Overview

- Continuation of design project initiated in ME 481. Extension of conceptual design to final design and prototype. Analysis, materials and part selection, synthesis of working systems. Computer-aided design and finite element modeling. Manufacturing specifications, shop drawings, and a final report are required.
- Prototypes will be scaled models focusing on completing a full detailed design.

Objectives

- Heuristic completion of a structured design process focusing on design for manufacture, prototyping techniques, and closing the design loop (self-evaluation).
- Students will learn to apply engineering analysis tools to an open-ended design problem, including pertinent application of Computer Aided Design Tools such as Computer Aided Modeling (CAM – SolidWorks) and Finite Element Analysis (FEA – ANSYS, SolidWorks Simulation, or Comsol).
- Effective oral communication. In fact, this is an oral communication intensive course (OC), and thus, students will be required to do a substantial number of technical presentations. Students will learn effective oral communication in 3 areas applicable to engineering: technical presentations, poster presentations, and hardware demonstrations.
- Effective written communication. Students will continue to enhance their written communication skills through several professional (typed, computer generated graphics, etc.) technical reports. Students must also write a publication-quality final paper, which, under supervision and conforming to UH policies, they are then encouraged to submit to a conference or journal.

Prerequisites

- ME 481

References:

- Course Websites:
  - Primary
    - http://rip.eng.hawaii.edu/courses/me-481482-design-project-iii/
  - Supplemental
    - Laulima
- Additional references: the ability to obtain the references you need to be successful in your projects is an ABET objective of this course.
**Staff:**

<table>
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<tr>
<th>Instructors</th>
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**Assignments and Grading**

COVID-19 Acknowledgement and passing score on Quiz

Homework/workshops
  - Drawings and GD&T
  - 10%

Design Project
  - Presentations
    - 3 Oral Presentations
    - Project Review
    - Detailed Design/Manufacturing Review
    - Midterm Report
    - 20%

  - 3 Hardware Demonstrations/Presentations
    - MCM Hardware Demonstration
    - Alpha-prototype Demonstration
    - Final Prototype Demonstration
    - 15%

  - Poster Presentation
    - 5%

  - Final Oral Presentations
    - 10%

Reports
  - Midterm
    - 10%
  - Final
    - 15%

Design Quality (Achievement of Objectives/Customer Satisfaction, Hardware Quality, etc.)
  - 15%

Individual Contribution (multiplier on group grade)
  - 0.5-1.1

Late work is not accepted.