

Manufacturing Career Cluster

The Manufacturing Career Cluster focuses on 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.

Manufacturing Technology Statewide Program of Study



The Manufacturing Technology program of study focuses on the development and use of automatic and computer controlled machines, tools, and robots that perform work on metal or plastic. CTE learners will learn how to set up and operate a variety of machine tools to produce precision parts and instruments. Students will also learn how to modify parts to make or repair machine tools or maintain individual machines, and how to use hand-welding or flame-cutting equipment.

Secondary Courses for High School Credit

Level 1

- Blueprint Reading for Manufacturing Applications
- Principles of Manufacturing
- Principles of Applied Engineering

Level 2

- Metal Fabrication and Machining I
- Diversified Manufacturing I
- Occupational Safety and Environmental Technology I

Level 3

- Precision Metal Manufacturing I
- Metal Fabrication and Machining II
- Diversified Manufacturing II
- Occupational Safety and Environmental Technology II
- Computer Integrated Manufacturing (PLTW)

Level 4

- Precision in Metal Manufacturing II/Lab
- Occupational Safety and Environmental Technology III
- Practicum in Manufacturing
- Practicum in Entrepreneurship

Postsecondary Opportunities

Associates Degrees

- Welding Technology/Welder
- Machine Shop Technology/Assistant
- Operations Management and Supervision
- Occupational Safety and Health Technology/Technician

Bachelor's Degrees

- Welding Engineering Technology/Technician
- Biomedical Technology/ Technician
- Operations Management and Supervision
- Environmental Health

Master's, Doctoral, and Professional Degrees

- Welding Engineering Technology/Technician
- Occupational Health and Industrial Hygiene
- Operations Management and Supervision
- Environmental Health

Work-Based Learning and Expanded Learning Opportunities

Exploration Activities

- Participate and compete in SkillsUSA
- Job shadow a machinist

Work-Based Learning Activities

- Work in a local business or industry apprenticeship
- Join the American Welding Society

Industry-Based Certifications

- AWS D.1.1 Structural Steel
- AWS SENSE Level 1: Entry Welder
- C-101 Certified Industry 4.0 Associate – Basic Operations
- C-103 Certified Industry 4.0 Associate - Robot System Operations
- Certified Manufacturing Associate
- Certified Production Technician (CPT) 4.0
- Certified SOLIDWORKS Professional (CSWP)- CAM
- Certified SOLIDWORKS Professional (CSWP) - Additive Manufacturing
- CNC Lathe Operations
- CNC Lathe Set Up and Operations
- Machining CNC Mill Operations Level I
- Machining CNC Mill Programming Setup and Operations Level I
- Machining CNC Milling Skills Level II
- Machining CNC Turning Level II
- Machining Drill Press Level I
- Machining Grinding Level I
- Machining Measurement, Material, and Safety Level I
- Machining Milling Level I
- Manufacturing Technology
- NCCER Core
- NCCER Welding Level 1
- Precision Machining - Job Ready
- Welding - Job Ready
- Mastercam Associate Certification Mill Design and Toolpaths*
- Mastercam Certified Professional Mill Level 1*
- Mastercam Professional Level Certification*
- OSHA 30 Hour General*

*BC sunseting 8/31/24

Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Mechanical Engineering Technicians	\$57,117	453	9%
CNC Machine Operators	\$39,250	1,319	12%
Aerospace Engineering and Operations Technicians	\$60,757	114	9%
Electrical and Electronics Engineering Technicians	\$60,382	1,439	9%
Industrial Engineering Technicians	\$61,672	326	9%

Successful completion of the Manufacturing Technology program of study will fulfill requirements of the Business and Industry and STEM endorsement if math and science requirements are met. Revised – August 2022

Manufacturing Technology Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Blueprint Reading for Manufacturing Applications	N1303684 (1 credit)	None	None
Principles of Manufacturing	13032200 (1 credit)	None	None
Principles of Applied Engineering	13036200 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Metal Fabrication and Machining I	13032700 (2 credits)	None	None
Diversified Manufacturing I	13032650 (1 credit)	None	None
Occupational Safety and Environmental Technology I	N1303680 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Precision Metal Manufacturing I	13032500 (2 credits)	None	None
Metal Fabrication and Machining II	13032800 (2 credits)	Metal Fabrication and Machining I	None
Diversified Manufacturing II	13032660 (1 credit)	Diversified Manufacturing I	None
Occupational Safety and Environmental Technology II	N1303681 (1 credit)	OSET I	None
Computer Integrated Manufacturing (PLTW)	N1303748 (1 credit)	None	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Precision Metal Manufacturing II/Lab	13032600 (2 credits) 13032610 (3 credits)	Precision Metal Manufacturing I	None
Occupational Safety and Environmental Technology III	N1303682 (2 credits)	OSET I and II	None
Practicum in Manufacturing	13033000 (2 credits) 13033005 (3 credits) 13033010 (2 credits) 13033015 (3 credits)	None	None
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE MANUFACTURING CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
<https://tea.texas.gov/cte>

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