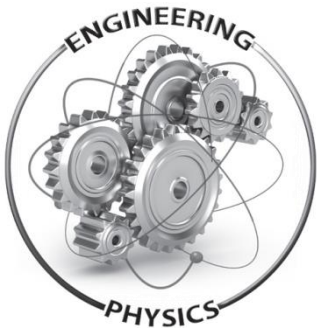
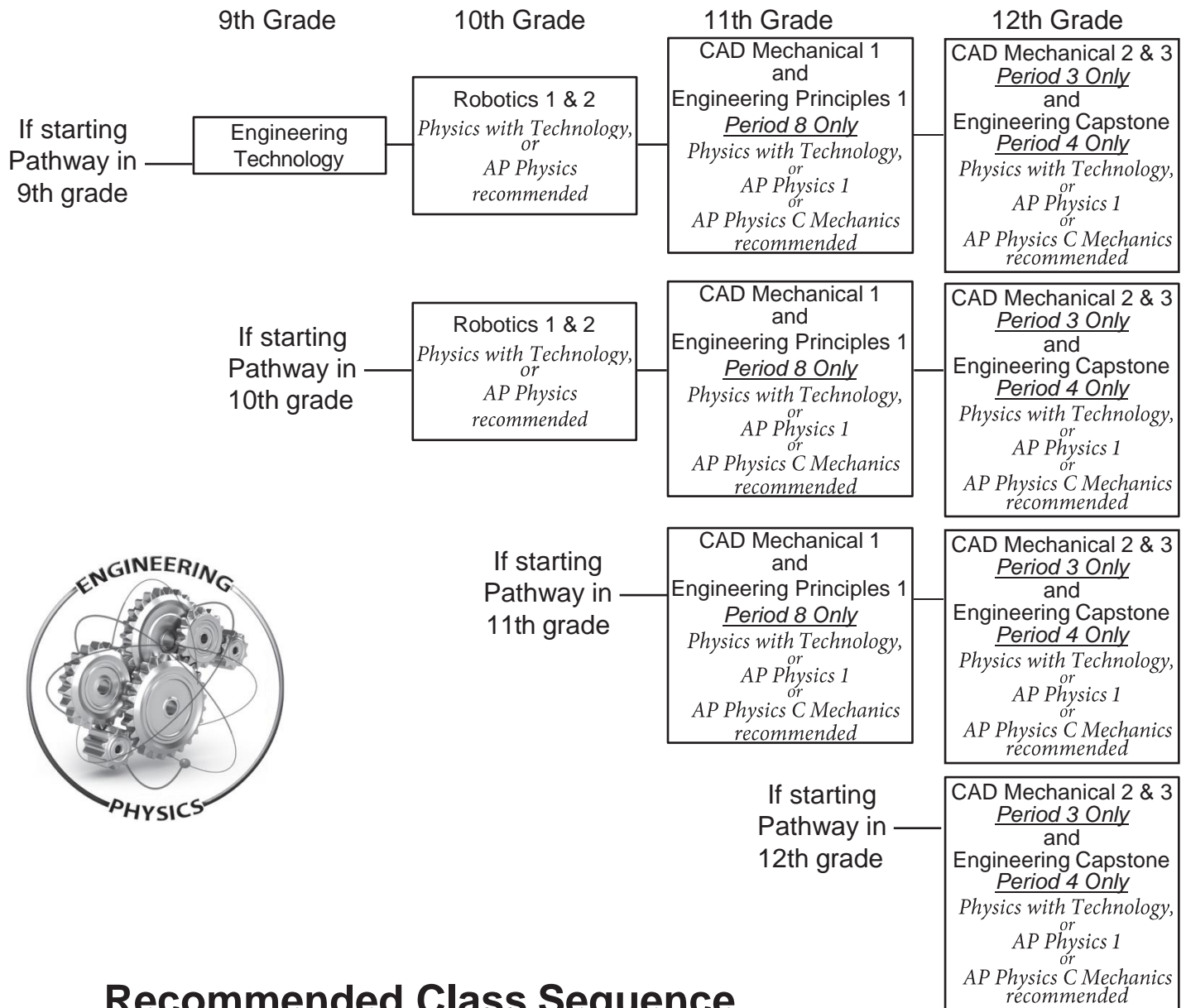


# Canyons School District Engineering Program at Alta High School

\*This program is open to all Canyons School District students



## Recommended Class Sequence

**Engineering Technology** should be taken during 9th grade, but can be taken anytime during the four years of high school. It must be taken before or concurrently with Robotics 1 & 2.

