

Introduction to Engineering Design (IED)

Instructor contact information

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Course Description

Students will explore the fundamentals of the engineering design process, applying math, science, and engineering standards to hands-on projects. Students will work individually and in teams to design solutions to a variety of problems using 3D modeling software, and will use an engineering notebook to document their work. This class will be exciting, challenging, and fast paced, requiring focus, attention, and effort.

General Objectives

Students will:

- Understand and utilize the engineering design process.
- Increase skills in technical sketching and drawing
- Learn measurement techniques and units and how to express them with statistics
- Develop 3D modeling skills
- Utilize geometry through design
- Reverse engineer various objects and products
- Document their work

Tracked Competencies will include:

- Problem solving skills using the engineering design process
- 2D drawing and 3D modeling
- Dimensioning and accuracy
- Documentation and collaboration

All work will be evaluated for the competencies above along with a component for Overall Quality (Neat, Clean, Clear, Omissions, On Time).

Class Materials

- Normal classroom supplies such as a pen and pencil will be the only student-required materials. It is optional to bring a 2" 3-ring binder for organization.

Assignments:

Assignments will be assigned through the Project Lead The Way site, which we will discuss in class. Note that assignments are project based, and may not be updated in the Marshfield online grading system for several weeks at a time. Assignments will be turned in through the Project

Lead The Way (PLTW) Learning Management System (LMS), engineering lab notebooks, and PLTW ePortfolio.

Technology Student Association (TSA)

All students have the opportunity to participate in Marshfield TSA activities. TSA activities include homecoming parade, state conferences, national conference, competitive events related to technology and many other fun activities. Marshfield TSA holds regular meetings to plan activities. TSA is a student run association that promotes technology education and leadership at local, state, and national levels. Mr. Veeneman is the chapter advisor.

Student Expectations

Students will be expected to maintain desired conduct as outlined in the school policies. Interpretation of these guidelines specific to this class includes the following.

Students are expected to:

- Be in their assigned classroom seat when the tardy bell sounds.
- Give 100% effort during class. Little to no homework will be given and it is critical that class time is used effectively.
- Listen to and follow instructions. **Always** ask questions.
- Be responsible for their personal belongings and project materials.
- Respect your peers and their property. Obtain permission before handling others property.
- Respect others opinions and use non-offensive language to communicate to others.
- No food or drink allowed in the lab.
- Refrain from horseplay in the classroom.
- Be held responsible for the purposeful damage or theft of classroom or lab equipment.
- Await dismissal at the end of class by the instructor.
- Make up class assignments and missed due to absence.
- No cell phones out during class. I will confiscate cell phones after the first warning.
- No video games on the computers.
- **Have passes to be excused from class signed by the teacher prior to leaving the classroom.**

Technology Use Agreement

Students that breach the technology use agreement will not be able to work on the computers in this class. Be smart on what you are doing on the computers.

Classroom discipline procedures

1. Upon observing inappropriate behavior, the instructor will issue a verbal warning.
2. If the same behavior continues, the instructor will have a conference with the student and consult with a parent/guardian.
3. If inappropriate behavior continues or if behavior is severe a referral form will be completed and sent to the assistant principal for further action.

Note: If a student incident occurs which is a violation of school disciplinary code that warrants in school or out of school suspension on the first offense, as outlined in the student handbook, or

purposely creates an unsafe situation, placing the student and/or others in an unsafe situation, the student will be referred directly to the assistant principal.

Grades

Student's grades will be accumulated from the following to determine the semester grade:

- Daily effort, lab notebook and assignments
- Individual and group projects
- Semester final exam

Daily lab work grades will be recorded daily at the discretion of the instructor. Students' work habits and behavior will be evaluated and recorded.

Individual and group projects will be evaluated for accuracy, completeness, and craftsmanship. Safe working habits and lab work efficiency will be evaluated as well. Grades will be recorded at the announced due date of the project.

Semester final exams will be administered at the end of each semester. Exams will be a comprehensive test of the student's learning during the semester. Scores on the final exam will serve as 10% of the student's semester grade.

Letter grades for individual written assignments, tests, quizzes, and projects will be determined using the following percentage scale:

94%-100% . . . A	73%-76%C
90%-93% A-	70%-72% C-
87%-89% B+	67%-69%D+
83%-86% B	63%-66% D
80%-82% B-	60%-62%D-
77%-79% C+	Below 60% . . .F

Make-up Work

Students who miss class are expected to make up missed class assignments and lab work. It is the student's responsibility to communicate with Mr. Zweerink before or after an absence to make up missed assignments.