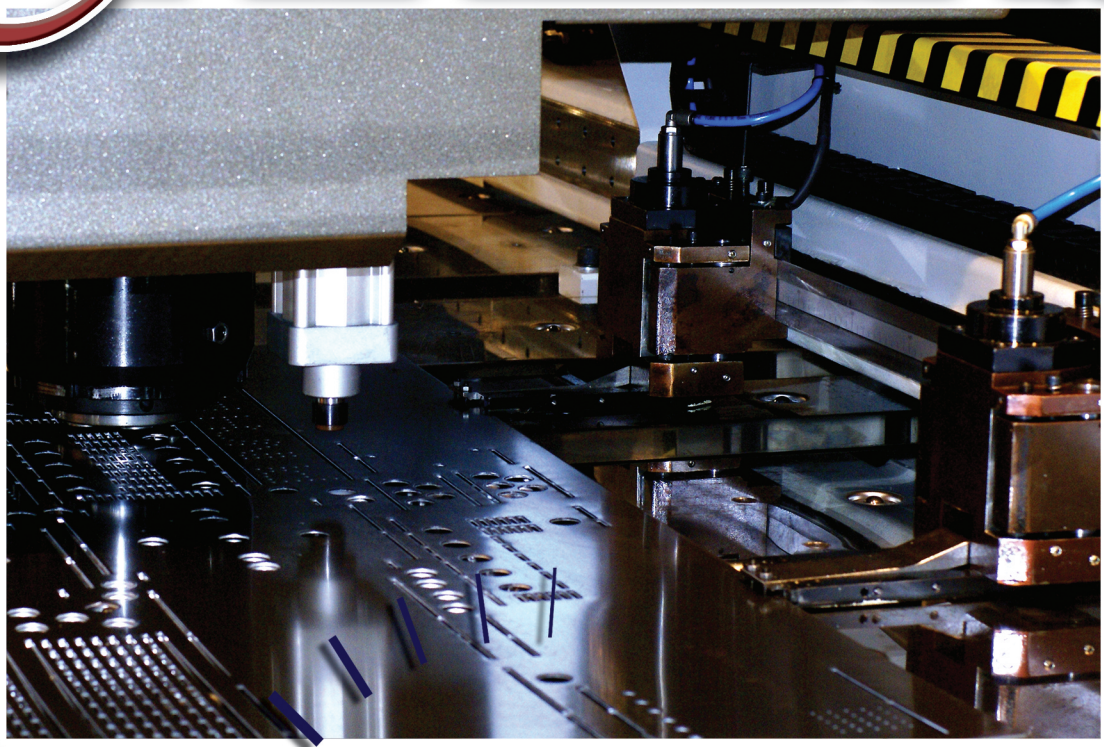
TENNESSEE CAREERS®



Manufacturing

Career Cluster Guide

2008-2009

Four Steps to Career Success

About the Manufacturing Career Cluster

Careers in the Manufacturing Career Cluster encompass planning, managing and performing the processing of materials into intermediate or final products and related professional and technical support activities, such as production planning and control, maintenance, and manufacturing/process engineering.

GET STARTED TODAY!

1
Assess Yourself

Identify your strengths. Then compare them with job expectations in favorite fields.

2
Check the Labor Market

See how a specific occupation fares in Tennessee. Turn to pages 4-7.

3
Find Schools and Educational Programs

Find information on education, training, financial aid, and licensing. See pages 8-11.

4
Find Employers and Job Openings

Check out the Web sites below or visit your local career centers to find out about opportunities in Tennessee.

