

Overview of Manufacturing Jobs in Utah and Related USHE Programs

Utah Manufacturing at a glance:

1. Manufacturing represents 7% of total state employment and 11% of state GDP;
2. Manufacturing adds about \$44 billion to the state's GDP per year;
3. Manufacturing supports 1/5 of all jobs in Utah, and 1/4 of Utah's total GDP;
4. Two-thirds of Utah's manufacturing is in durable goods (non-food, non-clothing);
5. Manufacturing wages are third largest in the state at just below \$11 billion;
6. The average salary in the manufacturing industry is \$72,565. This is 39% higher than the state average;
7. Manufacturing is the 2nd largest private sector industry.¹

The Governor's Office of Economic Opportunity (GOEC), lists the manufacturing sector as one of five targeted areas for economic development in Utah over the next ten years:

1. Advanced Manufacturing
2. Aerospace and Defense
3. Financial Services
4. Life Sciences and Healthcare
5. Software and Integrated Technology²

All of these top five areas of growth are heavily reliant on the development of high-tech production and information systems. The state's emphasis on advanced manufacturing is an attempt to tap into capital-rich, high-tech areas where Utah has already proven itself as a leader in cutting-edge industries that include aerospace, defense, and composite manufacturing/carbon-fiber industry.

The Kem Gardner Institute has ranked the percentage of the manufacturing establishments in Utah and has identified the following top sub-sectors:

1. Fabricated metal products: 16.4%³
2. Food manufacturing/processing: 9.5%
3. Furniture: 8.3%

¹ Some fabricated metal industries are high-tech, particularly in the aerospace industry. These are already considered advanced manufacturing industries.

² Governor's Office of Economic Opportunity, "Advanced Manufacturing," retrieved April 18, 2022. <https://business.utah.gov/targeted-industries/advanced-manufacturing/?hilit=manufacturing>

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4. Computer manufacturing: 6.7%
5. Print and publishing: 6.5%
6. Machinery production: 6.3%
7. Chemicals: 6%
8. Non-metallic minerals and products: 4.5%⁴

The Utah Advanced Materials and Manufacturing Initiative (UAMMI), a consortium of public-private organizations working together to grow advanced manufacturing in the state of Utah, anticipates that advanced manufacturing will replace fabricated metal products and food manufacturing as the top producing sub-sector in manufacturing in the next ten years.

Utah's economy is already deeply invested in manufacturing, and manufacturing is one of the top ten employment sectors in the state:

1. Government: 258,813
2. Retail: 216,210
3. Healthcare: 172,715
4. Professional, Scientific, and Technical Services: 159,186
5. **Manufacturing: 143,461**
6. Accommodation and Food Services: 133,541
7. Construction: 133,441
8. Finance and Insurance: 131,661
9. Real Estate Property Management: 117,678
10. Administrative and Support: 116,220⁵

In 2018, the impact on state revenues and expenditures as a result of manufacturing was key to financing government and education services:

1. Personal Income Tax: \$601 million
2. Corporate Income Tax: \$115 million
3. State Sales Tax: \$534 million

State Expenditures from manufacturing taxes:

1. Non-education expenditures: \$333 million
2. Public Education Expenditures: \$173 million
3. Higher Education Expenditures: \$138 million
4. Net operating expenditures: \$606 million.⁶

⁴ Ibid., p.3- 6.

⁵ DJ Benway and John Downen. *The Economic Impacts of Utah's Manufacturing Industry*, Kem C. Gardner Institute, University of Utah, Salt Lake City, May 2020. <https://gardner.utah.edu/wp-content/uploads/Manufacturing-May2020.pdf>

⁶ Gardner Institute, p. 18. Total Utah tax revenue collected in 2021 was \$13.9 billion.

The growth of manufacturing will also grow supporting industries that are necessary to facilitate manufacturing productivity in Utah. According to the Gardner Institute, the economic impact on the economy is much more pronounced through manufacturing than in many other industries. Economic impacts are changes in the size and structure of a region’s economy when goods and services are purchased from vendors within the region using money generated from outside the region. These in-state vendors will then purchase some of their inputs from other regional suppliers, who in turn may do the same. These rounds of purchases generate what are called “indirect” effects.⁷

Manufacturing Employment and Fields of Study

As UAMMI and GOEC work to develop Utah’s manufacturing industries, their efforts will rely on a wide range of majors and academic programs provided by the Utah System of Higher Education. The Department of Workforce Services forecasts that by 2028 there will be an additional 20,500 jobs available in the manufacturing sector, primarily in advanced manufacturing jobs.⁸

