Introduction to Engineering (IED) Syllabus

In this course you will literally explore what it means to be an engineer. You will learn about how engineers use a collaborative design process when engineering new parts. The major focus of the course is learning how to take an idea through a design process that will eventually be manufactured or produced. As you learn about various aspects of engineering and engineering design, such as how engineers communicate through drawing, you will apply what you learn through various activities, projects, and problems. For example, after learning about the different techniques engineers use in determining how to design a product, you and your teacher will have the flexibility to explore the design and engineering processes to solve problems that are of interest to you. In addition, you will use Autodesk Inventor, which is state of the art 3-D design software, to help you design solutions to different design projects. Working in teams, you will learn about documenting your solutions, solving problems, and communicating your solutions to other students and members of the professional community of engineering and engineering design. Introduction to Engineering Design TM is intended to serve as a foundation course within the Project Lead The Way® course sequence. All of the topics learned in this course will be used in future courses.

Introduction to Engineering Design Course Units:
- UNIT 1 – The Design Process
- UNIT 2 – Technical Sketching
- UNIT 3 – Measurement
- UNIT 4 – Modeling Skills
- UNIT 5 – Geometry and Design
- UNIT 6 – Reverse Engineering
- UNIT 7 – Documentation
- UNIT 8 – Advanced Computer Modeling
- UNIT 9 – Design Teams
- UNIT 10 – Design Challenges

*Time constraints and limitations may force us to modify the scope and sequence in which we move as a class

Grading Policy/Breakdown:
- **Projects** are worth **50%** of your grade
- **Activities and Quizzes** are worth **30%** of your grade
- **Engineering Notebook Portfolio and End of Course Final (EOC)** is worth **10%** of your grade
- **Employability Skills & Work Ethic** is worth **10%** of you grade. This includes participation, attendance, effort, behavior, & professional attitude

Required Materials and Tools:
- 3-Ring Binder to maintain your engineering notebook
- At least 1 pencil (mechanical or #2 yellow), one very good eraser
- At least two good pens, one fine point (0.8mm or less) and one bold (1.4mm and up)
- Class Folder to help you organize material that does not go in your engineering notebook
- Engineering Notebook Paper
- USB flash drive to transport/backup your work
- Headphones to watch video tutorials
- A current email account
- Recommended if you have a smart phone or tablet: CAM SCANNER APP

Computer Usage Policy: Students must remember that the computer they use is _not their personal computer_.
Therefore, students may not make any changes or adjustments to the computer environment *without teacher approval*. Unapproved changes include changing the background picture, and other settings on the computer, and/or downloading any material into the computer. Making unapproved changes or adjustments to the inside or outside of lab equipment is considered inappropriate usage and is grounds for immediate suspension from the lab and possible permanent removal from class accompanied by a loss of credit. This includes the playing of games (either pre-loaded on the computer, your USB drive, the network, or found on the Internet), which is never allowed without prior approval from the teacher.   Please refer to the CAD Lab Computer Contract.

Student Expectations: Be on time, participate, have a positive work attitude. Come prepared, have the proper
materials and ready to learn (Be Attentive!).   Listen in class and try your best! Demonstrate respect for yourself, fellow students, your instructor, and classroom equipment. Help other students succeed and DO NOT turn away students who ask meaning full questions! **Always use PEN when documenting and drawing in your Engineer's Notebook!**   All hand-written work MUST BE NEAT & LEGIBLE!

Projects: (50%) This is a project based course and, therefore, projects will have the greatest weight. These projects are designed to allow you the chance to demonstrate and show what you learned. Most projects will be worked on towards the end of the semester. Projects will typically take several days to a week to complete and will usually be presented in front of class. Quizzes are short assessments designed to cover each unit of study.   Quizzes can be taken multiple times until a successful score is obtained. The first quiz attempt will be completed as a class during class time; any subsequent quiz attempts must be completed on your own time (i.e., after school or at lunch).

Activities and Quizzes: (30%) Much of the work we will be doing will consist of activities. These activities are designed to literally teach the student about what it means to be an engineer. They are also meant to provide you with the skills necessary to complete course projects and will help you on the quizzes and end of course (EOC) final. Activities typically will take between 1-2 days to complete and are always submitted and uploaded as a digital/electronic PDF (**.pdf**) file. Quizzes are short assessments designed to cover each unit of study.   Quizzes can be taken multiple times until a successful score is obtained. The first quiz attempt will be completed as a class during class time; any subsequent quiz attempts must be completed on your own time (i.e., after school or at lunch).

