



Missouri Target Industry Brief ADVANCED MANUFACTURING

Advanced Manufacturing Industry

The **Advanced Manufacturing Target Industry Group** refers to technology-intensive producers and the industries that support them. In Missouri two niches of this industry include Aerospace/Defense and Transportation Equipment manufacturers. The Industry Group employed 177,678 in 2014.

Location quotient (LQ) compares the regional share of an industry to the national share so that an LQ over 1 indicates sectors of employment concentration. Missouri has particularly high employment concentrations in *HVAC/Commercial Refrigeration Equipment Manufacturing* with a LQ of 3.45 and *Other Transportation Equipment Manufacturing* with a LQ of 2.70.

2014 Employment and Establishment Data for the Advanced Manufacturing Target Industry Group

NAICS	Industry	2014 Establishments	2014 Employment	2014 Average Wage	2014 Employment Location Quotient
Total Private Sector Industries		175,198	2,250,914	\$44,698	
3169	Other Leather Product Manufacturing	17	ND	ND	ND
3259	Other Chemical Product and Preparation Manufacturing	50	1,405	\$58,546	0.87
3261	Plastics Product Manufacturing	223	11,852	\$45,774	1.12
3262	Rubber Product Manufacturing	50	3,532	\$46,349	1.37
3313	Alumina and Aluminum Production	12	1,714	\$62,221	1.51
3314	Other Nonferrous Metal Production	16	990	\$69,454	0.82
3315	Foundries	42	2,958	\$47,952	1.20
3323	Architectural and Structural Metals Manufacturing	251	7,433	\$45,585	1.06
3324	Boiler, Tank, and Shipping Container Manufacturing	49	3,093	\$53,097	1.61
3329	Other Fabricated Metal Product Manufacturing	135	7,681	\$53,997	1.42
3333	Commercial and Service Industry Machinery Mfg.	60	2,787	\$53,590	1.64
3334	HVAC and Commercial Refrigeration Equipment Mfg.	56	8,653	\$44,747	3.45
3335	Metalworking Machinery Manufacturing	198	5,112	\$51,919	1.44
3336	Turbine and Power Transmission Equipment Mfg.	25	2,771	\$48,557	1.43
3339	Other General Purpose Machinery Manufacturing	116	3,856	\$56,162	0.75
3341	Computer and Peripheral Equipment Manufacturing	11	109	\$62,147	0.04
3344	Semiconductor and Electronic Component Mfg.	49	5,789	\$79,048	0.80
3345	Electronic Instrument Manufacturing	60	3,077	\$60,594	0.40
3353	Electrical Equipment Manufacturing	65	4,509	\$58,232	1.61
3359	Other Electrical Equipment and Component Mfg.	55	5,131	\$48,458	2.07
3361	Motor Vehicle Manufacturing	11	ND	ND	ND
3362	Motor Vehicle Body and Trailer Manufacturing	76	2,775	\$37,224	1.01
3363	Motor Vehicle Parts Manufacturing	142	8,590	\$44,106	0.82
3364	Aerospace Product and Parts Manufacturing	48	17,778	\$111,070	1.87
3369	Other Transportation Equipment Manufacturing	18	1,700	\$51,983	2.70
5413	Architectural and Engineering Services	2,025	21,597	\$80,746	0.81
5414	Specialized Design Services	489	1,835	\$53,640	0.74
5415	Computer Systems Design and Related Services	3,732	33,767	\$84,083	0.97
5417	Scientific Research and Development Services	357	7,184	\$85,829	0.58
Total Advanced Manufacturing Industries		8,438	177,678	\$59,078	1.01

ND - Data Not Disclosable

Source: 2014 Quarterly Census of Employment and Wages, Bureau of Labor Statistics

Advanced Manufacturing Employment Trends

Advanced Manufacturing Five-Year Employment Trends

Employment in the **Advanced Manufacturing Target Industry Group** from 2010 to 2014 grew by 16,330 total jobs. The industry group had the second largest employment increase out of the seven target industry groups during the period. 20 industries in the group had a net increase in employment during the period, while six industries had a net loss of employment.

Industries with the largest job growth in the five-year period were *Computer Systems Design and Related Services* with an increase of 10,617 jobs, *Aerospace Product and Parts Manufacturing* grew by 3,032 jobs, followed by *Electronic Instrument Manufacturing* increased employment by 1,562.

Industries with the largest employment loss were *Scientific Research and Development Services* with a loss of 3,551 jobs, *Other General Purpose Machinery Manufacturing* with a loss of 955 jobs, and *Motor Vehicle Body and Trailer Manufacturing* with a loss of 376 jobs.

