

Manufacturing Career Cluster

Revised—June 2024



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.

Endorsement: **Business & Industry** **Statewide Program of Study: Robotics**

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

- | | |
|------------------------|--|
| 9 th Grade | <input type="checkbox"/> Principles of Applied Engineering (Level 1) |
| 10 th Grade | <input type="checkbox"/> Robotics I (Level 2) |
| 11 th Grade | <input type="checkbox"/> Robotics II (Level 3) (KCC)
<input type="checkbox"/> Elective Math: Digital Electronics AND/OR
<input type="checkbox"/> Elective Science: Engineering Science (Level 3) AND/OR
<input type="checkbox"/> Elective Math: Engineering Mathematics (Level 3) |
| 12 th Grade | <input type="checkbox"/> Practicum in Manufacturing – Robotics (Level 4) |

A CTE Completer is a student who completes three or more CTE courses for four or more credits including one Level 3 or 4 (advanced level) CTE course within a program of study will fulfill the requirements of a Business and Industry Endorsement.

Aligned Industry-Based Certifications

- FANUC Certification
- FAA Commercial Drone License



Work-Based Learning and Expanded Learning Opportunities

Work-Based Learning Activities

- Intern with a robotics technician working at a manufacturing plant
- Shadow a PLC programmer

Expanded Learning Opportunities

- Tour a manufacturing facility
- Participate in SkillsUSA or TSA
- Build a robot and participate in a robotics competition

NAVIANCE ACCESS

All Killeen ISD students (7th – 12th graders) should login to their Naviance account through Clever.

Log into Naviance by clicking the Clever logo or link and use the College SuperMatch Tool to find colleges offering degree plans in this field.

<https://clever.com/in/killeenisd>



Killeen 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: Rhea Bell, Title IX Coordinator, 902 N. 10th St., Killeen, TX 76541, 254-336-2822, Rhea.bell@killeenisd.org. Further nondiscrimination information can be found at [Notification of Nondiscrimination in Career and Technical Education Programs](#).



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: Texas Wages, 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




Endorsement: Business & Industry



Statewide Program of Study: Robotics








Course Information





IT IS IN THE BEST INTEREST OF THE STUDENT TO TAKE ALL COURSES BELOW IN EACH GRADE

Level 1 9th Grade	Course	Prerequisites Corequisites	Career Clusters
	Principles of Applied Engineering* 13036200 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisites: None Recommended Corequisites: None	  

Level 2 10th Grade	Course	Prerequisites Corequisites	Career Clusters
	Robotics I* 13037000 (1 credit)	Prerequisites: None Corequisites: None Recommended Prerequisite: Principles of Applied Engineering Recommended Corequisites: None	 

Level 3 11th Grade	Course	Prerequisites Corequisites	Career Clusters
	Robotics II* 13037050 (1 credit)	Prerequisites: Robotics I Corequisites: None Recommended Prerequisite: None Recommended Corequisites: None	 
	Digital Electronics* 13037600 (1 credit)	Prerequisites: Algebra I and Geometry Corequisites: None Recommended Prerequisite: None Recommended Corequisites: None	  
	Engineering Science* 13037500 (1 credit)	Prerequisites: Algebra I, one credit in Biology, and at least one credit in a course from the STEM career cluster Corequisites: None Recommended Prerequisite: Geometry, Integrated Physics and Chemistry (IPC), one credit in chemistry, or one credit in physics Recommended Corequisites: None	
	Engineering Mathematics* 13036700 (1 credit)	Prerequisites: Algebra II Corequisites: None Recommended Prerequisites: TBD Recommended Corequisites: None	

Level 4 12th Grade	Course	Prerequisites Corequisites	Career Clusters
	Practicum in Manufacturing - Robotics First Time Taken: 13033000 (2 credits) Second Time Taken: 13033010 (2 credits)	Prerequisites: None Corequisites: None Recommended Prerequisite: None Recommended Corequisites: None	 

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

See your school counselor to connect with a military recruiter for career counseling and to take the ASVAB in high school.