

# Middle School Engineering Technologies Courses

Subject Code	Course Title	Curriculum Code/Hours		
		VT	V3	VM
Engineering and Design (F6)				
175002	Engineering Principles	120-280	60	30-60
175015	Pre-Engineering Technologies			30-60
175003	Manufacturing Operations	120-280	60	30-60
178019	Plan Reading	120-280	60	30-60
145025	Computer Hardware	120-280	60	30-60
990364	Career Connections			30-60

Curriculum Code	Grades	CT Funded	Assessment	Counts toward Concentrator
VT	7-12	Yes	Required	Yes
V3	7-12	Yes	Not required	No
VM	7-9	Yes	Not required	No

- Career-Technical Middle School Courses require schools to complete a CTE-26 and program of study\*.
- Students enrolled in Career-Technical Middle School Courses (VT, VM) are eligible for participation in Career-technical Student Organizations (CTSO).
- Granting High School credit for Career-Technical Middle School Course high school courses is a local school district decision.
- VM Courses do not count towards four course minimum.
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\*If you have a 7-12 grade building with a current CTE26 on file, no additional CTE26 is required, unless you add a new program to that building IRN.

## **Engineering Principles**

Subject Code: 175002

This course will introduce students to fundamental engineering concepts and scientific principles associated with engineering design applications. Topics include mechanisms, energy, statics, materials, and kinematics. Additionally students will learn material properties and electrical, control and fluid power systems. Students will learn to apply problem solving, research and design skills to create solutions to engineering challenges.

## **Pre-Engineering Technologies**

Subject Code: 175015

Students in the pre-engineering programs acquire knowledge and skills in problem solving, teamwork and innovation. Students explore STEM careers as they participate in a project-based learning process, designed to challenge and engage the natural curiosity and imagination of middle school students. Teams design and test their ideas using modeling, automation, robotics, mechanical and computer control systems, while exploring energy and the environment.

## **Manufacturing Operations**

Subject Code: 175003

Students will learn the production processes applied across manufacturing operations. Students will be able to demonstrate a broad array of technical skills with an emphasis given to quality practices, measurement, maintenance and safety.

## **Plan Reading**

Subject Code: 178019

Students learn blueprint reading as it relates to the architecture and construction. Students will use scaling, orthographic projections, dimensioning practices, symbols, notations, and abbreviations to perform area calculations and to interpret floor plan, section, and elevations. Using construction plans, students will identify problems or shortcomings related to the layout and installation of materials for the project.

**Computer Hardware**

Subject Code: 145025

Students will learn to install, repair, and troubleshoot computer hardware systems. They will perform preventative maintenance practices and learn techniques for maintaining computer hardware security. Communication skills and professionalism in troubleshooting situations will be emphasized.

**Career Connections**

Subject Code: 990364

This course shows students how classroom learning translates into marketable skills. Through hands-on learning and local business involvement, students will engage in career-related experiences to acquire basic skills in various career fields. This provides students with tangible experiences to begin career decision making. Teachers have the flexibility to select career fields related to Ohio's in-demand jobs represented in the community.