

# 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.

## Advanced Manufacturing and Machinery Mechanics Statewide Program of Study



The Advanced Manufacturing and Machinery Mechanics program of study focuses on the assembly, operation, maintenance, and repair of electromechanical equipment or devices. CTE learners may work in a variety of mechanical fields, gaining knowledge and experience in robotics, refinery and pipeline systems, deep ocean exploration, or hazardous waste removal. CTE concentrators may work in a variety of fields of engineering.

### Secondary Courses for High School Credit

#### Level 1

- Principles of Manufacturing
- Principles of Applied Engineering

#### Level 2

- Occupational Safety and Environmental Technology I
- Robotics I
- Manufacturing Engineering Technology I
- Programmable Logic Controller I

#### Level 3

- Engineering Design and Presentation I
- Manufacturing Engineering Technology II
- Robotics II
- Occupational Safety and Environmental Technology II
- Programmable Logic Controller II

#### Level 4

- Practicum in Manufacturing
- Practicum in Entrepreneurship
- Career Preparation I

### Postsecondary Opportunities

#### Associates Degrees

- Electromechanical Engineering/Technology
- Certified Quality Technician
- Industrial Mechanics and Maintenance Technology

#### Bachelor's Degrees

- Electrical Engineering
- Industrial Engineering
- Mechanical Engineering

#### Master's, Doctoral, and Professional Degrees

- Electrical Engineering
- Industrial Engineering
- Mechanical Engineering

### Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
<ul style="list-style-type: none"> <li>• Participate in SkillsUSA and local STEM events</li> </ul>	<ul style="list-style-type: none"> <li>• Work at a local business or industry apprenticeship</li> <li>• Join the American Welding Society</li> </ul>

### Industry-Based Certifications

- C-101 Certified Industry 4.0 Associate - Basic Operations
- C-103 Certified Industry 4.0 Associate - Robot System Operations
- C-200 Certified Industry 4.0 Automation System Specialist I - 216 Robotic System Integration 1
- C-200 Certified Industry 4.0 Automation Systems Specialist I - 208 Programmable Controller Troubleshooting 1
- C-200 Certified Industry 4.0 Automation Systems Specialist I - 215 Robotic Operations 1
- Certified Manufacturing Associate
- CNC Lathe Operations
- CNC Lathe Set Up and Operations
- FANUC Robot Operator 1
- FESTO Certified Industry 4.0 Associate Fundamentals
- Industrial Technology Maintenance (ITM) - Process Control Systems
- Machining CNC Mill Operations Level I
- Machining CNC Mill Programming Setup and Operations Level I
- Machining CNC Milling Skills Level II
- Machining CNC Milling Skills Level II
- Industrial Technology Maintenance (ITM) - Electronic Control Systems\*
- ISCET Certified Electronics Technicians\*
- Mastercam Associate Certification Mill Design and Toolpaths\*
- Mastercam Certified Professional Mill Level 1\*
- Mastercam Professional Level Certification\*
- OSHA 30 Hour General\*

\*IBC sunseting 8/31/24

### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Electro-Mechanical Assemblers	\$30,160	951	9%
Electro-Mechanical Technicians	\$56,555	127	9%
Industrial Machinery Mechanics	\$49,816	3,788	27%

Successful completion of the Advanced Manufacturing and Machinery Mechanics program of study will fulfill requirements of the Business and Industry or STEM endorsement if the math and science requirements are met.

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# Advanced Manufacturing and Machinery Mechanics Course Information

## Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
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
Occupational Safety and Environmental Technology I	N1303680 (1 credit)	None	None
Robotics I	13037000 (1 credit)	None	None
Manufacturing Engineering Technology I	13032900 (1 credit)	None	None
Programmable Logic Controller I	N1303689 (1 credit)	None	None

## Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Engineering Design and Presentation I	13036500 (1 credit)	Algebra I	None
Manufacturing Engineering Technology II	13032950 (1 credit)	Manufacturing Engineering Technology I	None
Robotics II	13037050 (1 credit)	Robotics I	None
Occupational Safety and Environmental Technology II	N1303681 (1 credit)	OSET I	None
Programmable Logic Controller II	N1303690 (1 credit)	None	None

## Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
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
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

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

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