**Robotics 1 & 2** should be taken during 10th or 11th grade, but can be taken anytime during the four years of high school. It can be taken concurrently with CAD Mechanical 1 and Engineering Principles 1.  
(*Physics with Technology, or AP Physics recommended*)

**CAD Mechanical 1 Period 8 only (SLCC College Credit)** and **Engineering Principles 1** can **only** be taken in 11th or 12th grade. *No prerequisites required*  
(*Physics with Technology, AP Physics or AP Physics C Mechanics recommended*)

**CAD Mechanical 2 & 3 Period 3 only (SLCC College Credit)** can **only** be taken during 11th or 12th grade. It should be taken after CAD Mechanical 1 and Engineering Principles 1 before or concurrently with Engineering Capstone

**Engineering Capstone Period 4 only** and can **only** be taken during the 11th or 12th grade year. It should be taken after CAD Mechanical 2 & 3, but can be taken concurrently with CAD Mechanical 2 & 3. This is the capstone class of the Engineering program at Alta High School.  
(*Physics with Technology, AP Physics or AP Physics C Mechanics recommended*)

# Course Descriptions

## ENGINEERING TECHNOLOGY

A foundational engineering design course that introduces basic problem-solving and documentation skills. Various aspects of engineering will be explored along with technology's environmental, societal, political, and economic impacts on our world. By utilizing problem-solving skills, students will develop essential abilities and attitudes that will, in turn, expand their occupational opportunities in the world of engineering.

## ROBOTICS

A lab-based, hands-on curriculum combining electrical, mechanical and engineering principles. Students will learn to design, build, program and control robotic devices by applying science, technology, engineering, and math concepts. A rigorous study and application of electrical concepts will include sources of energy, electrical safety, use and identification of basic electronic components, sensors, and actuators. Engineering concepts will include: mechanical design, prototype development, design testing, programming, and proper engineering documentation. Industrial automation, robotic applications, and career opportunities will also be discussed.

## CAD MECHANICAL

Introduces high school students to the engineering design process and to the properties of good design. Students will plan, complete, and document a number of analysis-based designs. Skills will be developed in the creation of memos, design reports, and technical drawings using 2D/3D CAD software. The course content will be covered through a series of hands-on activities.

## ENGINEERING PRINCIPLES

A hands-on course that ties together observations and concepts common to a variety of different engineering disciplines in order to develop a better understanding of basic math and science principles used in engineering. By utilizing problem-solving skills in a laboratory environment, students will develop skills and attitudes that impact and expand occupational opportunities.

## ENGINEERING CAPSTONE

As members of an engineering team, students apply science, technology, and mathematical concepts and skills to solve engineering design problems or to significantly innovate existing products. Students research, develop, test, and analyze designs using criteria such as cost, effectiveness, safety, human factors, and ethics. Long term project development by student teams and regular interaction with and presentations to members of industry are essential components to the success of this course.

## PHYSICS "WITH TECHNOLOGY"

Highly recommended for 10th, 11th, and 12th grade students. The physics/electronics curriculum is divided into four major topics: (1) motion of objects, (2) forces acting on objects, (3) energy, and (4) circuits. The study is developed around systems and the nature of science. It is recommended the student take Secondary Math II before taking this course.

## AP PHYSICS 1/HONORS PHYSICS

Highly recommended for grades 11-12. Students must have successfully completed Secondary Mathematics II. AP Physics 1 is the equivalent of a first semester algebra-based college physics course, but it is designed to be taught over a full academic high school year to enable AP students to develop deep understanding of the content. The course covers Newtonian mechanics (including rotational dynamics and angular momentum); work, energy and power; mechanical waves and sound; and an introduction to electric circuits. As part of this class students have the opportunity to complete 10 labs outside of the school day at the University of Utah for university credit.

## AP PHYSICS C MECHANICS

Highly recommended for grades 11-12. Students must be concurrently enrolled in AP Calculus and have completed an introductory physics course. AP Physics C Mechanics is the equivalent of a first semester calculus-based college physics course, but it is designed to be taught over a full academic high school year to enable AP students to develop deep understanding of the content. The focus of AP Physics C Mechanics is classical Newtonian mechanics. It is especially appropriate for students planning to enter careers in engineering or physical science. University credit can be earned with a successful performance on the Advanced Placement exam. As part of this class students have the opportunity to complete 10 labs outside of the school day at the University of Utah for university credit.