

## Rationale

Engineering is the profession in which knowledge and processes of the mathematical and natural sciences are technologically applied with judgment in developing ways to utilize economically, the materials and forces of nature for the benefit of mankind. This program will provide a variety of exemplary educational experiences that will prepare students of character for lifelong learning in an increasingly changing world of technology.

There is a tremendous need for qualified students who are proficiently prepared in our nation's college/university engineering and engineering technology programs. Too many college students (more than 50%) drop out of these programs because they were not properly prepared in high school.

## Course Description

This class introduces the various fields of engineering and engineering technology and is beneficial for any student considering going into a 2 or 4 year engineering/engineering technology program in college. This project based class will explore concentration areas in the engineering field such as mechanical, electrical, control systems, statics, bridge building, material testing, the engineering design process, quality control, ballistics, and failure prevention. The student will learn how to; write technical reports, present their solutions, teamwork, and how science, math, and technology are used by engineers on a daily basis. At the end of the year, the student has the option of taking a college credit exam, at no cost, that is transferable to most colleges with engineering programs.

## Prerequisites

Introduction to Engineering Design (IED) with a "C" or higher or current teacher approval and concurrently enrolled in Algebra I or higher.

Credit: 1 Unit - Two Semesters (Practical Arts)

Weighted: 0.75

## Course Objectives

1. The student will identify in writing types of engineering and describe how engineering evolved and played a key role in the history of society, with 80% accuracy. (CA3, SS2, SS4, SC8; 1.2, 1.5, 3.1, 3.2) Locally assessed. (A+: Writing)
2. The student will orally define and use basic terminology related to technology with 80% accuracy. (CA1, CA3, CA4; 1.2, 1.4, 1.5, 3.1) Locally assessed. (A+: Speaking)
3. The student will read, analyze and design tools to record/document and present information, i.e., sketches, graphs, charts, written reports, power point, posters, and oral presentations with 80% accuracy. (CA3, CA4, MA1, MA2, MA3; 1.2, 1.3, 1.8, 3.2) Locally assessed. (A+: Research)
4. The student will evaluate and articulate the design process of a product development lifecycle with 80% accuracy. (CA1, CA2, CA3; 1.3, 1.4, 1.5, 3.1, 3.2) Locally assessed.
5. The student will read, interpret, calculate and evaluate various engineering systems, using a variety of measurement tools with 80% accuracy. (CA1, MA1, MA2, MA3, MA4, SC2; 1.2, 1.4, 1.5, 3.1, 3.2, 3.4) Locally assessed. (A+: Reading)
6. The student will transfer ideas into a cohesive design, by using logic, knowledge, and troubleshooting skills with 80% accuracy. (CA3, MA1, MA2, MA3, MA4, SC2; 1.2, 1.4, 3.2) Locally assessed.

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