

Middle School CTE Course Descriptions

6th: Creative Design

Students will apply the engineering design process to solve real-world problems. They will examine and use the manufacturing process, teamwork, and communication to design and create engineering/technology projects

6th: Programming and Coding

Students will learn how computers work and will practice computational thinking as they code computer programs to display graphics, design interactive stories, create games, and animate objects. Topics will include sequential logic, conditionals, loops, and variables.

7th: Engineering and Technology

Students will explore the engineering design process and real-world problem solving through the use of technologies including computer-aided design software, electronics, 3D-printing and CNC machining to discover their related applications.

7th: Digital Media Communications

Students will utilize digital tools in the fields of programming and coding, game design, creative design, photography, animation and film, and they will enhance their knowledge of media software and how to manipulate and design digital media.

7th: Careers and Academies

Students will investigate a variety of career clusters, analyze their personal assets, select career fields or occupations for further study, and create a plan based on their academic and career interests. They will also explore Albemarle County's Math, Engineering, & Science, Health & Medical Sciences, and Environmental Studies Academies and the Charlottesville-Albemarle Technical Education Center.

8th: Engineering: Design and Build

Students will use the engineering design process to solve unique problems in the world around them. They will apply their knowledge of design to meaningful problems using microcontrollers and electronics, advanced manufacturing techniques such as 3D printing and CNC machining, and materials processing. Students will learn to document their experience and communicate their problem-solving process.

8th: Programming: Media and Gaming

Students will use a variety of platforms to code computer programs and/or create multimedia projects that impact and interest them. Students will learn to evaluate their work and others' as part of the self-improvement process

8th: Leadership, Entrepreneurship, and Innovation

Students will learn concepts and techniques for planning an innovative business and living the entrepreneurial lifestyle. Students will study effective leadership principles and innovative problem-solving skills.

8th: Mechatronics

Students will learn how to modify and control the world around them through the use of design, programming, and electronics. Students will learn programming and electronics through the use of microcontrollers. Students will use computer-aided design software and advanced manufacturing technologies (3D printing, die cutting, CNC machining, etc.) to create physical objects. The three systems of computer programming, electronics, and design will be combined to create mechanical-electrical devices that are computer controlled.