**Guidelines for SD II Final Report: Final Details**

April 17, 2014

Rev D

SDII Final Report is the completion of your group’s year-long effort. You will, therefore, include all the work you did in SDI Final Report. However, in the SDII Final Report, you will condense your report in a way that it does not take more than a third of the new report, at max. This is also your opportunity to edit (NOT change) your understanding of the project so that your initial understanding of the project (ie SDI Final Report) nicely meshes with your findings in SD II Final Report. This final report must be ring bound with a thick front page with university logo and flow/format must be similar to SDI report.

Most of your new report will focus on your work in this semester. Therefore, your report must have following sections, at least,

1. **Final Design:** A professional (read Pro-E) sketch of your final design identifying all key components. Clearly state the functions and importance of each component and relationship among all major components. Since **this is a key slide in your presentation**, make sure that you can explain the customer requirements (needs & wants) succinctly. Don’t forget to **add a scale** **bar** so that audience understands if you are talking millimeters or miles!
2. **Equations and Units:** Make sure that you understand **every** **parameter** in your equations and its physical significance. You must know the **associated units of every parameter**.
3. **Bill of Materials:** Make sure that it includes at least part name, part description, vendor name, vendor location and contact info, unit, unit cost, number of parts, total cost, criticality class, lead time, and any comment. You need a slide or two.
4. **Manufacturing Method:** Did you use the parts as is or you had to do any secondary operations like machining, heat treatment, etc. Add pictures and videos, if appropriate.
5. **Assembly Process:** Once you have all the parts, how did you put the pieces together to complete your design? This is where you must add your picture and, possibly, video.
6. **Test Plan:** Clearly state your test objectives, methods, and expected results. If you followed any standard, let the reader/audience know. It is critical to clearly identify the units you are using for each and every parameter and test result. **Not giving attention to units is the most common mistakes every student makes!**
7. **Test Results (Raw Data):** Keep all your raw data in your lab report. Show selected raw data in your report and identify page numbers in your lab notebook showing all other data. Typically, you don’t show your raw data in your presentation. Nevertheless, you can keep a slide or two of raw data as back-up slides, in case someone challenges your analyzed data.
8. **Data Analysis:** Clearly show all the equations, tools, and software you used to analyze your data. While you **show** all the **calculations** and resulting **graphs** in your report, you also show the **equations** and resulting graphs during your presentation. If you are using finite element analysis, clearly state your assumptions, material properties, boundary & initial conditions, and parameters (deflections, von Mises stress, etc.) with units (inch, psi, etc.)
9. **Results & Discussions:** Discuss the overall impact of your design and how this meets the customer expectations in engineering terms. Do not try to be qualitative or vague (so called “hand waving”). Be as quantitative as possible. One common question is cost of the system. Give a cost **estimate for both prototype and possible manufacturing cost**. In your presentation slide, highlight impact of your design in engineering and economic terms.
10. **Best Practices:** Identify all the good things you have learnt from the project and want to share with everybody. This is the information you wished you had when you started the project a year back! (**You can use this in your job interview**!)
11. **Lessons Learned:** These are the mistakes you wish you did not do! Typically, these are the common mistakes, many students without adequate experience will do. Tell why none of you caught it and how to avoid them in future. Since this was done by four students and nobody got it, you can be candid! This will help the next student to avoid the same mistake!
12. **Future Work:** Improvements, tests, analyses you could/should have done if there was more time.
13. **References:** **References must be in numerical order & referred appropriately in the text.** Add all of them including websites. Do not use book as reference! You can pages from a book though.
14. Give me your Binders and keep your Lab Notebook. I also need your ppt & Final Report (both e- and hard copies). **Your grades will be affected otherwise!**
15. **You must add a flash drive w/your report/binder to include videos & other pictures!**
16. **Bring your prototype and set it up for presentation. It is your responsibility to demonstrate it and take it back to make room for the next presenter. Make sure that you hand over the prototype to your Faculty Advisor.**
17. **DON’T FORGET TO FILL UP ALL YOUR EVALUATION FORMS & SURVEYS!**

**Make sure that you have shown BOTH the final presentation AND report to me & your faculty advisor(s). There must not be any surprise for your Faculty Advisor!**