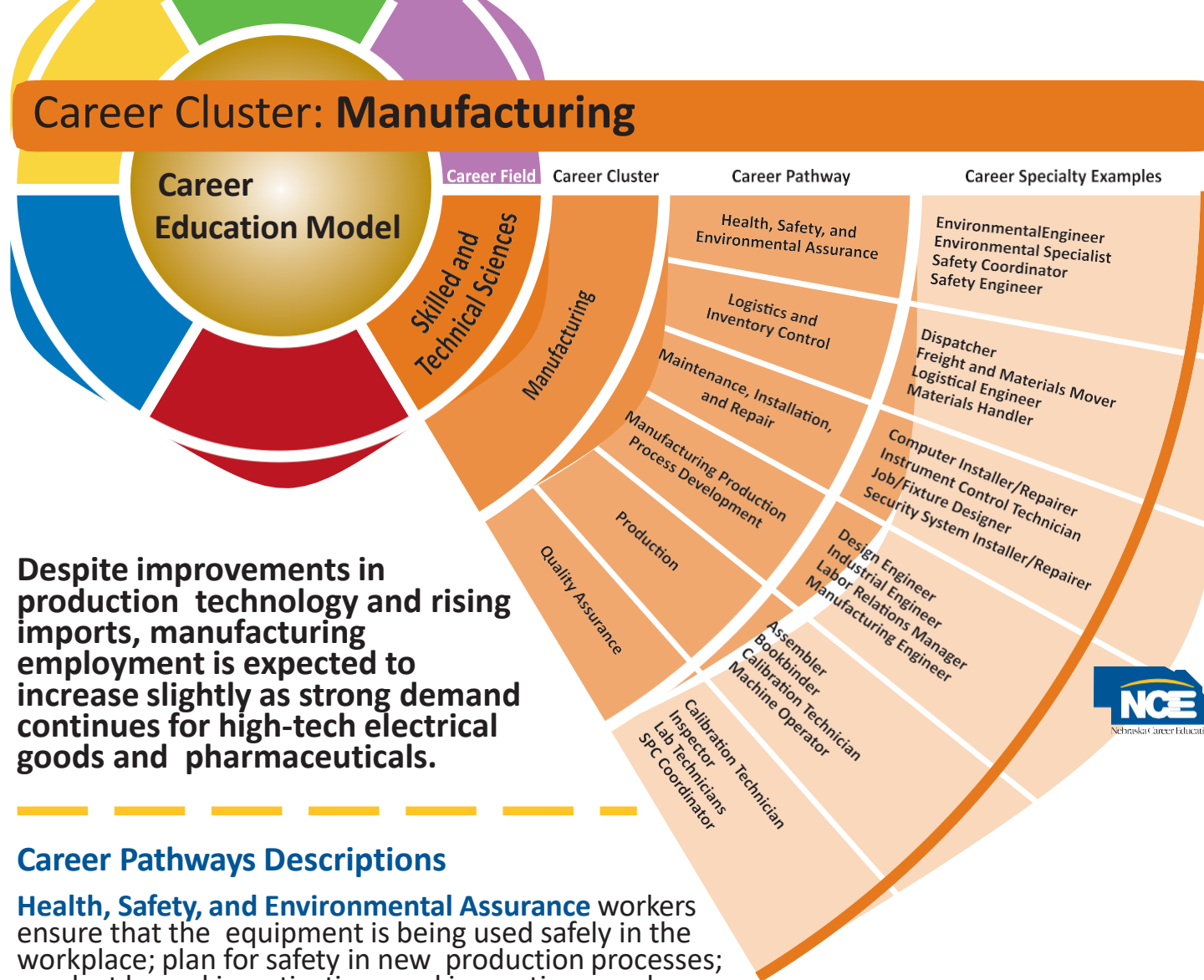


## Career Cluster: Manufacturing



Despite improvements in production technology and rising imports, manufacturing employment is expected to increase slightly as strong demand continues for high-tech electrical goods and pharmaceuticals.

