# Benchmarks/Deadlines – Descriptions and Due Dates

PRELIMINARY PROJECT PRESENTATION: 11/4 through 11/8 in class

Give a 6-8 minute informational powerpoint/slide presentation on your project to the class. Allow 5 minutes for questions.

PRELIMINARY PROJECT PLAN AND DESIGN SPECS: Due Wed 11/13 by 9:00am

Each group will submit a written report outlining their project plan and design specifications. The report need not follow the template below exactly but should generally include the following:

I. EXECUTIVE SUMMARY
- Reader should be able to read your exec summary in 30-90 seconds and have a solid high-level understanding of what you are building and why.
- 1-2 pages max, including figures
- Provide a high level overview of project
- Identify challenge(s) you are addressing and how your solution meets the needs
- If applicable, benchmark relevant competitor products
- If applicable, include preliminary image of final product and/or system schematic diagram (in some cases, one or both of these are better placed in another section)

II. INTRODUCTION / BACKGROUND

III. PRELIMINARY DESIGN OF FINAL PRODUCT
- System overview / block diagram / schematic diagram
- Description of all components/subsystems that will be integrated into the final product
- Flow chart showing operation of final product (e.g., pseudocode for your software)
- Minimum performance specs that need to be met by final product
- Where applicable, minimum performance specs for components/subsystems

IV. RISK ANALYSIS
- What are the key challenges you are facing? Be as specific as possible.
- What unknowns remain to be addressed/verified (e.g., via prototyping and/or additional research)? Be as specific as possible.

V. PROTOTYPE PLAN
- Identify at least 3 components/subsystems of your product that can be prototyped over the course of the year (typically more is better), describe in as much detail as possible (should be related to your risk analysis above)
- Develop a plan/timeline for completing these prototypes (see class prototype demo schedule). This should cover the *entire span of the project* (not just Fall quarter)!
- Assign ownership of each prototype, workload division among group members

VI. TASK DISTRIBUTION
- Large multidisciplinary teams must also include an ORGANIZATIONAL CHART
- Note: this will form the basis for your GANTT Chart later on

VII. PRELIMINARY COST ESTIMATES
- Estimated cost of expenditures over the course of the project (itemized list)
- Estimated cost per unit after scaling to production (if applicable)

FALL PROJECT PRESENTATION: Mon 12/2 – Tues 12/10

Each group will give a detailed presentation to their mentors and the instructor(s) describing the current status of their project and their current project plan, including any revisions to their plan that have occurred since submission of the Preliminary Project Plan. Each group may choose to demo their first prototype or show a video, and any results that may have been obtained through prototyping (if applicable). Plan for ~45 minutes, including questions.

PROTOTYPE DEMO: Wed 12/11

Each group will demonstrate their prototype(s) to advisors and peers.

REVISED PROJECT PLAN AND DESIGN SPECS: Due Wed 12/11 by noon

Each group will submit a written revised project plan and specifications. This will include:

- An updated version of your preliminary project plan/specifications
- A separate document with a brief overview of revisions made to the preliminary project plan/specs

FALL GROUP / INDIVIDUAL EVALUATIONS: Due Wed 12/11 by noon

Each individual will submit a short evaluation report, in which they evaluate their group's overall performance, evaluate each group member's contributions, and provide a self-evaluation of their own contributions during Fall Quarter.

ELEVATOR PITCHES: Week of 1/13-1/17 and 1/27-1/31

Imagine you are trying to raise funding to start a venture based on your product and are standing in front of a potential investor, or that you are simply just trying to sell your product. Your group has 3 minutes to make their case. Ready, set, go!!!

LOGO / BRANDING ASSIGNMENT: Due Fri 2/7 by 11:59pm

Each group will finalize their product name and create a logo.

MID-PROJECT DESIGN REVIEW: Week of 2/18-2/21

Each group will give a 45-60 minute presentation to their instructor(s) and their sponsors/mentors. Broadly, your presentation should cover your product specifications, the current status of your project, your plan for completion of the project, and a complete cost analysis. You must also dedicate 5-10 minutes presenting detailed engineering analysis or testing of an aspect of your project that significantly informed your design. Below is a suggested outline/format with a few more details, but feel free to adjust this to fit the specifics of your project:

- Introduction (adapted from elevator pitch)
- Updated key specifications that you will be discussing in this presentation
- Detailed presentation of your design and how it will work
- *Special section: Present ***engineering analysis or testing that significantly informed your design***. This may be focused on a single element or a complete subsystem.
    - Develop this section prior to the presentation with help from your advisors.
    - Grade for this section is influenced by whether your analysis or testing demonstrates that: your design will work (good), proves your design will be better than alternatives (better), or proves via optimization that your design will be the best (best). This grade is also influenced by the significance of your analysis or testing to the overall design objectives, as well as the technical strength and clarity of your presentation.
- Budget
- Schedule for the rest of the quarter and until project completion

DESIGN PACKET: Due Thurs 3/5 by 11:59pm

Each group will submit a detailed design packet, including some or all of the following items, by 3/5. Multidisciplinary teams with ME team members will also need to submit a design packet proposal in class on 1/24 that lists all of the items from the list below that will be included in your packet.

| **Include in design package (Y/N)** | **Item** | **Responsible team member(s)** |
|---|---|---|
| | **Documents** | |
| | Updated Project description and target specifications (from first quarter report) | |
| | Assembly drawing | |
| | Sub-assembly drawings (list) | |
| | Detail drawings (list) | |
| | Plumbing schematic(s) (list if more than one) | |
| | System and sub-system block diagram(s) | |
| | Operational flowcharts(s) | |
| | Circuit schematic(s), wiring diagram(s) | |
| | Bill of materials | |
| | Budget | |
| | Schedule for completing fabrication and testing in spring quarter | |
| | | |
| | **Prototypes and testing** | |
| | Design questions that you have answered or plan to answer with prototype testing (list). | |
| | Describe the new prototypes that you built or plan to build this quarter | |
| | | |
| | **Analysis and modeling** | |
| | Design questions that you have answered or plan to answer with modeling and analysis (list) | |

WINTER PROTOTYPE DEMO: 3/16-3/18

Each group will demo their second prototype, and any results that may have been obtained through prototyping (if applicable).

WINTER GROUP / INDIVIDUAL EVALUATIONS: Due 3/17 by 11:59pm

Each individual will submit a short evaluation report, in which they evaluate their group's overall performance, evaluate each group member's contributions, and provide a self-evaluation of their own contributions during Winter Quarter.

SPRING CLASS PRESENTATION: Week of 4/20-4/24

Give a 10 minute informational powerpoint/slide presentation on your project to the class. Allow 5 minutes for questions.

FINAL PRESENTATION/DEMO TO SPONSORS AND MENTORS: Week of 5/26-5/29

Each group will give a 45-60 minute presentation to the instructor and their sponsors/mentors. This will include all the details of their finalized product, along with a demo of the product.

ENGINEERING DESIGN EXPO: 6/5

Public presentation and demo of Capstone project to a group of judges. Poster session. Project-of-the-year awards given out.