

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 semiconductor processing technician.

Statewide Program of Study: *Manufacturing Technology Endorsement: Business and Industry*

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.

These course are dual-credit (college) level and taught at **Texas State Technical College in Red Oak**. **Transportation and certain costs associated with the program are covered for all students by Midlothian Independent School District.**



Manufacturing Technology Course Sequence

11th grade

Course	Prerequisites Corequisites
Diversified Manufacturing I Fall, 1 credit, 3 class periods	MISD and TSTC Prerequisites: 11th grade. Student must be on target for credits towards graduation, in good academic standing, and have no attendance issues.
Metal Fabrication and Machining I Spring, 1 credit, 3 class periods	MISD and TSTC Prerequisites: 11th grade Diversified Manufacturing I

12th grade

Course	Prerequisites Corequisites
Diversified Manufacturing II Fall, 1 credit, 3 class periods	MISD and TSTC Prerequisites: 12th grade Metal Fabrication and Machining I
Practicum in Manufacturing Spring, 2 credits, 3 class periods	MISD and TSTC Prerequisites: 12th grade Diversified Manufacturing II
Industry Based Certification	TSTC Red Oak Program Completion Certification

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

Aligned Occupations

Machinists

Median Wage: \$48,732

Annual Openings: 3,385

10-Year Growth: 23%

Industrial Engineering Technologists & 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%

To earn the Manufacturing Technology and Business and Industry Endorsement, students must complete the entire Red Oak Program.

1. **A student can be removed from the program if they do not meet attendance and/or academic requirements.**

Manufacturing Technology

BUSINESS & INDUSTRY ENDORSEMENT



An example of a four-year plan for a student entering 9th grade to complete the Manufacturing Technology Program of Study.

NOTE: this program must begin in the 11th grade.

9th	10th	11th	12th
English 1	English 2	3 rd Math	Advanced English
Algebra 1	English 3	4 th Science	4 th Math
Biology or IPC	Geometry	US History	Govt./Econ.
World Geography	Biology or Chemistry	Lunch and travel time to TSTC Red Oak	
Fine Arts	3 rd Science	Diversified Manufacturing I - FALL Metal Fabrication and Machining I - SPRING	Diversified Manufacturing II - FALL Practicum in Manufacturing - SPRING
Physical Education	World History		
Foreign Language	Foreign Language		

Industry Based Certifications
TSTC Red Oak Program Completion Certification

Related CTE Elective Courses
<ul style="list-style-type: none"> • None – no room in student schedule

Program of Study Planning
<ul style="list-style-type: none"> • To complete this Program of Study, a student must double down on English and Science credits their 10th grade year to make room for TSTC courses in the 11th and 12th grade. • A student must be positive that this Program of Study is what they wish to complete because of the differences in their English and Science courses taken and time devoted in their 11th and 12th grade years. • Students in this particular Program of Study will have no room for extracurricular activities, unless they speak individually with teachers, but those classes will not appear on their schedule.