

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: Electronics Technology

Approved in ESC Regions 6, 10, 11, 12, and 13

**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 Electronics Technology program of study focuses on occupational and education opportunities associated with the development of engineered products, voltage installation and testing, electrical schematics, semiconductors, millwrights, avionics, and electrical repairers. It includes exploration of a variety of electrical uses throughout residential and commercial applications such as chip making troubleshooting electrical lines from audio video production to commercial buildings. This program of study addresses how to troubleshoot, create, repair, and read electrical blueprints, technical drafting, and the applied mathematics of electricity throughout industry.



Secondary Courses for High School Credit

- | | |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Level 1 | <ul style="list-style-type: none"> Principles of Manufacturing Principles of Applied Engineering Blueprint Reading for Manufacturing Applications |
| Level 2 | <ul style="list-style-type: none"> AC/DC Electronics |
| Level 3 | <ul style="list-style-type: none"> Digital Electronics Solid State Electronics |
| Level 4 | <ul style="list-style-type: none"> Applied Mathematics for Technical Professionals 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 |

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 | <ul style="list-style-type: none"> Intern at a chip manufacturing company Intern at a millwright company Job shadow an electrician |
| Expanded Learning Opportunities | <ul style="list-style-type: none"> Tour a chip manufacturer Tour a local electrical company Participate in SkillsUSA |

Aligned Industry-Based Certifications

- C-101 Certified Industry 4.0 Associate–Basic Operations
- C-200 Certified Industry 4.0 Automation Systems Specialist I – 201 Electrical Systems I
- C-200 Certified Industry 4.0 Automation Systems Specialist I - 202 Electric Motor Control Systems 1
- Certified Manufacturing Associate
- Autodesk Associate (Certified User) AutoCAD
- FESTO Certified Industry 4.0 Associate Fundamentals
- Electrical Apprenticeship Certificate Level 1
- HBI Pre-Apprenticeship Certificate Training (PACT), Basic Electrical
- NCCER Industrial Millwright
- NCCER Commercial Electrician
- TRIO Electrical Pre-Apprenticeship (EPP) Certification
- NCCER Core
- NCCER Millwright Level I
- NCCER Millwright Level II



Example Postsecondary Opportunities

Associate Degrees

- Electromechanical Technology
- Electronic Controls Technology
- Electronics Technician Specialization



Bachelor's Degrees

- Electrical Engineering
- Engineering Technology

Master's, Doctoral, and Professional Degrees

- Electrical Engineering
- Master of Science in Engineering with a major in semiconductor science and engineering

Additional Stackable IBCs/Licenses

- Semiconductor Technician Advanced Rapid Start
- Semiconductor Manufacturing Operator



Example Aligned Occupations

Electrical and Electronics Repairers

Median Wage: \$61,099
Annual Openings: 624
10-Year Growth: 18%

Electrical and Electronic Engineering Technologists and Technicians

Median Wage: \$62,968
Annual Openings: 1,156
10-Year Growth: 14%

Semiconductor Processing Technicians

Median Wage: \$36,902
Annual Openings: 662
10-Year Growth: 10%

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 Career Cluster

Regional Program of Study: Electronics Technology

Course Information

	Course	Prerequisites Corequisites	Career Clusters
Level 1	Principles of Manufacturing* 13032200 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisites: None 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, Principles of Construction Recommended Corequisites: None	
Level 2	AC/DC Electronics 13036800 (2 credits)	Prerequisites: None Corequisites: None Recommended Prerequisites: Principles of Applied Engineering Recommended Corequisites: None	  
	Digital Electronics* 13037600 (1 credit)	Prerequisites: Algebra I and Geometry Corequisites: None Recommended Prerequisites: None Recommended Corequisites: None	  
Level 3	Solid State Electronics* 13036900 (1 credit)	Prerequisites: AC/DC Electronics Corequisites: None Recommended Prerequisites: None Recommended Corequisites: None	  

* 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>

Manufacturing Career Cluster

Regional Program of Study: Electronics Technology

Course Information

Level 4

Course	Prerequisites Corequisites	Career Clusters
Applied Mathematics for Technical Professionals 12701410 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisites: Algebra I and Geometry 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	 
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	             

* 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>