

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 process engineering. This career cluster includes occupations ranging from welder and machinist to industrial engineering technician and semi-conductor processing technician.

Statewide Program of Study: Robotics and Automation Technology

The Robotics and Automation Technology program of study focuses on occupational and educational opportunities associated with the assembly, operation, maintenance, and repair of electromechanical equipment or devices. This program of study includes exploration of a variety of mechanical fields, including robotics, refinery and pipeline systems, deep ocean exploration, and hazardous waste removal.



Secondary Courses for High School Credit

- | | |
|----------------|--|
| Level 1 | <ul style="list-style-type: none"> Principles of Manufacturing Principles of Applied Engineering |
| Level 2 | <ul style="list-style-type: none"> Robotics 1 |
| Level 3 | <ul style="list-style-type: none"> Robotics 2 Engineering Design & Presentation 1 |
| Level 4 | <ul style="list-style-type: none"> Practicum in Manufacturing |

Work-Based Learning and Expanded Learning Opportunities

Work-Based Learning Activities	<ul style="list-style-type: none"> Intern with a robotics technician working at a manufacturing plant Shadow a PLC programmer
Expanded Learning Opportunities	<ul style="list-style-type: none"> Tour a manufacturing facility Participate in SkillsUSA or TSA Build a robot and participate in a robotics competition

Aligned Industry-Based Certifications

- TBA



Successful completion of the Robotics and Automation Technology program of study will fulfill requirements of the Business and Industry Endorsement or the STEM endorsement if the math and science requirements are met.



Example Postsecondary Opportunities

Associate Degrees

- Instrumentation Technology
- Industrial Technology
- Robotics Technology
- Automation Engineer Technology



Bachelor's Degrees

- Mechanical Engineering
- Electrical Electronics Engineering
- Electrical, Electronic, and Communications Engineering Technology
- Electromechanical Engineering Technology

Master's, Doctoral, and Professional Degrees

- Mechanical Engineering
- Engineering/Industrial Management
- Industrial Engineering
- Electrical and Electronics Engineering



Example Aligned Occupations

Computer Numerically Controlled Tool Operators

Median Wage: \$46,353
Annual Openings: 1,146
10-Year Growth: 10%

Semiconductor Processing Technicians

Median Wage: \$36,902
Annual Openings: 621
10-Year Growth: 9%

Industrial Engineers

Median Wage: \$100,000
Annual Openings: 1,898
10-Year Growth: 26%

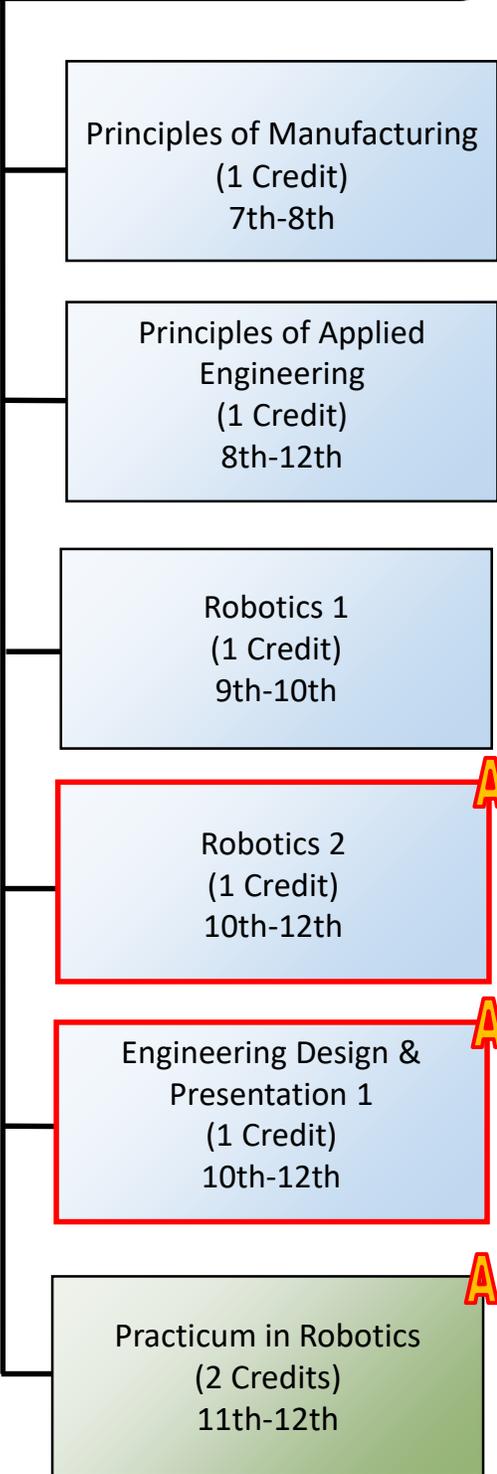
Data Source: TexasWages, Texas Workforce Commission. Retrieved 3/8/2024.



For more information visit:
<https://tea.texas.gov/academics/college-career-and-military-prep/career-and-technical-education/programs-of-study-additional-resources>

Manufacturing Cluster
Business & Industry Endorsement
Also Satisfies STEM Endorsement

**Robotics & Automation
Technology
Program of Study**



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 process engineering. This career cluster includes occupations ranging from welder and machinist to industrial engineering technician and semi-conductor processing technician.

Statewide Program of Study: Welding

The Welding 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 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 | <ul style="list-style-type: none"> Principles of Manufacturing Introduction to Welding |
| Level 2 | <ul style="list-style-type: none"> Welding 1 Entrepreneurship 1 |
| Level 3 | <ul style="list-style-type: none"> Welding 2 |
| Level 4 | <ul style="list-style-type: none"> Practicum in Manufacturing |

Work-Based Learning and Expanded Learning Opportunities

Work-Based Learning Activities	<ul style="list-style-type: none"> Job shadow a welder Intern for a local welding company
Expanded Learning Opportunities	<ul style="list-style-type: none"> Tour a welding shop Participate in SkillsUSA or TSA Participate in a welding project that benefits the community

Aligned Industry-Based Certifications

- AWS
- NCCER Core



Example Postsecondary Opportunities

Apprenticeships

- Welding

Associate Degrees

- Welding Technology
- Building/Construction Site Management
- Operations Management and Supervision

Bachelor's Degrees

- Welding Technology
- Construction Management
- Project Management
- Building/Construction Site Management

Master's, Doctoral, and Professional Degrees

- Engineering
- Engineering/Industrial Management
- Manufacturing Engineering
- Construction Engineering



Example Aligned Occupations

Welders, Cutters, Solderers, and Brazers

Median Wage: \$48,177
Annual Openings: 6,792
10-Year Growth: 23%

First-Line Supervisors of Production and Operating Workers

Median Wage: \$62,584
Annual Openings: 5,926
10-Year Growth: 17%

Industrial Production Managers

Median Wage: \$119,691
Annual Openings: 1,296
10-Year Growth: 19%



Successful completion of the Welding program of study will fulfill requirements of the Business and Industry endorsement.



For more information visit:

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**Manufacturing
Cluster**
Business & Industry Endorsement

**Welding
Program of Study**

