Overview of the Course
This course is designed as a comprehensive introduction to the engineering profession. Classroom discussions and presentations will inform the students of the many different avenues available to one in the field of engineering. The emphasis of the course is the concept of communication, specifically those methods used in the field of engineering to convey design intent, including writing, drawing and public speaking. General concepts of the design process and problem solving are also studied. Students will have the opportunity to practice their creative abilities both individually and in group design projects. The class is considered a STEM Pre-Engineering course, which utilizes coursework developed by Project Lead the Way, (PLTW) a nationally recognized leader in technology and engineering curriculums. (See attached)

Course Objectives

- Become familiar with the design process and learn creative approaches to problem solving.
- Learn freehand sketch techniques to assist in creating and conveying design concepts
- Become familiar with industry acceptable documentation and drawing standards
- Become able to create 3D modeling parts, assemblies and technical drawings through the use of Autodesk Inventor software
- Become proficient in record keeping through the use of an Engineering Journal
- Gain experience in public speaking through the task of concisely presenting individual design solutions to a panel of peers and others
- Exercise practical application of mathematical skills through the use of statistics, measurement and unit conversion exercises
Supplies Needed

- Engineering Notebook (provided by Instructor, to remain in classroom)
- Two inch, three ring binder
- Black pens, pencils and eraser
- Student planner or calendaring device
- 8 GB Flash Drive (please see me if this is a hardship)

Textbooks

- No textbooks are required for this course

Grading Policy

Grading is based on your completion of all assignments, attendance, work ethic and quizzes and tests. Your final grade in the course will be based on the following percentages:

- Major Projects and Assignments 50%
- Quizzes and Tests 20%
- “Work Ethic” 30%

Attendance:

If you are tardy or miss a Mission Valley ROP class multiple times, you will lose units of credit and your grade will be adversely affected. Be advised that credits are earned by attendance only and cannot be made up. Much of the work will be done in class. Make up for class assignments will be given for excused absences only. Failure to complete make up assignments will adversely affect your grade.

Late Work:

Late work will be accepted and graded as follows:
1 Day Late: - 25%
2 – 7 Days Late: - 50%
Late Work will NOT be accepted after 1 week.

Extra Credit:

Extra Credit is very seldom offered. To earn a good grade in this class, you need simply to pay attention, participate, be respectful of others, of our classroom rules and do your assigned work on time.

Bathroom Pass:

Each student will be given 3 Bathroom Passes per Semester. No extra credit will be given for unused passes.
“Work Ethic” Grade:
The Work Ethic grade is a very important aspect of this course. As this is an ROP course, I am committed to providing opportunities where you can develop and strengthen “Job Ready Practices.” In addition to the attainment of academic knowledge, my goal is for you to develop good work habits, often referred to in industry as “Soft Skills.”

Soft skills are often associated with maturity and will not only assist you in getting a job, but will also help you to keep your job and advance at it.

Your Work Ethic score is determined by, among other things, your daily class point value accrued at the end of each quarter. Each day you will be given **10 points** upon entering the classroom. *It will be up to you and how well you adhere to the Classroom EXPECTATIONS and Classroom RULES throughout each day, whether or not you still have the full 10 points at the end of each day.*

Classroom RULES:
- NO cell phones or other personal electronic devices are allowed in the classroom. As per Logan School Policy, they are to be “OFF and AWAY” during my class.
- Chromebooks are seldom needed, as the CAD program we use in class is installed on our classroom desktops. I ask that Chromebooks be “OFF and AWAY” unless I direct use.
- NO talking when someone else is talking.
- NO food or drink allowed in the classroom. (Except water)

Classroom EXPECTATIONS:
- Be PROMPT: in your seat and ready to work when the bell rings
- Be PREPARED: Have your pencils, pens, planner, calculator with you every day
- Be RESPECTFUL: Simply stated, treat others how you would like others to treat you
- Be ALERT: I want to hear your ideas, your thoughts, your questions...everything! Please communicate to me! That’s what I’m here for!
- Use care and respect for the computer equipment. Mistreatment will lose you the opportunity to use them, which will adversely affect your grade.