### Career Pathways Descriptions

**Health, Safety, and Environmental Assurance** workers ensure that the equipment is being used safely in the workplace; plan for safety in new production processes; conduct hazard investigations and inspections; and implement health, safety, and/or environmental programs, projects, policies, or procedures.

**Logistics and Inventory Control** workers move raw materials, unload trucks, wrap pallets for shipment, and communicate with traffic managers.

**Maintenance, Installation, and Repair** workers perform preventive maintenance procedures on machines, tools, and equipment. They also trouble-shoot and repair electrical, electronic, and mechanical systems.

**Manufacturing Production Process Development** workers are responsible for product design of the manufacturing process. They also monitor the manufacturing process and the materials used to manufacture the product.

**Production** workers make parts or assemble them. They work with machines, making or assembling electronic parts, constructing or assembling modular housing, performing welding jobs, or printing materials.

**Quality Assurance** workers assure that standards and procedures are adhered to and that delivered products or services meet performance requirements.

*Are you good with working with your hands?  
Can you explain to others how a machine works?  
Do you set up and repair stereo equipment for yourself or friends?  
Do you enjoy reading the latest developments in electronics?  
Can you visualize how a machine works?*

<https://azcis.intocareers.org/VideoSelect.aspx?VideoFileNum=00-000013>

2:19 minutes video on this career cluster (you must be logged into AZCIS to see video)

# Occupations Examples

## Levels of Education and Earnings\*

\* Data from AZCIS

	National Annual Median Wage	Arizona Annual Median Wage
<b>Moderate-Term, On-the-Job Training (One to Twelve Months)</b>		
<a href="#">Airplane Assemblers</a>	\$48,970	\$49,830
<a href="#">Appliance Installers and Repairers</a>	\$36,200	\$41,210
<a href="#">Cabinetmakers</a>	\$32,270	\$25,560
<a href="#">Dental Laboratory Technicians</a>	\$37,190	\$37,680
<a href="#">Precision Assemblers</a>	\$30,860 - \$39,600	\$32,110 - \$36,300
<a href="#">Security and Fire Alarm Systems Installers</a>	\$43,420	\$53,230
<a href="#">Shoe and Leather Workers</a>	\$23,630	\$28,790
<a href="#">Small Engine Mechanics</a>	\$32,710	\$31,710
<a href="#">Upholsterers</a>	\$32,020	\$29,100
<a href="#">Vehicle Painters</a>	\$41,150	\$36,660
<a href="#">Welders and Solderers</a>	\$38,150	\$37,290
<b>Long-Term, On-the-Job Training (Over One Year)</b>		
<a href="#">Building Maintenance Workers</a>	\$36,630	\$33,910
<a href="#">Cabinetmakers</a>	\$32,270	\$25,560
<a href="#">Chemical Plant Operators</a>	\$59,320	\$44,320
<a href="#">Gas and Oil Plant Operators</a>	\$65,190 - \$66,010	\$48,430
<a href="#">Glass Blowers</a>	\$29,630	\$29,820
<a href="#">Jewelers</a>	\$37,060	\$32,410
<a href="#">Locksmiths</a>	\$39,160	\$40,430
<a href="#">Machinists</a>	\$40,550	\$39,220
<a href="#">Medical Appliance Technicians</a>	\$34,890	\$34,280
<a href="#">Power Plant Operators</a>	\$71,940 - \$88,560	\$88,130
<b>Work Experience in a Related Occupation</b>		
<a href="#">Manufacturing, Transportation, and Construction Worker Supervisors</a>	\$46,960 - \$63,010	\$45,900 - \$57,950
<b>Postsecondary Vocational Training (Certificate or Diploma)</b>		
<a href="#">Computer, ATM, and Office Machine Repairers</a>	\$36,840	\$31,090
<a href="#">Home Electronic Repairers</a>	\$37,790	\$45,200
<a href="#">Industrial Electronics Repairers</a>	\$55,690	\$52,010
<a href="#">Manufacturing Production Technicians</a>	\$61,260	\$56,970
<a href="#">Musical Instrument Repairers and Tuners</a>	\$35,660	\$32,770
<b>Associate Degree</b>		
<a href="#">Camera and Photographic Equipment Repairers</a>	\$40,620	\$37,830
<a href="#">Medical Equipment Repairers</a>	\$46,340	\$35,840
<a href="#">Semiconductor Processing Operators</a>	\$35,390	\$42,020
<a href="#">Wind Turbine Technicians</a>	\$51,050	not available