Engineering Notebook Portfolio and EOC Final: (10%) As we go through the course, you are required to maintain an engineering notebook in a 3-ring binder.   Your engineering notebook portfolio is a reflection of what you have learned for the first quarter of this class. Any assignment done on engineering notebook paper needs to go into your engineering notebook portfolio. It should contain a table of contents and be arranged in an orderly manner. Any assignment with a drawing or calculations should have designer and witness signatures along with dates of conception.   Any page with work on it should have a both a title and page number.   Assignments, especially drawings should always be done with dark pen ink. All pages should be hole punched and placed in an uncluttered orderly manner. At the end of the first quarter grading period, engineering notebooks will be checked for completeness, organization, and legibility and will account for 10% of your grade. The second semester will consist of an end of course (EOC) final assessment. This multiple choice assessment will cover everything we have learned since our first day of class and will also account for 10% of your grade but for the second semester.

Employability Skills & Work Ethic Grade: (10%) This is a CTE class and is designed to help you prepare for the work force. Therefore it is important to treat this class as if it were a job.   This portion of your grade is based on excellent attendance, active participation in class, no unnecessary tardies or truancies, and an excellent, positive attitude. Students who consistently leave garbage around the computers, act inappropriately, turn work in late, and make trouble will NOT receive the full 10% of their grade. It is also based on how well you help others, clean up after yourself; not to mention how well you bring all required materials to class daily. In addition, when the teacher is talking, students are expected to stop, look, listen, and follow directions, and take notes if needed.

Attendance Policy: You should treat attendance in this course the same way that you would treat attendance at your place of employment. If a student is absent, it is the student's responsibility to see the instructor to get "make-up" or "missed" information. All resources are online (class website) and available for your convenience if you are absent. Also, if a student is behind, he/she can check with the instructor and use the computer lab before school, after school, or during their lunch/open period.

Academic Honesty: Students are expected to demonstrate honesty and integrity at all times. Each student is responsible for his or her own work, which includes class activities and assignments, individual contributions to group products. All work submitted by a student should be a true reflection of that student's knowledge, experience, effort and ability. It is unacceptable academic behavior to submit work that is not one's own. Students who engage in plagiarism will receive ZERO credit and will NOT be allowed to make it up. The consequences laid out in this section will be strictly adhered to in all incidents of cheating or plagiarism.

Late Work: All work should be turned in on the due date!

- **Late work:** Late work is will be marked down 20% (*1 point for 5 point assignments, 2 points for 10 point assignments, 4 points for 20 point assignments and so forth…..*) It is difficult to keep an accurate gradebook when students consistently turn work in late. **Therefore, it is also your responsibility to notify the instructor once you notice the assignment is graded and scored in Blackboard**. Turning work in late will also affect your employability and work ethic portion of your grade. When returning from an absence, see the instructor for handouts and missed assignments. It is your responsibility to request this information and to see the instructor!
- **Website (Blackboard):** Many lectures/PowerPoint presentations, handouts, and assignments will also be on the class Blackboard learning management system. Be sure to check the website daily, especially when absent!
- **Note:** It is in the student's best interest to submit all work attempted, rather than receive "zero credit."

Contact Info:

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Roseville High School
Computer Lab Use Contract

The computer resources and labs at Roseville High School carry a responsibility to respect and protect the equipment, software, and rights of others in a lab.

Please review this contract with your son/daughter and discuss the following responsibilities.

1. Vandalism or tampering with classroom equipment and computer configurations of the files and/or operating system will not be tolerated.
2. Copyright laws prevent installing and/or removing any programs not authorized by the school.
3. Unauthorized software & disks may **NOT** be brought from home and used on any computer.
4. A student's work is considered their property. Tampering with or copying another student's work/data will be considered a violation of property rights and disciplinary action will be taken.
5. **REPORT <u>IMMEDIATELY</u> TO YOUR TEACHER ANYTHING FOUND WRONG WITH THE COMPUTER SYSTEM OR WORK AREA**
6. **NO FOOD OR DRINKS** are allowed in the computer lab. However: a tightly capped bottle with water in it can be kept under the student desk…no other types of drinks are allowed!
7. **UNAUTHORIZED PRINT JOBS WILL NOT BE ALLOWED!**
8. **NO DOWNLOADING of any sort: music, videos, software, etc………**
9. **The use of social media or games is NOT allowed**
10. Always backup your work in safe location (i.e., google drive, home computer, external hardrive….)
11. Always SAVE your work in an organized manner and create folders and subfolders in a structured manner
12. Clean up any trash or debris around your work space even if it is not yours

<u>**This contract must be signed by the student & parent/guardian before using the lab**</u>.**

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We have read/understood the COURSE SYLLABUS & COMPUTER CONTRACT. We agree to comply with the class policies/procedures and understand the consequences. We realize that any misuse or vandalism of the computer labs can result in forfeiture of lab use and disciplinary action from the Administrator's office, and students may be placed on disciplinary probation. Elective courses are a privilege and those students who do not comply may be subject to a class schedule change. All costs caused by vandalism will be the responsibility of the student(s)/parents/legal guardians.

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Student Signature   Date   Parent/Guardian Signature   Date

Please **PRINT** below & **CIRCLE** preferred method of communication:

Student Name:
Student ID #:
Grade:
Parent/Guardian:
Best Email Contact
Best Cell Phone Contact