

ENGINEERING CAPE ACADEMY

**Successful completion of course sequence and exam will earn a student Master Cam Certification*

**All courses in this academy the art requirement for graduation*

Engineering I Honors: Intro to Engineering 86005500

Grade(s): 9-11

Pre-Req: N/A

This course exposes students to the design process, research and analysis, teamwork, communication methods, global and human impacts, engineering standards, and technical documentation. Students will employ engineering and scientific concepts in the solution of engineering design problems. In addition, they will learn to use 3D solid modeling design software to design solutions to problems. Students will develop problem-solving skills and apply their knowledge of research and design to create solutions, document the process, and communicate the results.

Engineering II Honors: Principles of Engineering 86005200

Grade(s): 10-12

Pre-Req: Successful completion of Engineering I

This course helps students understand the field of engineering/engineering technology and prepares them for postsecondary engineering programs by developing a more in-depth mastery of the required knowledge and skills in mathematics, science, and technology. Through problem-based learning strategies, students study key engineering topics, including mechanisms, energy sources, energy applications, machine control, fluid power, statics, material properties, material testing, statistics, and kinematics. Exploring various technology systems and manufacturing processes help students learn how engineers and technicians use math, science and technology in an engineering problem solving process to benefit people. The course also includes concerns about social and political consequences of technological change.

Engineering III Honors: Computer Integrated Manufacturing 86005600

Grade(s): 11-12

Pre-Req: Successful completion of Engineering I and II

This course applies principles of robotics and automation. The course builds on computer solid modeling skills developed in Introduction to Engineering Design. Students use CNC equipment to produce actual models of their three-dimensional designs. Fundamental concepts of robotics used in automated manufacturing, and design analysis are included.

Engineering IV Honors: Engineering Design and Development 86006500

Grade(s): 12

Pre-Req: Successful completion of Engineering I, II, and III

The purpose of this course is to serve as a capstone course to provide students with the opportunity to develop a solution to a design problem from start to finish. Students work in teams to design, engineer, create a prototype, perform product testing, and then produce a finished product. This would involve using ALL of the knowledge previously learned, not only in technology education, but across the curriculum. Students will be expected to create and deliver a formal report on the project.

- **Honors Level Course Note:** Academic rigor is more than simply assigning to students a greater quantity of work. Through the application, analysis, evaluation, and creation of complex ideas that are often abstract and multi-faceted, students are challenged to think and collaborate critically on the content they are learning.
- **Advanced Placement Course:** Students earn 6 Quality Points on their weighted GPA for these courses; however, to earn college credit, the student must pass an end of the year course given by the College Board.
- **LH Courses:** LH is designated Local Honors. This means that the district has deemed the course honors; however, the state has not. Some scholarships, and post secondary institutions may not consider these courses Honors level.