Free Online Resources to Explore Careers

Tennessee Career Information Delivery System (TCIDS): http://tcids.tbr.edu/
KUDER Tennessee College and Career Planning System prepared by edamerica:
http://www.planningyourdreams.org/
Tennessee Department of Labor and Workforce Development:
Education, Wages, Jobs and More: http://www.sourcetn.org
Youth pages: http://state.tn.us/labor-wfd/youth
Career Center locations: http://www.state.tn.us/labor-wfd/cc/
Tennessee Department of Education, Career and Technical Education: http://www.tennessee.gov/education/cte/
Online Tennessee Board of Regents ROCC Virtual Career Center: http://careers.rodp.org/
College for TN, powered by xap: http://www.collegefortn.org/

SECONDARY PROGRAMS OF STUDY*	Specific Occupations	
Engineering**	• Aerospace Engineers • Biomedical Engineers • Computer Engineers • Industrial Engineers • Mechanical Engineers	
Precision Production	• Precision Instrument and Equipment Repairers, All Others • Fabric Menders, Except Garment • First-Line Supervisors/Managers of Production and Operating Workers • Structural Metal Fabricators and Fitters • Timing Device Assemblers, Adjusters, and Calibrators • Computer-Controlled Machine Tool Operators, Metal and Plastic • Numerical Tool and Process Control Programmers • Forging Machine Setters, Operators, and Tenders, Metal and Plastic • Rolling Machine Setters, Operators, and Tenders, Metal and Plastic • Drilling and Boring Machine Tool Setters, Operators and Tenders, Metal and Plastic • Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators and Tenders, Metal and Plastic • Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic • Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	• Machinists • Metal-Refining Furnace Operators and Tenders • Pourers and Casters, Metal • Model Makers, Metal and Plastic • Patternmakers, Metal and Plastic • Foundry Mold and Coremakers • Multiple Machine Tool Setters, Operators, and Tend • Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic • Lay-Out Workers, Metal and Plastic • Metal Workers and Plastic Workers, All Others • Sewing Machine Operators • Fabric and Apparel Patternmakers • Cabinetmakers and Bench Carpenters • Furniture Finishers • Sawing Machine Setters, Operators, and Tenders, Wood • Woodworking Machine Setters, Operators, and Tenders, Except Sawing • Woodworkers, All Others • Dental Laboratory Technicians • Medical Appliance Technicians • Ophthalmic Laboratory Technicians
Production Design	• Cost Estimators • Model Makers, Wood • Patternmakers, Wood	
Operations & Maintenance	• Boilermakers • First-Line Supervisors/Managers of Mechanics, Installers, and Repairers • Electric Motor, Power Tool, and Related Repairers • Electrical and Electronics Installers and Repairers • Electrical and Electronics Repairers, Commercial and Industrial Equipment • Electronic Equipment Installers and Repairers, Motor Vehicles • Electronic Home Entertainment Equipment Installers • Mechanical Door Repairers • Home Appliance Repairers • Industrial Machinery Mechanics • Maintenance and Repair Workers, General • Maintenance Workers, Machinery • Millwrights	• Camera and Photographic Equipment Repairers • Medical Equipment Repairers • Coil Winders, Tapers, and Finishers • Electrical and Electronic Equipment Assemblers • Electromechanical Equipment Assemblers • Tool and Die Makers • Tool Grinders, Filers, and Sharpeners • Textile Knitting and Weaving Machine Setters, Operators and Tenders • Textile Winding, Twisting, and Drawing Out Machine Setters, Operators and Tenders • Extruding and Forming Machine Setters, Operator • Chemical Plant and System Operators • Chemical Equipment Operators and Tenders • Inspectors, Testers, Sorters, Samplers, and Weighers • Helpers – Production Workers

**Information on engineering can also be found in the Science, Technology, Engineering & Mathematics booklet.

Manufacturing Jobs in Tennessee

Title	Basic Description	Projected Total 2014 Employment
Source: See footnote #2.	Source: See footnote #2.	Source: See footnote #1.
Boilermakers	Construct, maintain, and repair stationary steam boilers and boiler house auxiliaries. Align structures or plate sections to assemble boiler frame tanks or vats, following blueprints.	**180**
Cost Estimators	Prepare cost estimates for product manufacturing, construction projects, or services to aid management in bidding on or determining the price of products or services. May specialize.	**3,670**
Dental Laboratory Technicians	Construct and repair full or partial dentures or dental appliances.	**1,120**
Electrical and Electronics Repairers, Commercial and Industrial Equipment	Repair, test, adjust, or install electronic equipment, such as industrial controls, transmitters, and antennas.	**2,390**
First-Line Supervisors/Managers of Mechanics, Installers and Repairers	Supervise and coordinate the activities of mechanics, installers, and repairers. Exclude team or work leaders.	**11,490**
First-Line Supervisors/Managers of Production and Operating Workers	Oversee the activities of production and operating workers (inspectors, precision workers, machine setters and operators, assemblers, fabricators, and plant and system operators).	**21,360**
Industrial Machinery Mechanics	Repair, install, adjust, or maintain industrial production and processing machinery or refinery and pipeline distribution systems.	**6,360**

