The purpose of the mid-term oral presentation is to show the progress and direction of individual design teams. In the presentation the design problem, goals and constraints, design concepts, and any design decisions need to be clearly explained. A Gantt chart should be presented to outline the group’s schedule for the remainder of the quarter. The group’s projected budget for the quarter should be presented in a table.

A presentation will be given by each design team. They should last 15-25 minutes. All members taking either ME499 or ME495 must be present and participate in the presentation to receive credit.

**Problem Statement and Background**

- [ ] State the design problem and its impact on the submarine’s ability to function
- [ ] Summarize previous attempts (if any) by other teams to solve this problem
- [ ] Identify changes/improvements to previous designs

**Goals and Constraints**

- [ ] What are the goals for this quarter?
- [ ] What are the design constraints; i.e. shape, size, weight, material, cost, time, etc.
- [ ] Give example constraint calculations (if applicable)

**Design Concepts (new designs only)**

- [ ] What designs were considered?
- [ ] Illustrate how these designs work
- [ ] How were the designs rated? What was the selection process? How were they analyzed?
- [ ] Based on the selection process, what is the final design concept?

**The Selected Design**

- [ ] Give a detailed description of the selected design
- [ ] Explain thoroughly how this design satisfies the design constraints
- [ ] Show Solidworks drawings (if applicable)
- [ ] Demonstrate how the design will integrate into the submarine using models, drawings, etc.
- [ ] Demonstrate how the design interacts with other components using models, drawings, etc.

**Manufacturing Plan and Quarterly Schedule**

- [ ] Create a Gantt Chart of the current quarter’s activities. Indicate tasks to be accomplished by finals week and the time period when they will be worked on.
- [ ] Outline a manufacturing schedule for the design(s) being created. Estimate production times based on knowledge of the machine shops capabilities. Include descriptions of the manufacturing processes involved (i.e. this part takes this long to make using these machines and this material on these machines.)
- [ ] What interaction will there be with other design teams and for what purpose? How will team leaders make sure their designs don’t interfere?
- [ ] State the projected budget for the quarter on a per-item basis in a table

**Total Score:** ___/50
The mid-term written report provides a comprehensive look at the work the team has completed to date, as well as providing plans for the remainder of the quarter and a manufacturing outline which can be used to create reasonable deadlines once the manufacturing phase has begun.

ME499 and ME495 students working on the same project will collaborate on writing a group report covering the work of the quarter. This report will account for the entire written report grade of the ME499 students, and 25% for the ME495 students. ME 495 students will, in addition, submit a separate report of their designs that will account for the remainder of their grade. Only one report is required of ME495 students working alone. The team reports are generally 7-10 pages in length and the individual reports 6-8 pages. The outline provided below is a general form for both reports. These reports serve as a draft for the final.

Abstract

- A summary of the design problem and the proposed solution.

Problem Statement and Background

- Similar to the oral presentation topic. Be specific and clear about what the design problem is.

Design Goals and Constraints

- Similar to the oral presentation topic. Provide numerical values where possible, and be very clear about what the quarterly goals are.

Design concepts

- Describe the design ideas, how they worked, the merits and detractions of each concept, how the designs were analyzed, and what the selection process was.

Use of Illustrations

- When describing designs and their function, illustrations are more effective than verbal descriptions. Use visuals when possible.

Selected Design Concept(s)

- Similar to the oral presentation topic. Illustrate and describe how the designs will interact and integrate with other systems. ME495 students should include a performance analysis of the design from input to output in quantitative terms, as well as an explanation of why components of the design are the size/shape/material/etc. they are.

Manufacturing Plan

- An outline of the manufacturing schedule and plan for producing the designs. Estimate the length of time each step of the manufacturing process will take and when the design will be ready to integrate into the submarine. Include details of the material that will be necessary to produce the part, what machining will be needed, and what outsourcing (if any) will be necessary. If materials must be ordered, state whether they can be acquired in a timely manner. The budget should be part of this plan, showing cost on a per-item basis.

Quarterly Schedule

- A Gantt chart showing the tasks which have been and will be accomplished this quarter. Clearly show the team’s progress.

Grammar/Spelling

- Total Score: ____/90