

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: Manufacturing Technology

The Manufacturing Technology program of study focuses on occupational and educational opportunities associated with the development and use of automatic and computer-controlled machines, tools, and robots that perform work on metal or plastic. It includes exploration of a variety of machine tools that are used to produce precision parts and instruments. This program of study addresses how to modify parts to make or repair machine tools or maintain individual machines, and how to use hand-welding or flame-cutting equipment.



Weslaco ISD

Secondary Courses for High School Credit

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|------------------|--------------------------------------|
| 9 th | • Principles of Manufacturing |
| 10 th | • Metal Fabrication and Machining I |
| 11 th | • Metal Fabrication and Machining II |
| 12 th | • Practicum in Manufacturing |

Aligned Advanced Academic Courses

Dual Credit Dual credit offerings will vary by local education agency.

Students should be advised to consider these course opportunities to enrich their preparation. AP or IB courses not listed under the Secondary Courses for High School Credit section of this framework document do not count towards concentrator/completer status for this program of study.

Work-Based Learning and Expanded Learning Opportunities

Work-Based Learning Activities

- Shadow a metallurgist working at a refinery, steel mill, or aircraft manufacturing company
- Intern at a manufacturing plant using CNC machines

Expanded Learning Opportunities

- Tour a manufacturing facility
- Participate in SkillsUSA or TSA

Weslaco ISD Aligned Industry-Based Certifications

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| <ul style="list-style-type: none"> • AWS D1.1 Structural Steel • AWS SENSE Level I: 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) - Additive Manufacturing • Certified SOLIDWORKS Professional (CSWP) – CAM • CNC Lathe Operations • CNC Lathe Set Up and Operations • Machining CNC Mill Operations Level I • Machining CNC Mill Programming Setup and Operations Level I | <ul style="list-style-type: none"> • 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 I • Precision Machining - Job Ready • Welding - Job Ready • Certified Logistics Technician (CLT) • Certified Technician-Supply Chain Automation (CT-SCA) |
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Example Postsecondary Opportunities

Associate Degrees

- Industrial Technology
- Instrumentation Technology
- Manufacturing Engineering Technology
- Machine Shop Technology



Bachelor's Degrees

- Engineering/Industrial Management
- Industrial Engineering
- Mechanical Engineering Technology
- Manufacturing Engineering

Master's, Doctoral, and Professional Degrees

- Mechanical Engineering
- Engineering/Industrial Management
- Industrial Engineering
- Engineering



Example Aligned Occupations

Machinists

Median Wage: \$48,732
Annual Openings: 3,385
10-Year Growth: 23%

Industrial Engineering Technologists and Technicians

Median Wage: \$62,096
Annual Openings: 787
10-Year Growth: 17%

Mechanical Engineers

Median Wage: \$99,937
Annual Openings: 1,755
10-Year Growth: 19%

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>

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Statewide Program of Study: Manufacturing 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	
Principles of Applied Engineering* 13036200 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisites: None 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
Diversified Manufacturing I* 13032650 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisites: Algebra I Recommended Corequisites: None	
Occupational Safety and Environmental Technology I* N1303680 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisites: Principles of Transportation Systems, Principles of Distribution and Logistics, or Principles of Manufacturing Recommended Corequisites: None	  
Metal Fabrication and Machining I 13032700 (2 credits)	Prerequisites: None Corequisites: None Recommended Prerequisites: Algebra I or Geometry Recommended Corequisites: None	

Level 3

Course	Prerequisites Corequisites	Career Clusters
Diversified Manufacturing II 13032660 (1 credit)	Prerequisites: Diversified Manufacturing I Corequisites: None Recommended Prerequisites: Algebra I Recommended Corequisites: None	

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

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







Weslaco ISD does not discriminate on the basis of race, color, national origin, sex, or disability in its programs or activities and provides equal access to the Boy Scouts and other designated youth groups. The following person has been designated to handle inquiries regarding the nondiscrimination policies: Juanita D. Ybarra Rodriguez, Assistant Superintendent for Human Resources, 319 West Fourth Street Weslaco, TX 78596, (956) 969-6619, Jdybarrarodriguez@wisd.us. Further nondiscrimination information can be found at [Notification of Nondiscrimination in Career and Technical Education Programs](#)

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Course Information

Level 3

Course	Prerequisites Corequisites	Career Clusters
Occupational Safety and Environmental Technology II* N1303681 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisites: Occupational Safety and Environmental Technology I Recommended Corequisites: None	 
Metal Fabrication and Machining II 13032800 (2 credits)	Prerequisites: Metal Fabrication and Machining I Corequisites: None Recommended Prerequisites: Geometry and Algebra II Recommended Corequisites: None	
Precision Metal Manufacturing I 13032500 (2 credits)	Prerequisites: None Corequisites: None Recommended Prerequisites: Principles of Manufacturing and completion of or concurrent enrollment in Algebra I or Geometry Recommended Corequisites: None	
Computer Integrated Manufacturing (PLTW) N1303748 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisites: Concurrently in college preparatory math and science and Engineering Design Recommended Corequisites: None	 

Level 4

Course	Prerequisites Corequisites	Career Clusters
Occupational Safety and Environmental Technology III N1303682 (2 credits)	Prerequisites: Occupational Safety and Environmental Technology I and Occupational Safety and Environmental Technology II Corequisites: None Recommended Prerequisites: Chemistry or Integrated Physics and Chemistry (IPC) Recommended Corequisites: None	
Precision Metal Manufacturing II 13032600 (2 credits)	Prerequisites: Precision Metal Manufacturing I Corequisites: None Recommended Prerequisites: None Recommended Corequisites: None	

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Course Information

Level 4

Course	Prerequisites Corequisites	Career Clusters
Precision Metal Manufacturing II + Precision Metal Manufacturing II Lab 13032610 (3 credits)	Prerequisites: Precision Metal Manufacturing I Corequisites: None Recommended Prerequisites: None Recommended Corequisites: None	
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	 
Practicum in Entrepreneurship* First Time Taken: 13011111 (2 credits)	Prerequisites: None Corequisites: None Recommended Prerequisites: Entrepreneurship I and II or successful completion of at least two courses in a CTE program of study Recommended Corequisites: None	         
Practicum in Entrepreneurship + Extended Practicum in Entrepreneurship* First Time Taken: 13011121 (3 credits)	Prerequisites: None Corequisites: None Recommended Prerequisites: Entrepreneurship I and II or successful completion of at least two courses in a CTE program of study 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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