*Students and Parent/Guardian:*
*Please sign below, signifying that you have read and discussed together the class syllabus.*

I have read and agree to abide by the rules and regulations of the Class Name course as described in the above syllabus.

______________________________________________
Print Student Name                                                                                      Date

______________________________________________
Student Signature

______________________________________________
Print Parent/Guardian Name                                                                                      Date

______________________________________________
Parent/Guardian Signature
IED is the first of a series of classes within the PLTW Pathway to Engineering Program. The following is an excerpt from
http://www.pltw.org/our-programs/high-school-engineering-program

Pathway To Engineering | High School Engineering Program

The PLTW Pathway To Engineering (PTE) program is a sequence of courses which follows a proven hands-on, real-world problem-solving approach to learning. Throughout PTE, students learn and apply the design process, acquire strong teamwork and communication proficiency, and develop organizational, critical-thinking, and problem-solving skills. They discover the answers to questions like how are things made and what processes go into creating products? Students use the same industry-leading 3D design software (Autodesk Inventor Professional) used by companies like Intel and Lockheed Martin. They explore aerodynamics, astronautics, and space life sciences. Students apply biological and engineering concepts related to biomechanics – think robotics. They design, test, and actually construct circuits and devices such as smart phones and tablets and work collaboratively on a culminating capstone project. It’s STEM education, and it’s at the heart of today’s high-tech, high-skill global economy.

PTE courses complement traditional mathematics and science courses and can serve as the foundation for STEM-centered or specialized academies. The program is designed to prepare students to pursue a post-secondary education and careers in STEM-related fields.

PLTW Foundation Courses

• Introduction to Engineering Design (IED)
  o Designed for 9th or 10th grade students, the major focus of IED is the design process and its application. Through hands-on projects, students apply engineering standards and document their work. Students use industry standard 3D modeling software to help them design solutions to solve proposed problems, document their work using an engineer’s notebook, and communicate solutions to peers and members of the professional community.
• **Principles Of Engineering (POE) (Offered at James Logan High School)**
  o Designed for 10th or 11th grade students, this survey course exposes students to major concepts they’ll encounter in a post-secondary engineering course of study. Topics include mechanisms, energy, statics, materials, and kinematics. They develop problem-solving skills and apply their knowledge of research and design to create solutions to various challenges, document their work and communicate solutions.

• **Civil Engineering and Architecture (CEA) (Currently offered at Mission Valley ROP (MVROP). Refer to MVROP website for more details.) (www.MVROP.org)**
  o Students learn important aspects of building and site design and development. They apply math, science, and standard engineering practices to design both residential and commercial projects and document their work using 3D architecture design software.

• **Biomedical Science (currently offered at Mission Valley ROP. Refer to website for more details.) (www.MVROP.org)**
  o In the introductory course of the PLTW Biomedical Science program, students explore concepts of biology and medicine to determine factors that led to the death of a fictional person. While investigating the case, students examine autopsy reports, investigate medical history, and explore medical treatments that might have prolonged the person’s life. The activities and projects introduce students to human physiology, basic biology, medicine, and research processes while allowing them to design their own experiments to solve problems.

• **Computer Science Principles (currently offered at Mission Valley ROP. Refer to website for more details.) (www.MVROP.org)**
  o Computer Science Principles (CSP) is the PLTW course that covers the College Board’s CS Principles framework. Students work in teams to develop computational thinking and problem solving skills. The course does not aim to teach mastery of a single programming language but aims instead to develop computational thinking, to generate excitement about the field of computing, and to introduce computational tools that foster creativity. The course also aims to build students’ awareness of the tremendous demand for computer specialists and for professionals in all fields who have computational skills. The course also aims to engage students to consider issues raised by the present and future societal impact of computing.

• **Digital Electronics (currently offered at Mission Valley ROP. Refer to website for more details.) (www.MVROP.org)**
  o Digital Electronics (DE) is a high school level course that is appropriate for 10th or 11th grade students interested in exploring electronics. Other than their concurrent enrollment in college preparatory mathematics and science courses, this course assumes no previous knowledge.