for Metalworking Skills](#) (NIMS) has developed skills standards in 24 operational areas and offers 52 skills certifications.

The [Fabricators & Manufacturers Association International](#) also has developed a Precision Sheet Metal Operator (PSMO) certification program.

### Advancement

Advancement usually includes higher pay and a wider range of responsibilities. With experience and expertise, workers can become trainees for more highly skilled positions. For example, it is common for machine operators to move into setup or machinery maintenance positions. Setup workers may move into maintenance, machinist, or tool and die maker roles. For more information, see the profiles on [industrial machinery mechanics and maintenance workers](#), [millwrights](#), and [machinists and tool and die makers](#).

Skilled workers with good communication and analytical skills may move into supervisory positions.

### Important Qualities

**Computer skills.** Modern technology systems require that metal and plastic machine workers be able to use programmable devices, computers, and robots on the factory floor.

**Mechanical skills.** Although modern technology has brought a lot of computer-based systems to this occupation, metal and plastic machine workers still set up and operate machinery. They must be comfortable working with machines and have a good understanding of how the machines and all their parts work.

**Physical strength.** Although most material handling is done using automated systems or is mechanically aided, some metal and plastic machine workers must be strong enough to guide and load heavy and bulky parts and materials into machines.

**Stamina.** Metal and plastic machine workers must be able to stand for long periods and perform repetitive work.

### 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="#">Precision Manufacturing Technology (CERT)</a>	<a href="#">Industrial Systems Technology (CERT)</a>		
	<a href="#">Precision Manufacturing Technology (AAS)</a>	<a href="#">Precision Manufacturing Technology - Mold, Tool &amp; Die Making (AAS)</a>		

### Local Employers

<a href="#">Brownsville Sheet Metal Works</a>	<a href="#">Brownsville</a>	<a href="#">Amfels Inc</a>	<a href="#">Brownsville</a>
<a href="#">C S Construction Specialties</a>	<a href="#">Brownsville</a>	<a href="#">Fox Valley Molding Inc</a>	<a href="#">Harlingen</a>
<a href="#">Door &amp; Window Shop</a>	<a href="#">Brownsville</a>	<a href="#">International Sales &amp; Mfg</a>	<a href="#">Harlingen</a>
<a href="#">Therma-Tru Corp</a>	<a href="#">Brownsville</a>	<a href="#">Tri-Pak Machinery Inc</a>	<a href="#">Harlingen</a>
<a href="#">T P Molding</a>	<a href="#">Brownsville</a>	<a href="#">WTS Industrial Solutions</a>	<a href="#">San Benito</a>

### Career Options

(Specific Job Types)

- Ship Fitter
- Layout Technician
- Layout Man
- Layout Mechanic
- Fitter
- Layout Inspector
- Development Mechanic
- Layout Worker
- Quality Technician
- Fabricator

## Salary Ranges

---

Local wages not available.

Location	Pay Period	2012				
		10%	25%	Median	75%	90%
United States	Hourly	\$11.48	\$15.21	\$20.22	\$24.61	\$28.81
	Yearly	\$23,900	\$31,600	\$42,100	\$51,200	\$59,900
Texas	Hourly	\$9.40	\$11.08	\$16.32	\$21.52	\$28.93
	Yearly	\$19,600	\$23,000	\$33,900	\$44,800	\$60,200

## Professional Associations linked to the Careers

---

For more information about metal and plastic machine workers, including training and certification, visit

[Fabricators & Manufacturers Association International](#) (FMA)

[National Institute for Metalworking Skills](#) (NIMS)

For general information about manufacturing careers, machinery, and equipment, visit

[Association for Manufacturing Technology](#) (AMT)

[National Tooling and Machining Association](#) (NTMA)

[Precision Machined Products Association](#) (PMPA)

[Precision Metalforming Association](#) (PMA)

## 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/>)



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

# Assemblers and Fabricators, All Other

**Career Goal (O\*NET Code):** (51-4192) - Metal and plastic machine workers set up and operate machines that cut, shape, and form metal and plastic materials or pieces.

**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	
		<b>Career-Related Electives:</b>	Practicum in Manufacturing or Problems and Solutions or Career Preparation I		
	<p><b>How to Become a Lay-Out Worker, Metal and Plastic</b>            A few weeks of on-the-job training are enough for most workers to learn basic machine operations, but 1 year or more is required to become highly skilled. Although a high school diploma is not required, employers prefer to hire workers who have one.</p>			<p><b>Career Options:</b></p>	
Postsecondary		<p><a href="#">Texas Southmost College</a>      <a href="#">South Texas College</a>      <a href="#">Texas State Technical College</a></p>	<ul style="list-style-type: none"> <li>• Ship Fitter</li> <li>• Layout Man</li> <li>• Layout Mechanic</li> <li>• Development Mechanic</li> <li>• Quality Technician</li> <li>• Layout Technician</li> <li>• Fitter</li> <li>• Layout Inspector</li> <li>• Layout Worker</li> <li>• Fabricator</li> </ul>		
			<p><a href="#">Precision Manufacturing Technology (CERT)</a>    <a href="#">Industrial Systems Technology (CERT)</a>  <a href="#">Precision Manufacturing Technology (AAS)</a>    <a href="#">Precision Manufacturing Technology - Mold, Tool &amp; Die Making (AAS)</a></p>		
		<p><a href="#">University of Texas at Brownsville</a>      <a href="#">University of Texas - Pan American</a></p>			
<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>	
				<p><b>Professional Associations:</b></p> <p><a href="#">Fabricators &amp; Manufacturers Association International</a>  <a href="#">National Institute for Metalworking Skills</a>  <a href="#">Association for Manufacturing Technology</a>  <a href="#">National Tooling and Machining Association</a>  <a href="#">Precision Machined Products Association</a>  <a href="#">Precision Metalforming Association</a></p>	

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.