Revised–July 2025

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.

CFISD Program of Study: Robotics – Manufacturing Focus

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

The Robotics-Manufacturing Focus 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.

Recommended Course Sequence (credits)(A=advanced)

Students wanting an endorsement in this area must select three (3) or more courses totaling four (4) or more credits with at least one being advanced.

Grade 9	• Principles of Manufacturing (1) • OR Principles of Applied Engineering (1)
Grade 10	• Robotics I (1)
Grade 11	• Robotics II K (1-math) (A)
Grade 12	• Practicum in Manufacturing (2) (A)

Note: There is a robotics program of study offering courses with an engineering focus available in the Engineering career cluster.

Aligned Industry-Based Certifications Offered in CFISD

(course) (CCMR=impacts "career ready" status as outlined by the TEA Accountability System for College, Career or Military Readiness)

- FANUC Robot Operator I (Robotics II K) (CCMR)

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

CFISD·CTE opportunity starts here

- Receive training on industry-standard material, software & equipment.
- Enhance your resume by earning recognized industry-based certifications.
- Get a jump-start by taking advantage of core curriculum dual credit, transferable to 2-yr and 4-yr degrees.

ALL AT A FRACTION OF THE COST!

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

Data Source: Texas Wages, Texas Workforce Commission. rev 3/8/2024

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%

For more information on this and other CTE programs of study offered in CFISD, visit https://www.cfisd.net/academics/career-technical-education/programs-of-study

What's next? For more information on related programs available to continue your studies at Lone Star College, visit https://www.lonestar.edu/programs-of-study

Robotics and Automation Technology