1. Estimated wage and employment data are from the Tennessee Department of Labor and Workforce Development, Employment Security Research and Statistics Division (www.sourcetn.org).
2. Job titles and common descriptions are from the Bureau of Labor Statistics, U.S. Department of Labor, Standard Occupational Classification System (http://www.bls.gov/soc).

High Skill - High Wage - In Demand

Projected Number of New Jobs, 2004-2014	Annual Median Wage	Most Common Education/Training	Suggested Programs of Study	High Skill	High Wage	In Demand
Source: See footnote #1.		Source: See footnote #1.	See footnote #3.	Source: See footnote #1.		
20	$52,230	Long-term on-the-job training	Industrial Machinery Maintenance and Repairer	●	●	
750	$46,343	Work experience in a related occupation	Operations Management and Supervision	●	●	
320	$29,563	Long-term on-the-job training	Dental Laboratory Technician	●		●
330	$42,108	Postsecondary career/ technical education	Computer Installer and Repairer; Computer Maintenance Technologist/Technician; Industrial Electronics Installer and Repairer	●	●	●
1,700	$46,693	Work experience in a related occupation	Operations Management and Supervision	●	●	
1,770	$42,229	Work experience in a related occupation	Operations Management and Supervision	●	●	
450	$36,145	Long-term on-the-job training	Industrial Machinery Maintenance and Repair; Industrial Equipment Maintenance and Repair, Other	●	●	

3. The suggested programs of study are postsecondary programs.

For updated career information go to http://www.sourcetn.org.

Manufacturing Jobs in Tennessee

Title	Basic Description	Projected Total 2014 Employment
Source: See footnote #2.	Source: See footnote #2.	Source: See footnote #1.
Machinists	Operate a variety of machine tools to produce precision parts and instruments. Includes precision instrument makers who fabricate, modify, or repair mechanical instruments.	**11,880**
Medical Appliance Technicians	Construct, fit, maintain, or repair medical supportive devices, such as braces, artificial limbs, joints, arch supports, and other surgical and medical appliances.	**230**
Medical Equipment Repairers	Test, adjust, or repair biomedical or electromedical equipment.	**850**
Numerical Tool and Process Control Programmers	Develop programs to control machining or processing of parts by automatic machine tools, equipment, or systems.	**470**
Precision Instrument and Equipment Repairers, All Others	All precision instrument and equipment repairers not listed separately.	**730**
Tool and Die Makers	Analyze specifications, lay out metal stock, operate machine tools, and fit and assemble parts to make and repair dies, cutting tools, jigs, fixtures, gauges, and machinists' hand tools.	**3,100**

1. Estimated wage and employment data are from the Tennessee Department of Labor and Workforce Development, Employment Security Research and Statistics Division (www.sourcetn.org).
2. Job titles and common descriptions are from the Bureau of Labor Statistics, U.S. Department of Labor, Standard Occupational Classification System (http://www.bls.gov/soc).

High Skill - High Wage - In Demand

Projected Number of New Jobs, 2004-2014	Annual Median Wage	Most Common Education/Training	Suggested Programs of Study	High Skill	High Wage	In Demand
Source: See footnote #1.		Source: See footnote #1.	See footnote #3.	Source: See footnote #1.		
1,150	$32,707	Moderate-term on-the-job traininga	Machine Shop Assistant; Machinist/Machine Technologist	●	●	●
50	$30,459	Long-term on-the-job training	Orthotics/Prosthetics	●		●
140	$39,995	Associate Degree	Biomedical Engineering-Related Technologist/Technician	●	●	●
40	$36,064	Long-term on-the-job training	Industrial Electronics Installer and Repairer; Machine Shop Assistant	●	●	●
100	$46,875	Long-term on-the-job training	Electromechanical Instrumentation and Maintenance Technologist/ Technician; Instrument Calibration and Repair; Instrumentation Technologist/ Technician	●	●	●
230	$41,719	Long-term on-the-job training	Tool and Die Maker/Technologist	●	●	●

3. The suggested programs of study are postsecondary programs.

For updated career information go to http://www.sourcetn.org.

