Directions
Generate a proposal report. Utilize the work you have been doing on your problem definition as an initial draft (i.e. arrange and copy paste as necessary to turn the problem definition working document into a professional report). Generate your report as a google doc utilizing the template below as guidance.

Your report should be created in your team’s shared online drive/folder by the due date. The document shall be named “me213-2021s-proposalReport”.

As the semester progresses, you will be adding to this report as a means of documenting your design process. At the end of the semester, your team will turn in a complete report describing each step of your design process, including your competition performance.

General Tips
1. Know your audience.
   • Assume your reader has the same knowledge as you at the start of this term.

2. Avoid being too informal.
   • Avoid “we” and mentioning of the team → Describe actions and results.
   • Avoid “got” → Use other verbs.

3. Define any new vocabulary, symbols, and acronyms the first time you use them.
   “... includes a capacitor: an electronic component that stores charge...”
   “... number of revolutions per minute (RPM) of the engine...”

4. Cite every piece of information you acquire from outside sources. Use IEEE citation style guide.
   • Use brackets at the end of sentences with quoted information.
   “... reached its peak performance [1-3,5].”

5. Tell the reader to look at your figures and equations, and where they are.
   “...Figure 15 shows...”
   “... as described in Equation 1.3...”

6. Be consistent with formatting
   • Use the same fonts, sizes, and effects for each occurrence of an item (headings, vocabulary, equations, captions).
   • Use Times New Roman
• Use 1” margins
• Use 12 point for body font.
• Use 10 point as minimum font (i.e. in figures as necessary).
ME 213: Introduction to Engineering Design
Team Name

Part 1: Design Problem Definition, Preliminary Background Research, Preliminary Design Requirements

1.1 Purpose, Importance, and Impact
1/2 page max. Describe why this problem matters. Who are the stakeholders? Who does it helps or cares?

1.2. Design Problem Definition
Mission Statement and Objectives
1/2 page max. In your own words, describe the overall goal of the project. Then describe what objectives are required to achieve this goal (a bulleted list is not required but can be used effectively for communicating objectives). For example, what does a “successful” attempt look like? Walk through the “story” of how your device will have to function. As a reminder, goals and objectives don’t usually include explicit numerical targets.

The Success Criteria, Functional Requirements, and Constraints
1 page max. Describe the key targets your design needs to meet. If this was a race course, this is where you should include details such as the number of steps, the dimensions of each segment of the course, what materials/surfaces your vehicle will have to deal with, and any extra elements not explicitly spelled out in the overall goal / objectives that could possibly prove useful to you and your team.]
[Hint: One or more figures showing key targets might be helpful here!]

Concept of Operations
1 figure. Graphically describe what functions your devices needs

System Architecture
1 figure. Graphically describe the interactions your device has with its stakeholders.

1.3. Physics and Preliminary Background Research
1 page max. Using appropriately sourced (e.g. include a numerical citation for the source used that references the full citation in the bibliography Example: … described the overall topic of vector analysis [1].) background research to describe the “physics” of the problem. What technical knowledge might be most applicable to this project.

Benchmarks
Provide a short introduction into the general types of benchmark products/solutions you were able to find. Did you find any full solutions to your problem? If not, what aspects seemed to have the most existing solutions?
After the introductory paragraph, include each benchmark summary and description of why it may prove useful from each team member. Include any additional sources you may find relevant. Format each entry as shown below:

[Short Descriptive Title of the Benchmark]
[Summary text of the benchmark and why it is beneficial to the team. Include any relevant figures.]

At the end of each source, include a numerical citation for the source used, rather than the full citation. Save that for the bibliography (see below). Continue numbering from where you ended the literature sources.

Example: … described in a detailed stair-climbing mechanism [2].

1.4. Project Management

Time
Generate a preliminary list of project milestones and a preliminary work breakdown structure/task list.

Performance
Create a google sheet to track your objectives and requirements. Utilize the examples in the project management lectures on the website. Use the sheet to generate a objectives and requirements tracking table in the google doc.

Note 1: You may not be able to fill in exact requirements for each objective at this point; that’s expected. You will be revising this table of the report in future assignments. Right now, fill in as much as you can and list document your understanding of the “gaps” using TBD.

Note 2: This is where you and your teammates should try to set initial mass, volume, and dollar budgets for each subsystem. Of course, you will not know exact targets right now and these values will change so include a margin.

Money
Create an initial budget. Although you don’t know how you will solve the problem yet, utilizing your background research generate an extremely preliminary budget.

Bibliography

[This section will always remain at the end of your report. You should list proper citations, use IEEE format, for each externally referenced material (literature source, benchmark, etc.) in the order that you used them. For example:

[1] Citation 1 Information…
[2] Citation 2 Information…

You will be updating this section as well any time you add new references for this report.]