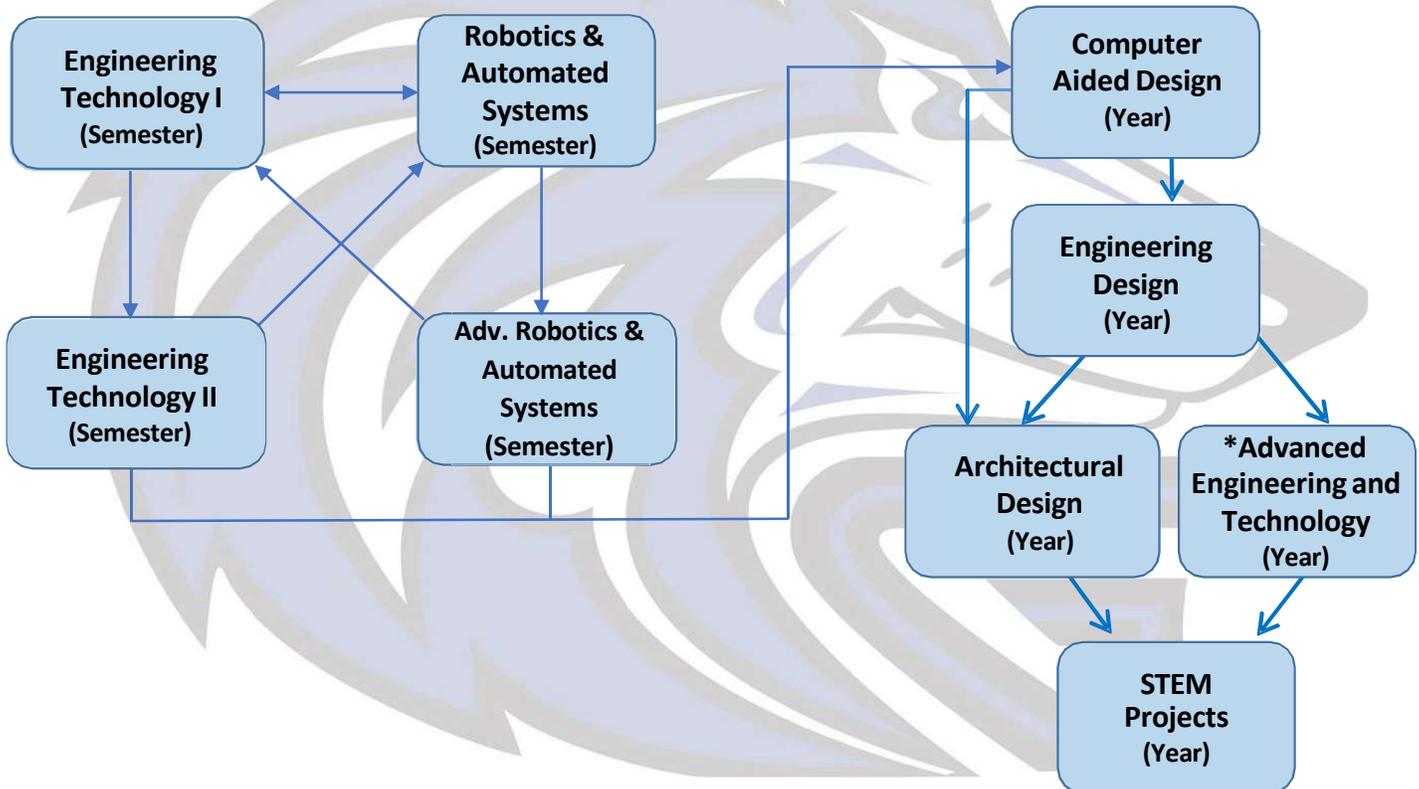


ENGINEERING & TECHNOLOGY

Engineering & Technology classes offer a wide selection of practical courses for students of all ability levels and interests. Course offerings allow students to explore a variety of topics and careers in the applied technologies. Students have the opportunity to begin training that may lead to careers in areas including engineering, drafting, architecture, manufacturing, and other technological fields.

**Students enrolled in Computer Science courses are encouraged to participate in the Technology Student Association (TSA), Women in Stem, Vex Robotics, and/or CyberPatriot/Computer Science Club.*



ENGINEERING & TECHNOLOGY COURSE DESCRIPTIONS

ENGINEERING TECHNOLOGY I

Grade Level: 9 – 12

Semester: 0.5 Credit

Prerequisites: None

Fee: \$25.00 lab fee

An introductory survey course for students interested in learning more about careers in engineering and technology. This course will be hands-on, and project based. Sample projects could include bridges, boats, gliders or other similar engineering design type projects. Upon completion of this course, students will be able to identify steps in the engineering design process. They can evaluate an existing engineering design, use fundamental sketching and engineering drawing techniques, complete simple design projects, and effectively communicate design solutions to others.