# Career Plan of Study

Learner Name \_\_\_\_\_

Date \_\_\_\_\_

Learner Signature \_\_\_\_\_

Advisor Signature \_\_\_\_\_

Parent/Guardian Signature (if required) \_\_\_\_\_

*This plan of study should serve as a guide, along with other career planning materials, as you continue your career path. Courses listed within this plan are only recommended coursework and should be individualized to meet each learner's educational and career goals. All plans should meet high school graduation requirements as well as college entrance requirements.*

	9 <sup>th</sup> Grade	10 <sup>th</sup> Grade	11 <sup>th</sup> Grade	12 <sup>th</sup> Grade
<b>High School</b>	English I	English II	English III	English IV
	Algebra I or Geometry	Geometry or Algebra II	Algebra II or Trigonometry	Trigonometry or Pre-Calculus
	Physical Science or Biology I	Biology I or Chemistry I	Chemistry, or Physics	Physics or Environmental Science
	Geography/State History	World History	American History	Economics/Government
	<b>Required Courses/Electives</b> PE, Health, Art, Foreign Language, or Computer Technology	<b>Required Courses/Electives</b> PE, Health, Art, Foreign Language, or Computer Technology	<b>Additional High School Electives</b> Agriculture Power & Technology Principles of Ag Technology Drafting and Design *Introduction to Engineering *Computer Integrated Manufacturing *Principles of Engineering *Engineering Design & Development	<b>Technology Center Electives</b> Drafting and CAD CNC (Computer Numerical Control) Electronics Industrial Maintenance Precision Machining Plastic Manufacturing Welding
	<b>Career Electives</b> TechConnect Manufacturing Technology Education Agriscience I	<b>Career Electives</b> <b>TechConnect Manufacturing</b> Technology Education Agriscience II		
<b>Post-Secondary</b>	<b>Career/Technical College</b>		<b>Community College</b>	<b>College/University</b>
	<ul style="list-style-type: none"> <li>☞ Automated Manufacturing Technology</li> <li>☞ Drafting and CAD</li> <li>☞ Electronics</li> <li>☞ Industrial Maintenance</li> <li>☞ Manufacturing Engineering Technology</li> <li>☞ Precision Machining</li> <li>☞ Plastic Manufacturing</li> <li>☞ Welding</li> </ul>		<ul style="list-style-type: none"> <li>☞ Engineering Technology</li> <li>☞ Agriculture Engineering</li> <li>☞ Precision Production Trades</li> <li>☞ Manufacturing Technology</li> <li>☞ Pre-Engineering</li> <li>☞ Industrial Drafting</li> <li>☞ Automated Aerospace Manufacturing Technology</li> </ul>	<ul style="list-style-type: none"> <li>☞ Mechanical Engineering</li> <li>☞ Engineering Technology</li> <li>☞ Industrial Technology</li> <li>☞ Mechanical Engineering Technology</li> </ul>
<b>Career Enhancement Options</b>	<b>Work-based Learning Options</b>		<b>Short-Term Training Options</b>	
	Job-Shadowing: Internship/Mentorship: On-The-Job Training:		<ul style="list-style-type: none"> <li>☞ Safety Training</li> <li>☞ Welding I</li> <li>☞ Welding II</li> <li>☞ Precision Machining</li> <li>☞ Lean Manufacturing</li> </ul>	

\*These courses are part of the Project Lead The Way curriculum. More information is available at [www.pltw.org](http://www.pltw.org)