The sector employs USHE degree-holders from a wide variety of disciplinary backgrounds, as shown in the employment patterns of USHE graduates one year after completing their degrees in 2018 (the latest year for which we have data).⁹

Count of 2018 DGI Graduates Employed in Manufacturing One Year After Award	
Field of Study (CIP Family)	Graduate Count
LIBERAL ARTS AND SCIENCES, GENERAL STUDIES AND HUMANITIES	339
ENGINEERING	283
BUSINESS, MANAGEMENT, MARKETING, AND RELATED SUPPORT SERVICES	251
COMPUTER AND INFORMATION SCIENCES AND SUPPORT SERVICES	109
ENGINEERING TECHNOLOGIES AND ENGINEERING-RELATED FIELDS	107
BIOLOGICAL AND BIOMEDICAL SCIENCES	44
HEALTH PROFESSIONS AND RELATED PROGRAMS	38
SOCIAL SCIENCES	37
VISUAL AND PERFORMING ARTS	30
PSYCHOLOGY	27
PRECISION PRODUCTION	26
PHYSICAL SCIENCES	25

⁷ Ibid, p. 17.

⁸ Department of workforce Services, Short-term and Long-term job forecasting: jobs.utah.gov/wi/data/library/employment/index.html

⁹ <https://ushe.edu/data/industry-of-employment-first-year-after-award/>

COMMUNICATION, JOURNALISM, AND RELATED PROGRAMS	24
ENGLISH LANGUAGE AND LITERATURE/LETTERS	19
SCIENCE TECHNOLOGIES/TECHNICIANS	15
MATHEMATICS AND STATISTICS	14
MECHANIC AND REPAIR TECHNOLOGIES/TECHNICIANS	13
HOMELAND SECURITY, LAW ENFORCEMENT, FIREFIGHTING AND RELATED PROTECTIVE SERVICES	12
EDUCATION	11
FOREIGN LANGUAGES, LITERATURES, AND LINGUISTICS	11
NATURAL RESOURCES AND CONSERVATION	11
FAMILY AND CONSUMER SCIENCES/HUMAN SCIENCES	10
MULTI/INTERDISCIPLINARY STUDIES	N<10
HISTORY	N<10
PARKS, RECREATION, LEISURE, AND FITNESS STUDIES	N<10
PERSONAL AND CULINARY SERVICES	N<10
PUBLIC ADMINISTRATION AND SOCIAL SERVICE PROFESSIONS	N<10
TRANSPORTATION AND MATERIALS MOVING	N<10
AGRICULTURE, AGRICULTURE OPERATIONS, AND RELATED SCIENCES	N<10
ARCHITECTURE AND RELATED SERVICES	N<10
COMMUNICATIONS TECHNOLOGIES/TECHNICIANS AND SUPPORT SERVICES	N<10
AREA, ETHNIC, CULTURAL, GENDER, AND GROUP STUDIES	N<10
LEGAL PROFESSIONS AND STUDIES	N<10
PHILOSOPHY AND RELIGIOUS STUDIES	N<10
TOTAL	1456

The occupations most prevalent in manufacturing vary by educational requirements, as shown in the following three tables created from data provided by the Bureau of Labor Statistics and Department of Workforce Services:

Ten Occupations Most Prevalent in Manufacturing, Bachelor's Degree Required	SOC Code	2020 Percent of Industry (National)	Utah Star Rating	Utah Median Annual Wage
General and operations managers	11-1021	1.7	5	\$67,345
Industrial engineers	17-2112	1.7	5	\$80,733
Software developers and software quality assurance analysts and testers	15-1256	1.3	5	#N/A*
Mechanical engineers	17-2141	1.2	5	\$89,507
Industrial production managers	11-3051	1.1	5	\$89,792

Buyers and purchasing agents	13-1020	0.8	5	\$62,061
Accountants and auditors	13-2011	0.7	5	\$63,100
Architectural and engineering managers	11-9041	0.6	5	\$123,164
Electrical engineers	17-2071	0.5	5	\$86,940
Sales managers	11-2022	0.4	5	\$106,162