PROGRAMS OF STUDY

TENNESSEE TECHNOLOGY CENTERS, COLLEGES & UNIVERSITIES

Manufacturing Majors	Dyersburg State Community College www.dscc.cc.tn.us	Nashville State Community College www.nscc.edu	Northeast State Technical Community College www.nstcc.cc.tn.us	Southwest Tennessee Community College www.southwest.tn.edu/	Tennessee Technology Center at Athens www.athens.tec.tn.us/	Tennessee Technology Center at Chattanooga www.chattanoogastate.edu	Tennessee Technology Center at Covington www.covington.tec.tn.us/	Tennessee Technology Center at Crossville www.crossville.tec.tn.us/	Tennessee Technology Center at Crump www.crump.tec.tn.us/	Tennessee Technology Center at Dickson www.dickson.tec.tn.us/
Biomedical Engineering-Related Technology/Technician										
Computer Installer and Repairer										
Dental Laboratory Technician										
Electrical and Electronics Equipment Installer and Repairer				A	C	C		C	C	C
Industrial Electronics Installer and Repair	C				C			C	C	
Industrial Equipment Maintenance and Repairers, Other										
Industrial Machinery Maintenance and Repair	C, A		A		C	C	C	C	C	C
Machine Shop Assistant			A		C	C	C	C	C	C
Machinist/Machine Technologist							C	C		
Manufacturing										
Mechanics and Repairers, Other				C						
Quality Control Technology/Technician				C						
Robotics Technology/Technician		C								
Tool And Die Maker/Technologist										
Upholsterer										
Woodworkers, General										

C = Postsecondary Awards/Certificates/Diplomas
A = Associate Degree
B = Bachelor's Degree
M = Master's Degree
D = Doctoral Degree

This chart was based upon the best available information and is intended only to serve as a general guide for educational opportunities. Department names for programs vary among schools. Refer to related cluster booklets for other possible programs. Community Colleges (www.tbr.state.tn.us/campuses.htm) **offer University Parallel Programs, which may also offer opportunities for study in this field. Contact the schools' academic departments or your school advisor for current programs and degrees:** www.tbr.state.tn.us/campuses.htm **and** http:/www.tennessee.edu/.

For financial aid information, go to the Tennessee Student Assistance Corporation, http://Tennessee.gov/tsac/about_us.htm, or The Source, www.sourcetn.org (Services for Individuals, Education Services, Financial Aid).

Tennessee Technology Center at Elizabethton www.elizabethton.tec.tn.us/												
Tennessee Technology Center at Harriman www.harriman.tec.tn.us/												
Tennessee Technology Center at Hartsville www.hartsville.tec.tn.us/												
Tennessee Technology Center at Hohenwald www.hohenwald.tec.tn.us/												
Tennessee Technology Center at Jacksboro www.jacksboro.tec.tn.us/												
Tennessee Technology Center at Jackson www.jackson.tec.tn.us/												
Tennessee Technology Center at Knoxville www.knoxville.tec.tn.us/												
Tennessee Technology Center at Livingston www.livingston.tec.tn.us/												
Tennessee Technology Center at McKenzie www.mckenzie.tec.tn.us/	C											
Tennessee Technology Center at McMinnville www.mcminnville.tec.tn.us/		C										
Tennessee Technology Center at Memphis www.memphis.tec.tn.us/			C									
Tennessee Technology Center at Morristown www.morristown.tec.tn.us/		C		C	C	C	C	C	C	C	C	C

