

# Engineering Design and Problem Solving

Engineering Design and Problem Solving (EDPS) is an open-ended engineering research course in which students work in teams to design and develop an original solution to a well-defined and justified open-ended problem by applying an engineering design process.

Students will perform research to select, define, and justify a problem. After carefully defining the design requirements and creating multiple solution approaches, teams of students select an approach, create, and test their solution prototype. Student teams will present and defend their original solution to an outside panel. While progressing through the engineering design process, students will work closely with experts and will continually hone their organizational, communication and interpersonal skills, their creative and problem-solving abilities, and their understanding of the design process.

## Supplies:

- *Composition Book Quad Rule (graphing paper)*
- *Pencil*

## Student Expectations:

- All students will be on time. Tardiness is not acceptable.
- Students must come to class prepared each day by completing all assignments/ materials learned in class.
- Students will be expected to participate in all activities involved with the class.
- Any student who is absent from class is responsible for getting material from another student in the class and be prepared when returning to class.
- Each student is responsible for their own belongings and materials.
- Follow all rules and regulations of RPHS
- ALL students are expected to participate no matter the circumstance!!!! Participation is imperative for this type of class. If a student refuses to participate, then points may be deducted from the student's grade. Participation grades may be given at any time throughout the semester.
- If a student is absent from an approved extracurricular activity, then the student is responsible for turning in the assigned work at the beginning the next class.

## Requirements:

- All students must come to class prepared with the following materials: Engineering Notebook and Pencil (Additional materials will be announced before the next class when they are needed.)
- Students will be required to keep up with an interactive notebook for their assignments.
- NOT BRINGING MATERIALS shows a lack of interest and concern for class. By not bringing materials, may result in points being deducted from a student's grade.

## Grading Policy:

- Major 50%
  - Daily: 50%
- \*Each 9 weeks, is worth 42.5% with two 9 weeks combining to 85% of the semester grade. The final exam is worth the other 15%

## Daily Grades:

- Each week of work is a daily grade. There are 3 things you will have to demonstrate at the end of each week.
  1. 50% - Appropriate amount of work completed during the week
    - \*10% of the grade is based on teammate contribution, to encourage all team members to contribute
  2. 40 % - Documentation of your work (in your notebook, and/or within your portfolios)
  3. 10 % - Evidence that your chosen work demonstrates forward progress for your team
- There are a variety of activities to choose from that demonstrate progress and the process as the students work towards their ultimate solution. Activities are organized into Elements. In order to simulate real world projects, students will choose which activities are most relevant to their project by choosing what element of the project is most important to address next. Activities are offered to help guide students along with their project. Rubrics for each activity will be communicated to students.
- Late activities will not be accepted. Activities submitted after the weekly deadline will be counted towards the next week.
- If a team does not complete enough activities in the allotted time, they may be offered a chance to improve that week's grade, if they can demonstrate improvement in the weeks that follow.

## Major Grades:

- Virtual Element Documentation: Students will compile all research, evidence, ideas and creation related to an element of their project, into an organized document. Students have to complete at minimum 2 elements per 9 weeks. Note the elements do not have to go in order
- Notebook Checks: Students will be required to actively keep their Engineering Notebook up to date. This includes documenting progress, ideas, the process, and reflections on work. There will be 1 Notebook Check every 9 weeks. This will serve as a Major Grade.
- If students are unhappy with a Major Grade, they can improve their grade by submitting an extra Virtual Element Documentation within the 9 weeks.

**- Every day an activity is late, you will lose 5 points.**