

# Manufacturing Technology

# Manufacturing

R.L. Turner High School

Business & Industry or STEM Endorsement



This four year plan can be used as an example to help plan your high school career.

Subject	9th Grade	10th Grade	11th Grade	12th Grade
Language Arts	English	English	English	English
Math	Math	Math	Math	Math
Science	Science	Science	Science	Science
Social Studies	Social Studies	Social Studies	Social Studies	Social Studies
<b>CTE Courses</b>	Principles of Applied Engineering (1 Credit)	Diversified Manufacturing I (1 Credit)	Computer Integrated Manufacturing (1 Credit)	Practicum in Manufacturing (2 Credits)
Additional Elective				
Additional Elective				
Additional Elective				

<b>Additional Graduation Requirements</b> <ul style="list-style-type: none"> <li>Foreign Language (2 Credits)</li> <li>Physical Education (1 Credit)</li> <li>Fine Arts (1 Credit)</li> </ul>	<b>Possible Industry Based Certifications</b> <ul style="list-style-type: none"> <li>MSSC Certified Production Technician</li> <li>ISCET Associate-Level Certified Electronics Technician</li> <li>Mastercam Professional Level Certification</li> <li>NIMS Industrial Technology Maintenance - Basic Mechanical Systems</li> </ul>
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Occupations	Median Wage	Annual Openings	% Growth
Mechanical Engineering Technicians	\$57,117	453	9%
CNC Machine Operators	\$39,250	1,319	12%
Aerospace Engineering and Operations Technician	\$60,757	114	9%
Electrical and Electronics Engineering Technicians	\$60,382	1,439	9%
Industrial Engineering Technicians	\$61,672	326	9%

The Manufacturing Technology program of study focuses on the development and use of automatic and computer controlled machines, tools, and robots that perform work on metal or plastic. CTE learners will learn how to set up and operate a variety of machine tools to produce precision parts and instruments. Students will also learn how to modify parts to make or repair machine tools or maintain individual machines, and how to use hand-welding or flame-cutting equipment.

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## Recommended Course Sequence

### Principles of Applied Engineering

Principles of Applied Engineering provides an overview of the various fields of science, technology, engineering, and mathematics and their interrelationships. Students will develop engineering communication skills, which include computer graphics, modeling, and presentations, by using a variety of computer hardware and software applications to complete assignments and projects. Upon completing this course, students will understand the various fields of engineering and will be able to make informed career decisions. Further, students will have worked on a design team to develop a product or system. Students will use multiple software applications to prepare and present course assignments.



### Diversified Manufacturing

In Diversified Manufacturing I, students gain knowledge and skills in the application, design, production, and assessment of products, services, and systems and how those knowledge and skills are applied to manufacturing. The study of manufacturing systems allows students to reinforce, apply, and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems, and settings in a manufacturing setting. Diversified Manufacturing, I allows students the opportunity to understand the process of mass production by using a wide variety of materials and manufacturing techniques. Knowledge about career opportunities, requirements, and expectations and the development of skills prepare students for workplace success.



### Computer Integrated Manufacturing - PLTW

PLTW Computer Integrated Manufacturing is one of the specialization courses in the PLTW Engineering program. The course deepens the skills and knowledge of an engineering student within the context of efficiently creating the products around us. Students build upon their Computer Aided Design (CAD) experience through the use of Computer Aided Manufacturing (CAM) software. CAM transforms a digital design into a program that a Computer Numerical Controlled (CNC) mill uses to transform a block of raw material into a product designed by a student. Students learn and apply concepts related to integrating robotic systems such as Automated Guided Vehicles (AGV) and robotic arms into manufacturing systems. Throughout the course students learn about manufacturing processes and systems. This course culminates with a capstone project where students design, build, program, and present a manufacturing system model capable of creating a product.



### Practicum in Manufacturing

The Practicum in Manufacturing course is designed to give students supervised practical application of previously studied knowledge and skills. Practicum experiences can occur in a variety of locations appropriate to the nature and level of experience.