

## Mechanical Engineering

### Project Management Assignment - ME486C

The goal of this assignment is to set the tone, from a Project Management standpoint, for the rest of your project. You will be required to reflect on last semester as well as to make plans for moving forward. **This should be a succinct and standalone report with accompanying files for reference only such as Gantt charts, BOMs, and potentially even Purchase Orders (POs).** If this assignment is difficult to complete, that should be a wakeup call on your team's preparedness for Capstone II and should hopefully serve as a *gentle* reminder to improve your team's Project Management.

**NOTE:** Your project may still be wrapping up with design efforts and the following plans might not be entirely complete. That's OK, this assignment is meant to identify gaps and to get action items for team members to do good work. An "A" grade will be determined on how well you can identify those remaining gaps and distribute that workload appropriately.

#### Reflection

Now that you've completed an entire semester of capstone, you should have a pretty good understanding of your project and how your team functions. With an eye for success, answer the following questions (do not speak in generalities, be very specific):

- **Project Management - Successes:** In a bulleted list with a sentence or two introducing the list, what were the most successful things that your team did last semester with-respect-to project management and team communication?
- **Project Management - Room for Improvements:** In a bulleted list with a sentence or two introducing the list, what areas with-respect-to project management and team communication could your team improve upon?
- **Project Management - Action Items:** In the second list above (improvements), add sub-bullet points (or add as its own list that references the previous enumerated list), with comments to how your team will make corrections moving forward. **Bold and number these action items** to draw the reader's attention to them. Don't forget to state how each action item will improve your team's Project Management.
- **Remaining Design Efforts:** Add another list of the remaining design efforts that need completion before building. *(Hopefully this is a short list...)*

#### Gantt Chart

Update your Gantt chart for the second semester with the work that will be needed to complete your project. Reference client, competition (if applicable), and course timelines when doing so and remember that proper project management starts with the finish line and works back to the present. In this section of this report, place an image of your Gantt chart that shows **week 1 until the first Hardware Status Update** (have the image(s) on its own page(s) or even change the orientation of the page, if needed). **Make sure that the Work Breakdown Structure (WBS) on the left is visible and that the chart is not blurry.** Introduce the chart, then discuss the major work/milestones that will be needed to be complete starting at the first Hardware Status Update and working backwards to now (bullet points are OK here).

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### Purchasing Plan

Purchasing parts is going to be a major part of every engineer's future career. What follows, is good practice for someone who will specialize in "Parts Acquisition". Starting with your most up to date and detailed Bill of Materials (BOM), add the following columns if not already present (**some of these columns you may already have and could apply to your Manufacturing Plan as well**):

- "cost" – you should have this already. If part is being donated, state that
- "make/buy" decision making - will you make it, or will you purchase it
- "Primary vender" - who will you buy the item from. Note: an item could be bought from different vendors and sometimes it becomes important to have a secondary (backup) vender (*you do not need a secondary vender for this assignment*). Venders example: I can buy a particular drill from Harbor Freight or Home Depot but maybe one of them might be quicker and/or cheaper to acquire.
- "Manufacturer" (who manufactured the item) - add a column for "lead time", where you will add the primary vender's expected lead time for each purchased item.
- "Part Status" – status could simply be the date to which your team will purchase the item, on order, in house, being manufactured, or assembled. **This column gets continuously updated throughout the project.**

For this report, sort your table [1,2] for **just the purchased items** and add an image(s) to this document. Introduce the image and talk about where you see the need for more planning (bulleted list is Ok). Action Items should clearly be identified in this report to then be distribute at your next team meeting. **Bold and number these action items** to draw the reader's attention to them.

### Manufacturing Plan

A good Manufacturing Plan answers some simple questions: who, what, when, and where. It should be obvious what you should be doing with some of the columns that you added for purchasing that also apply to manufacturing (*when in doubt, ask*). Add (or even combine) columns to your BOM that detail the following:

- Who will make the part
- When and how long will it take to make the part (start & duration or duration & expected finish)
- What raw material will it be made of
- Where will it be made

For this report, sort your table [1,2] for **just the manufactured items** and add an image(s) to this document. Introduce the image and talk about where you see the need for more planning (bulleted list is Ok). Action Items should clearly be identified in this report to then be distribute at your next team meeting. **Bold and number these action items** to draw the reader's attention to them.

**[1] How do you create a sortable Excel table:** <https://www.cedarville.edu/insights/computer-help/post/convert-data-into-a-table-in-excel>

**[2] How do you sort that Excel table:** Click on the header that you want to sort and sort by name or even just check the names that you want to see.

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### Bonus/Substitution Sections – as needed:

#### For Analytical Projects Only

As a substitute for your Purchasing and Manufacturing Plan sections, detail the analyses that will be completed by each of the Hardware Status Updates, Testing deliverables, and Individual Analyses/Self-learning deliverables. Be very specific and identify the Customer and Engineering Requirements that each analysis will validate (or what that learning activity will teach you). A good analysis plan will be able to check that all Customer and Engineering Requirements are being met and that there is no doubt in your client's mind that your design will be a success. It may even identify Customer and Engineering Requirements that were not initially noted in the QFD. Also include in the appendix an email from your client approving of these analyses. **Follow this assignment up with a meeting with the instructor within a week to review and approve (or not) the proposed work.**

#### For Competition Teams or Self-Identified “Special Projects” Only

In another section, please propose how you would like to alter the Capstone II deliverables to better serve your project. Example: if your competition/client has a very particular final report, make a proposal for how you would like your capstone final report to look like so it meets both requirements (capstone and competition/client). Do this with all applicable deliverables. **Follow this assignment up with a meeting with the instructor within a week to review and approve (or not) the proposal.**