ECE 212 – How to write your final project report

This is a formal project report addressing technical audience (unless specified otherwise). There are four big questions that you need to answer in this report:

1. What is the need that your team has identified?
2. What is your proposed solution / product?
3. How did you implement your solution / product?
4. How did you test your solution / product?

Below are instructions and hints on how to do a good job of writing this report:

- Your report must have a **title page**, with a title for your project and team members' names
- **Executive Summary**. Summarize your project for non-technical audience. Suppose you want to get funding for your project, how would you describe it to potential funders? An executive summary is a brief section at the beginning of a long report, article, recommendation, or proposal that summarizes the document. It is not background and not an introduction. People who read only the executive summary should get the essence of the document without fine details. Avoid hype and stick to your plans and accomplishments.
- **[1/2 - 1 page] Motivation**. First section of your report should be "Motivation" (or "Introduction")
    - Cover the first question (need / problem) in here
    - Explain why you decided to pursue this project
    - Explain why this need / problem is important or interesting; who will care?
        - You do not have to make exaggerated claims about importance of your project but do not short-change yourselves either.
- **[1-2 pages, including sketches] Project Requirements.** This is where you address the 2nd question on your proposed solution. You should address project requirements and any specifications that you have developed. Make sure that you understand what requirements are. In addition to a bulleted list of requirements, you should also describe:
    - Functions (at least 2): At least two (2) statements are required describing the function of your prototype. They must include the word "shall".
    - Include a sketch of L0 and L1 functional decomposition - consider using a tool like lucidchart.com
    - Performance (at least 2, preferably more): Define how the functions listed above will be measured. In other words, how will you know if your project is successful? Again, be sure to include the word "shall".
    - At least 6 requirements / constraints from the long list given in the original project assignment.
    - It is likely that not all requirements will be equally important. For the most important ones you may want to provide more details or explanations along with rationale.
- **[1 page] Project planning.** Describe the processes you used and how your plans developed.
    - If you followed our "standard" Scrum way of doing things, then just state that. There is no need to go into details of Daily Standups, Sprints, etc.
    - However, if you have done things that are in addition to or modification of our standard process, then describe them. For example, if some members met using online tools, state which one you used.

    - Outline of the planned and actual project timeline; describe if anything changed along the way.
        - This should be done with Gantt charts
        - Include one that you started with (from week 1) +
        - One from your last sprint
        - If they are the same, state that.
    - List of specialization or areas of focus by team members
    - List goals for each of the four sprints (this is in your sprint reports – copy from there)
    - Close by discussing how well your project planning worked and make suggestions for improving it.
- **[1-2 pages] Prototype Description**: This is where you address the 3rd question. Make sure that you include relevant **schematics and photos** of your final prototype.
    - You may provide a **short** description of how your thinking about your product changed over time.
    - If your prototype has several components, describe them individually
- **[variable, ½ - 1 page] Prototype Testing**: describe how you did your product testing and its results. State whether you met your performance requirements listed above.
- **[1/2 page] Technical Summary** – This summary is for technical audience (instructor, your fellow students). What do you want reader to remember, i.e., what are the most important things from your proposal that you would want reader to pay attention to? It is OK to repeat things from prior sections, but you should not introduce anything that you did not discuss already.
- **[1/2 - 1 page] Lessons learned**.
    - Describe at least one thing that went wrong and how you fixed it.
    - What would you do differently?
    - What would you recommend to teams doing this next year?
- **[variable] References**: If you are using sources (and you should!) such as books, websites, articles etc. then you should include a References section list of all the materials used. Use IEEE reference format (https://ieee-dataport.org/sites/default/files/analysis/27/IEEE%20Citation%20Guidelines.pdf). You can also test some websites that generate reference lists in specific formats.
- **Appendix**: Include a bill (list) of materials (BOM). Include only the major components (e.g. I don't need to know what type or screws you are using, but I need to know if you used Arduino, Huzzah32 or Raspberry Pi)

Additional constraints (i.e. your report "shall"):

- Use "normal" single spaced formatting and font size 11 or 12 for text
- All figures, photos, graphs shall have figure captions
- Report should not exceed 10 pages (excluding Title Page, References and Appendix)
- Only one report uploaded on D2L for each team (remember to upload your code too!)
- At the end you shall include the following statement:

  "All team members have contributed to this report, read it and agree with its contents."

Number of pages given above is just for orientation – my guess is that your report may vary ± 1 page or so (excluding references). Please do not make it very long!