Course Title: Engineering Design

Course #: 1472-1473

Course Description:
This course introduces students to the fundamentals of computer graphics and two and three-dimensional modeling on computer-aided design, modeling, and drafting software programs. Students use AutoCAD, Adobe Illustrator, SolidWorks, OnShape, and other software and online computer systems to design and display various objects, projects, and solutions. Students learn principles and techniques that enable them to create, modify, annotate, scale, and output two- and three-dimensional drawings, renderings, and models.

UC/CSU Approval: “f” approved

Grade Level: 10-12

Estimated Homework Per Week: 1-2 hours

Prerequisite: none

Recommended Prerequisite Skills: basic desktop computer knowledge

Course Grade Scale:
- Projects: 40%
- Homework: 25%
- Tests and Quizzes: 15%
- Final Project: 20%

Major Assessments/Units/Topics: Vector Graphic Design, 3D modeling, and 2D drafting projects

Unit 1: Graphic Design
In this unit students learn the importance and techniques to creating images and illustrations using vector based design programs. The unit includes quizzes, small group projects and culminates in a large individual project.
Unit 2: 3D-Modeling
In this unit, students learn about the applications of prototyping and manufacturing using industry grade software programs to bring their ideas and solutions to life. The unit includes quizzes, small group projects and culminates in a large individual project.

Semester 1 Final Project: Students will design robotic mechanisms that are represented by the different areas of robotics. They will select simple tasks to perform and design a robotic element to perform said task.

Unit 3: 2D Drafting: In this large unit students will create projects that utilize research, planning, and technical CAD skills to effectively solve problems presented to them. The unit includes quizzes, small group projects and culminates in a large individual project.

Semester 2 Final Project: This will encompass all the skills and concepts attained throughout the year to complete a complex solution to an identified problem.