PROGRAMS OF STUDY

TENNESSEE COLLEGES & UNIVERSITIES, & TECHNOLOGY CENTERS

Manufacturing Majors	Tennessee Technology Center at Murfreesboro www.murfreesboro.tec.tn.us/	Tennessee Technology Center at Nashville www.nashville.tec.tn.us/	Tennessee Technology Center at Newbern www.newbern.tec.tn.us/	Tennessee Technology Center at Oneida/Huntsville www.huntsville.tec.tn.us/	Tennessee Technology Center at Paris www.paris.tec.tn.us/	Tennessee Technology Center at Pulaski www.pulaski.tec.tn.us/	Tennessee Technology Center at Ripley www.ripley.tec.tn.us/	Tennessee Technology Center at Shelbyville www.shelbyville.tec.tn.us/	Tennessee Technology Center at Whiteville www.whiteville.tec.tn.us/	Walters State Community College www.wscc.cc.tn.us
Biomedical Engineering-Related Technology/Technician										
Computer Installer and Repairer		C				C				
Dental Laboratory Technician		C								
Electrical and Electronics Equipment Installer and Repairer		C	C	C			C			
Industrial Electronics Installer and Repairer		C	C	C		C	C	C	C	
Industrial Equipment Maintenance and Repairers, Other					C					
Industrial Machinery Maintenance and Repair		C	C		C	C		C	C	C
Machine Shop Assistant	C	C	C	C	C	C		C	C	
Machinist/Machine Technologist									C	
Manufacturing										
Mechanics and Repairers, Other										
Quality Control Technology/Technician										C
Robotics Technology/Technician										
Tool And Die Maker/Technologist										
Upholsterer										
Woodworkers, General										

C = Postsecondary Awards/Certificates/Diplomas
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B = Bachelor's Degree
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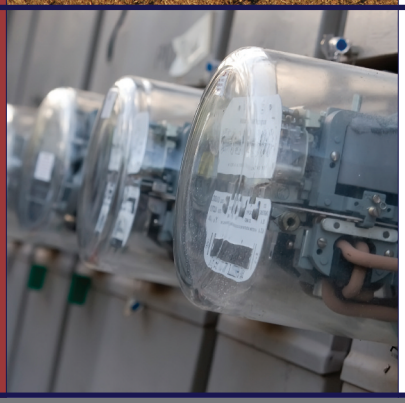
For financial aid information, go to the Tennessee Student Assistance Corporation, http://Tennessee.gov/tsac/about_us.htm, or The Source, www.sourcetn.org (Services for Individuals, Education Services, Financial Aid).

Tennessee Licensed Occupations

Job Titles and Licenses		Contacts
Coin, Vending, and Amusement Machine Servicers and Repairers Alarm System Contractor Employee		Board for Licensing Alarm Systems Contractors Division of Regulatory Boards Department of Commerce and Insurance Davy Crockett Tower, 2nd Floor 500 James Robertson Pkwy. Nashville, TN 37243 (615) 741-9771 http://www.tennessee.gov/commerce
Inspectors, Testers, Sorters, Samplers, and Weighers Boiler Inspector		Boiler Board Division of Boiler and Elevator Inspection Department of Labor and Workforce Development 220 French Landing Drive Nashville, TN 37243-0663 (615) 741-2123 http://www.state.tn.us/labor-wfd/boilersinsp.html
Inspectors, Testers, Sorters, Samplers, and Weighers Dairy Tester		Regulatory Services Division Food & Dairy Section Department of Agriculture P. O. Box 40627, Melrose Station Nashville, TN 37204 (615) 837-5150 http://state.tn.us/agriculture/regulate/permits/permit3.html
Precision Instrument and Equipment Repairers, All Others Weights and Measurement Serviceperson		Regulatory Services Division Weights & Measures Section Department of Agriculture P. O. Box 40627, Melrose Station Nashville, TN 37204 (615) 837-5150 http://state.tn.us/agriculture/regulate/food/index.html

Tennessee Career Information Delivery System (TCIDS): http://tcids.tbr.edu/
The Source: http://www.sourcetn.org

Notice

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For more information on Career clusters:

http://www.tennessee.gov/education/cte

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Office for Civil Rights
Tennessee Department of Education
710 James Robertson Parkway, 6th Floor
Nashville, TN 37243-0383
Tel. (615) 253-1550

States' Career Clusters Initiative
www.careerclusters.org