

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.

Regional Program of Study: Advanced Manufacturing and Industrial Technology Approved in ESC Region 7

**The list of approved ESC regions is updated every school year. Be sure to check the CTE regional program of study website for updates.*

The Advanced Manufacturing and Industrial Technology program of study focuses on occupational and educational opportunities associated with the development of electrical, mechanical, and machining components of manufacturing processing, automated systems, blueprint and sketching reading, and welding. It includes exploration of a variety of tools including, Computer Numerical Controlled (CNC) machines, hydraulics, and programmable logic controllers for students to learn to fabricate and maintain to processes and move through manufacturing production.



Secondary Courses for High School Credit

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| Level 1 | <ul style="list-style-type: none"> Principles of Manufacturing Blueprint Reading for Manufacturing Applications |
| Level 2 | <ul style="list-style-type: none"> Agricultural Mechanics and Metal Technologies Agricultural Mechanics and Metal Technologies + Agricultural Laboratory and Field Experience Welding I Diversified Manufacturing I |
| Level 3 | <ul style="list-style-type: none"> Digital Electronics Solid State Electronics |
| Level 4 | <ul style="list-style-type: none"> Practicum in Manufacturing Practicum in Manufacturing + Extended Practicum in Manufacturing Career Preparation for Programs of Study Career Preparation for Programs of Study + Extended Career Preparation |

Work-Based Learning and Expanded Learning Opportunities

Work-Based Learning Activities

- Intern at an automation focused manufacturing facility
- Job shadow an assembly line process at a manufacturing company

Expanded Learning Opportunities

- Tour a manufacturing facility
- Participate in SkillsUSA

Aligned Industry-Based Certifications

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| <ul style="list-style-type: none"> Applied Robotics C-200 Certified Industry 4.0 Automation Systems Specialist I - 208 Programmable Controller Troubleshooting 1 Certified Manufacturing Associate (CMfgA) Certified Production Technician (CPT) 4.0 CNC Lathe Operations CNC Milling II CNC Turning II Core Fundamentals of Electricity - AC/DC Industrial Maintenance Mechanic Level I | <ul style="list-style-type: none"> Industrial Maintenance Support Mechanic Industrial Technology Maintenance (ITM) - Basic Mechanical Systems Introduction to Electronics CNC Lathe Programming Setup and Operations Machining CNC Mill Operations Machining CNC Mill Programming Setup and Operations Machining Drill Press I Machining Grinding I Machining Measurement, Material, and Safety |
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Example Postsecondary Opportunities

Associate Degrees

- Industrial Technology
- Industrial Systems
- Machining Technology

Bachelor's Degrees

- Industrial Technology
- Mechanical Engineering Technology

Master's, Doctoral, and Professional Degrees

- Manufacturing Systems Management
- Supply Chain Management

Additional Stackable IBCs/Licenses

- Precision Machining



Example Aligned Occupations

Industrial Machinery Mechanics

Median Wage: \$60,477
Annual Openings: 4,907
10-Year Growth: 35%

Machinists

Median Wage: \$49,608
Annual Openings: 2,098
10-Year Growth: 23%

Maintenance and Repair Workers

Median Wage: \$39,344
Annual Openings: 14,757
10-Year Growth: 20%

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/m-advanced-manufacturing-and-industrial-technology-extendedpptx.pdf>

Successful completion of the Advanced Manufacturing and Industrial Technology program of study will fulfill requirements of the Business and Industry endorsement.



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Regional Program of Study: Advanced Manufacturing and Industrial Technology

Course Information

Level 1

Course	Prerequisites Corequisites	Career Clusters
Principles of Manufacturing* 13032200 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisites: Algebra I or Geometry Recommended Corequisites: None	
Blueprint Reading for Manufacturing Applications* N1303684 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisites: Algebra I, Geometry, and Principles of Construction Recommended Corequisites: None	

Level 2

Course	Prerequisites Corequisites	Career Clusters
Agricultural Mechanics and Metal Technologies 13002200 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisites: Principles of Agriculture, Food, and Natural Resources Recommended Corequisites: None	
Agricultural Mechanics and Metal Technologies + Agricultural Laboratory and Field Experience 13002210 (2 credits)	Prerequisites: None Corequisites: None Recommended Prerequisites: Principles of Agriculture, Food, and Natural Resources Recommended Corequisites: None	
Welding I* 13032300 (2 credits)	Prerequisites: None Corequisites: None Recommended Prerequisites: Algebra I, Principles of Manufacturing, Introduction to Precision Metal Manufacturing, or Introduction to Welding Recommended Corequisites: None	
Diversified Manufacturing I* 13032650 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisites: Algebra I Recommended Corequisites: None	

* Indicates course is included in more than one program of study in this career cluster.

For additional information on the **Manufacturing** career cluster, contact cte@tea.texas.gov or visit <https://tea.texas.gov/cte>



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Course Information

Level 3

Course	Prerequisites Corequisites	Career Clusters
Digital Electronics* 13037600 (1 credit)	Prerequisites: Algebra I and Geometry Corequisites: None Recommended Prerequisites: None Recommended Corequisites: None	  
Solid State Electronics* 13036900 (1 credit)	Prerequisites: AC/DC Electronics Corequisites: None Recommended Prerequisites: None Recommended Corequisites: None	  

Level 4

Course	Prerequisites Corequisites	Career Clusters
Practicum in Manufacturing* First Time Taken: 13033000 (2 credits) Second Time Taken: 13033010 (2 credits)	Prerequisites: None Corequisites: None Recommended Prerequisites: None Recommended Corequisites: None	 
Practicum in Manufacturing + Extended Practicum in Manufacturing* First Time Taken: 13033005 (3 credits) Second Time Taken: 13033015 (3 credits)	Prerequisites: None Corequisites: None Recommended Prerequisites: None Recommended Corequisites: None	 
Career Preparation for Programs of Study* First Time Taken: 12701121 (2 credits)	Prerequisites: At least one Level 2 or higher CTE course Corequisites: None Recommended Prerequisites: None Recommended Corequisites: None	             
Career Preparation for Programs of Study + Extended Career Preparation* First Time Taken: 12701141 (3 credits)	Prerequisites: At least one Level 2 or higher CTE course Corequisites: None Recommended Prerequisites: None Recommended Corequisites: None	             

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