2010 - 2014 Employment Data - Advanced Manufacturing Target Industry Group

NAICS	Industry	2014 Employment	2013 Employment	2012 Employment	2011 Employment	2010 Employment	2010-2014 Employment Change
3169	Other Leather Product Mfg.	ND	ND	ND	ND	ND	N/A
3259	Other Chemical Product and Preparation Mfg.	1,405	1,442	1,542	1,540	1,555	-113
3261	Plastics Product Mfg.	11,852	11,644	11,496	11,391	11,758	-114
3262	Rubber Product Mfg.	3,532	3,326	3,316	3,298	3,197	129
3313	Alumina and Aluminum Production	1,714	1,767	1,785	1,721	1,732	35
3314	Other Nonferrous Metal Production	990	1,186	1,419	1,416	1,338	-152
3315	Foundries	2,958	2,858	2,681	2,491	2,154	704
3323	Architectural and Structural Metals Mfg.	7,433	7,301	6,656	6,484	6,541	760
3324	Boiler, Tank, and Shipping Container Mfg.	3,093	2,331	2,436	2,284	2,107	224
3329	Other Fabricated Metal Product Mfg.	7,681	10,230	9,846	9,783	9,622	608
3333	Commercial and Service Industry Machinery	2,787	2,698	2,718	2,680	2,614	84
3334	HVAC and Commercial Refrigeration Equipment	8,653	8,521	9,546	9,839	8,439	82
3335	Metalworking Machinery Mfg.	5,112	5,011	5,013	4,760	4,538	473
3336	Turbine and Power Transmission Equipment Mfg.	2,771	2,843	2,940	2,963	2,819	24
3339	Other General Purpose Machinery Mfg.	3,856	3,819	3,837	3,698	4,774	-955
3341	Computer and Peripheral Equipment Mfg.	109	118	93	75	70	48
3344	Semiconductor and Electronic Component Mfg.	5,789	3,347	3,365	3,285	3,218	129
3345	Electronic Instrument Mfg.	3,077	3,103	1,942	1,250	1,541	1,562
3353	Electrical Equipment Mfg.	4,509	4,638	4,660	4,740	4,195	443
3359	Other Electrical Equipment and Component Mfg.	5,131	5,387	5,557	5,563	5,219	168
3361	Motor Vehicle Mfg.	ND	ND	ND	ND	ND	N/A
3362	Motor Vehicle Body and Trailer Mfg.	2,775	2,731	3,268	3,772	3,107	-376
3363	Motor Vehicle Parts Mfg.	8,590	7,997	8,088	7,821	7,499	498
3364	Aerospace Product and Parts Mfg.	17,778	17,689	14,235	14,490	14,657	3,032
3369	Other Transportation Equipment Mfg.	1,700	1,641	1,363	961	945	696
5413	Architectural and Engineering Services	21,597	21,118	20,429	19,807	20,040	1,078
5414	Specialized Design Services	1,835	1,720	1,625	1,537	1,523	197
5415	Computer Systems Design and Related Services	33,767	33,083	30,172	25,088	22,466	10,617
5417	Scientific Research and Development Services	7,184	6,742	10,031	10,018	10,293	-3,551
	Total	177,678	174,291	170,059	162,755	157,961	16,330

ND - Not Discloseable

N/A - Data Not Available

Source: Quarterly Census of Employment and Wages, Bureau of Labor Statistics

Advanced Manufacturing Occupations

Advanced Manufacturing Occupations

The **Advanced Manufacturing Industry** top long-term training occupations include *General and Operation Managers, Industrial, Mechanical and Electrical Engineers*. Leading moderate training occupations include *First Line Supervisors of Production and Operating Workers, Electricians, and Sheet Metal Workers*. Short-term training occupations include *Team Assemblers, General Maintenance and Repair Workers and Packaging and Filing Machine Operators*.

2014 Top Advanced Manufacturing Occupational Employment

Occupation Code	Title	2014 Employment	2014 Average Wage	2014 Occupation Location Quotient
Total, All Occupations		2,673,640	\$42,790	
Long Term Training				
11-1021	General and Operations Managers	49,190	\$96,630	1.21
41-4011	Sales Representatives, Wholesale and Mfg., Tech., and Scientific Prod.	5,230	\$66,510	0.79
11-9021	Construction Managers	3,950	\$86,850	0.88
17-2112	Industrial Engineers	3,770	\$78,870	0.80
17-2141	Mechanical Engineers	3,590	\$79,530	0.67
Moderate Training				
51-1011	First-Line Supervisors of Production and Operating Workers	12,070	\$54,730	1.03
47-2111	Electricians	10,120	\$57,300	0.90
47-2211	Sheet Metal Workers	3,560	\$57,380	1.36
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	5,950	\$62,610	1.04
49-3011	Aircraft Mechanics and Service Technicians	2,020	\$51,150	0.87
Short Term Training				
49-9071	Maintenance and Repair Workers, General	28,620	\$34,260	1.13
51-2092	Team Assemblers	26,360	\$33,030	1.18
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighters	9,690	\$39,940	1.00
51-9111	Packaging and Filing Machine Operators and Tenders	8,920	\$32,970	1.18
51-4121	Welders, Cutters, Solderers, and Brazers	6,850	\$38,570	0.94