ENGINEERING TECHNOLOGY II

Grade Level: 9 – 12

Semester: 0.5 Credit

Prerequisites: Successful completion of Engineering Technology I

Fee: \$25.00 lab fee

This is a continuation of the Engineering Technology 1 course. This course will be hands-on, and project based, with students working with our laser engraver/cutter, CNC mills and with power tools in the woodshop, after passing all applicable safety tests. Sample projects could include clocks, labyrinths, light boxes, house modeling and microprocessors. Upon completion of this course, proficient students are able to describe various engineering disciplines. They will also be able to identify simple and complex machines, explain fundamental concepts related to energy, understand Ohm's Law, follow the steps in the engineering design process to complete a team project, and effectively communicate design solutions to others.

ROBOTICS & AUTOMATED SYSTEMS

Grade Level: 9 – 12

Semester: 0.5 Credit

Prerequisites: None

Fee: \$25.00 lab fee

Robotics & Automated Systems is an applied course for students who wish to explore how robots and automated systems are used in industry. Upon completion of this course, students will have an understanding of the historical and current uses of robots and automated systems; programmable circuits, interfacing both inputs and outputs; ethical standards for engineering and technology professions; and testing and maintenance of robots and automated systems.

ADVANCED ROBOTICS & AUTOMATED SYSTEMS

Grade Level: 10 – 12

Semester: 0.5 Credit

Prerequisites: Successful completion of Robotics & Automated Systems

Fee: \$25.00 lab fee

Advanced Robotics & Automated Systems is an applied course for students who wish to continue their understandings of robotics. This course goes through understanding the engineering design process and creating robots. The class uses the newest VEX Robotics to create designs to solve problems. Problems include but are not limited to automation races, soccer, tug-o-war, obstacle courses, and others.

COMPUTER AIDED DESIGN

Grade Level: 9 – 12

Year: 1.0 Credit

Prerequisites: None

Computer Aided Design (CAD) is an entry-level class in the Engineering and Technology pathway. Focuses on basic computer aided drafting skills using the Solidworks software. Includes file management, Cartesian coordinate system & dynamic input, drawing templates, drawing aids, line type and line weights, drawing & editing geometric objects, polylines & splines, array, text applications, and basic dimensioning. This course aligns with the Colorado Community College course SolidWorks Basic. If a student is interested in earning community college credit, an additional fee application is required. More information can be found at www.cherrycreekschools/cte on the Concurrent Enrollment tab.

ENGINEERING DESIGN**Grade Level: 10 – 12****Year: 1.0 Credit****Prerequisites: Computer Aided Design****Fee: \$25.00 lab fee**

Engineering Design is a 2nd year course in our Engineering and Technology pathway. Focuses on intermediate 3D computer aided drafting skills using the Solidworks software. Includes 3D modeling methods such as Extrude, Loft, Revolve, Chamfer and Fillet, Assemblies using Mates and Relationships and Toolbox, detailed mechanical drawings with Bill of Materials, advanced dimensioning and dimension variables. Students have the opportunity to earn Industry Certifications throughout the course. This course aligns with the Colorado Community College course SolidWorks Mechanical (CAD 257). If the student is interested in earning community college credit, an additional free application is required. More information can be found at www.cherrycreekschools/cte on the Concurrent Enrollment tab.

ADVANCED ENGINEERING & TECHNOLOGY**Grade Level: 11 – 12****Year: 1.0 Credit****Prerequisites: Successful completion of Engineering Design****Fee: \$25.00 lab fee**

Advanced Engineering and Technology is a 3rd year course in the Engineering pathway. An applied course for students interested in further developing their skills as future engineers. This course covers knowledge, skills, and concepts required for postsecondary engineering and technology fields of study. Upon completion of this course, identify components of control systems, create simple free body diagrams, use measurement devices employed in engineering, follow the steps in the engineering design process to complete a team project, and effectively communicate design solutions to others. Students will have the opportunity to earn multiple advanced industry recognized certifications in Solidworks during the yearlong course. Students enrolled in this course are encouraged to participate in the Technology Student Association (TSA). This course has a \$20 lab fee.

ARCHITECTURAL DESIGN**Grade Level: 10 – 12****Year: 1.0 Credit****Prerequisites: Successful completion of Computer Aided Design or Engineering Technology I**

Designed for students to develop skills in the field of architectural engineering. This class will offer the experience in the development and design of residential structures using REVIT, an architectural design software. Students will develop drafting skills through reading architectural blueprints and generating floor plans for real world applications. This course is designed to allow students to create a set of house plans that meet city code requirements for the city. Students will use REVIT to create floor plans, plot plans, electrical plans, foundation plans, and elevation views for their house.

STEM PROJECTS**Grade Level: 11 – 12****Year: 1.0 Credit****Prerequisites: Successful completion of multiple Engineering Technology or Computer Sciences courses****Fee: Material cost based on project need**

This course allows for advanced work in the Engineering & Design Program of Study. This advanced course is designed to be individualized for the student in a specific field of study of their choosing. Specific content and course design will be determined by the instructor in collaboration with the individual student. Goal setting, time management, and independent learning skills are developed in this course. The student will develop a career plan, a digital portfolio and professional presentation about their topic of study. This course is instrumental in helping students make future educational and career decisions.