Ten Occupations Most Prevalent in Manufacturing, Associates Degree Required	SOC Code	2020 Percent of Industry (National)	Utah Star Rating	Utah Median Annual Wage
Electrical and electronic engineering technologists and technicians	17-3023	0.4	4	\$56,338
Industrial engineering technologists and technicians	17-3026	0.4	4	\$56,931
Chemical technicians	19-4031	0.3	4	\$45,155
Mechanical drafters	17-3013	0.2	4	\$61,267
Mechanical engineering technologists and technicians	17-3027	0.2	3	\$37,859
Computer network support specialists	15-1231	0.1	4	#N/A*
Architectural and civil drafters	17-3011	0.1	4	\$52,357
Electro-mechanical and mechatronics technologists and technicians	17-3024	0.1	3	\$62,549
Human resources assistants, except payroll and timekeeping	43-4161	0.1	3	\$38,855
Avionics technicians	49-2091	0.1	3	\$60,541

Ten Occupations Most Prevalent in Manufacturing, Postsecondary Non-Degree Award Required	SOC Code	2020 Percent of Industry (National)	Utah Star Rating	Utah Median Annual Wage
Heavy and tractor-trailer truck drivers	53-3032	1.1	4	\$44,624
Tool and die makers	51-4111	0.5	2	\$50,714
Electrical and electronics repairers, commercial and industrial equipment	49-2094	0.2	4	\$62,267
Prepress technicians and workers	51-5111	0.2	0	\$37,296
Aircraft mechanics and service technicians	49-3011	0.1	5	\$58,420
Heating, air conditioning, and refrigeration mechanics and installers	49-9021	0.1	4	\$47,823
Audio and video technicians	27-4011	<0.1	3	\$38,350
Sound engineering technicians	27-4014	<0.1	1	\$22,186
Licensed practical and licensed vocational nurses	29-2061	<0.1	4	\$47,819
Dental assistants	31-9091	<0.1	2	\$32,387

Because of recent shifts in how occupational data is being reported, the three-year salary trends for these occupations are not yet available.

All sixteen of Utah's public higher education institutions provide education needed by the manufacturing industry, either directly through science, technical, and engineering programs, or

through other majors in the liberal arts and sciences that are in high industry demand. The following tables show where programs are offered across the system.

Manufacturing Programs, Tech Colleges¹⁰

Program	B'land	Davis	Dixie	MTEC	OW	SW	Tooele	UB
Automation Technology/Manufacturing	X	X		X	X	X	X	X
Biotechnology			X					
Cabinetry								X
CNC Machinist	X	X	X	X	X			
Composites		X			X		X	
Computer-Aided Design					X			
Controls Engineering	X							
Drafting and Design	X		X					X
Electrician	X	X	X	X	X	X	X	X
Electronics	X							
Injection Molding		X						
Welding	X	X	X	X	X	X	X	X

Manufacturing Programs, Degree-Granting Institutions¹¹

Programs	SLCC	Snow	SUU	UU	USU	UTU	UVU	WSU
Advanced Manufacturing							X	
Aerospace Engineering					X			
Airframe and Air Power Systems					X			
Applied Mathematics				X				X
Architectural Woodwork							X	
Automated Manufacturing					X			
Automation	X							
Biomedical Engineering				X				X
Biotechnology						X		
Book Arts				X				
CAD/CAM Engineering Technology			X					
Cabinetry	X	X					X	
Composites	X	X						
Digital Design						X		
Electronics	X							
Engineering Design							X	
Engineering Entrepreneurship				X				
Engineering Technology							X	
Entrepreneurship			X	X				
Food Science			X		X			
General Engineering Programs (Civil, Computer, Electrical, Mechanical)			X	X	X	X	X	X
General Technology and Design					X	X		
Hydraulics	X	X						X
Industrial Mechanics	X	X			X			
IU/UX Design						X		
Machinist	X	X						X
Maker/Prototypes						X		
Manufacturing Audits								X

¹⁰ OCHE data collected April 18, 2022.

¹¹ OCHE data collected April 18, 2022.

Manufacturing Supervision								X
Manufacturing Technology		X						X
Manufacturing Technology Plastics and Composites								X
Manufacturing Technology Production						X		X
Manufacturing Technology Systems								X
Materials Science and Engineering				X				
Mechatronics							X	
Metallurgical Engineering				X				
Multi-Disciplinary Design				X				
Product Design and Development								X
Technology Innovation and Entrepreneurship						X		
Technology Systems					X			
Welding	X	X	X		X			X

For further information, see also the report on manufacturing in Utah provided by the Kem C. Garner Institute:

<https://gardner.utah.edu/wp-content/uploads/Manufacturing-May2020.pdf>