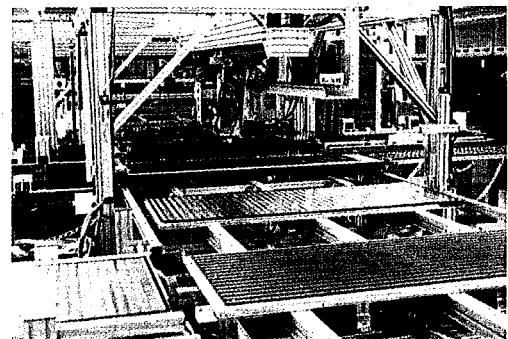
Source: 2014 Occupational Employment Survey, Bureau of Labor Statistics

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Manufacturing: Production Career Pathway Plan of Study for Learners Parents Counselors Teachers/Faculty

This Career Pathway Plan of Study (based on the Production Pathway of the Manufacturing Career Cluster) can serve as a guide, along with other career planning materials, as learners continue on a career path. Courses listed within this plan are only recommended coursework and should be individualized to meet each learner's educational and career goals. *This Plan of Study, used for learners at an educational institution, should be customized with course titles and appropriate high school graduation requirements as well as college entrance requirements.

EDUCATION LEVELS		GRADE		Math	Science	Social Studies/ Sciences	Other Required Courses Other Electives Recommended Electives Learner Activities	*Career and Technical Courses and/or Degree Major Courses for Production Pathway	SAMPLE Occupations Relating to This Pathway
<i>Interest Inventory Administered and Plan of Study Initiated for all Learners</i>									
SECONDARY	9	English/ Language Arts I	Algebra I	Earth or Life or Physical Science	State History Civics	All plans of study should meet local and state high school graduation require- ments and college entrance requirements. Certain local student organization activi- ties are also important including public speak- ing, record keeping and work-based experi- ences.	<ul style="list-style-type: none"> • Introduction to Manufacturing Occupations • Information Technology Applications • Employment in Manufacturing Occupations 	<ul style="list-style-type: none"> ▶ Assembler ▶ Automated Manufacturing Technician ▶ Calibration Technician ▶ Electrical Installer and Repairer ▶ Electromechanical Equipment Assembler ▶ Extruding and Drawing Machine Setter/Set-Up Operator ▶ Foundry Worker ▶ Grinding, Lapping, and Buffing Machine Operator ▶ Hand Packer and Packager ▶ Hoist and Winch Operator ▶ Instrument Maker ▶ Large Printing Press Machine Setter and Set-Up Operator ▶ Machine Operator ▶ Medical Appliance Maker ▶ Micro and Nano Fabrication Technicians ▶ Milling Machine Setter and Set-Up Operator ▶ Millwright ▶ Pattern and Model Maker ▶ Precision Layout Worker ▶ Sheet Metal Worker ▶ Solderer and Brazier ▶ Tool and Die Maker ▶ Welder 	
	10	English/ Language Arts II	Geometry	Biology	U.S. History				
	11	English/ Language Arts III	Algebra II	Chemistry	World History Economics				
<i>College Placement Assessments-Academic/Career Advisement Provided</i>									
POSTSECONDARY	12	English/ Language Arts IV	Trigonometry or Statistics or other math course	Physics	Psychology	All plans of study need to meet learners' career goals with regard to required degrees, il- censes, certifications or journey worker status. Certain local student organization activities may also be important to include.	<ul style="list-style-type: none"> • Applications in Manufacturing Technology 	<ul style="list-style-type: none"> • Quality Assurance Concepts and Techniques • Safety in the Workplace • Problem Solving and Teamwork 	
	13	English Composition English Literature	Algebra	Chemistry Physics	American Government Psychology				
	14	Speech/ Oral Communication	Computer Applications	Biological Science Physical Science	American History Geography				
Year 15	Continue courses in the area of specialization.								
Year 16	<ul style="list-style-type: none"> • Continue Courses in the Area of Specialization • Complete Manufacturing Major (4-Year Degree Program) 								