

# Laboratory Prototype Documentation

## Assignment 7

### CpE 190/EEE 193A

Deliver full electronic documentation of your working laboratory prototype. Tell the engineering story of your laboratory prototype. This report is not just previously completed assignments crudely inserted into a new report. You should tell the technical story of your project and include the following mandatory topics (full list is at the end of this assignment document) in the report include:

- Problem statement.
- Design idea with feature set “Punch List”
- Work Breakdown Structure and Project timeline (through the entire two semesters).
- Discussion of the work required to create the prototype.
- **Photographic** documentation of your work throughout the semester.
- Specific design elements such as circuit diagrams, circuit simulations, or other design support work.
- User guide of the device as it currently exists.
- Preliminary testing results – how does your laboratory prototype perform?
- Details of the work anticipated in the second semester to reach your practical prototype. This is a significant part of this report and should include considerable detail on the work needed to take the laboratory prototype to a deployable system by the end of the second semester.
- Appendix (electronic submission required for this part) to include:
  - Data sheets of all devices and components in your prototype
  - References useful to your design. Papers, conference notes, or other written sources used by your team during the semester.
  - Team member resumes.
  - Vendor contacts to especially highlight those who contributed time, parts or other support to your project.
  - Copies of all documentation submitted to the instructor during this semester.

The laboratory prototype documentation report format requirements:

Full IEEE format to include cover page, abstract, keyword index, table of contents, list of tables, list of figures, introduction, main points, conclusion, references, glossary, and appendixes.

The report will be in an electronic format (Microsoft Word or LaTeX and PDF) uploaded to your team's ECS Hive site.

Use a two column format, single line spacing, and a readable font similar to Times New Roman 12 pitch.

General though provoking questions:

Did it work as we envisioned?

Were the design assumptions valid?

Do we need to acquire more parts/skills/software/space/brains/people.....

Are we prepared for the next semester?

Check the syllabus for the laboratory prototype documentation due date.

**Electronic Report documentation Requirements:** Tell an engineering story that includes at least the following elements. Content should flow like any good story. Inserting individual assignments into the report with no connecting narrative is not a good story.

**Indexed electronic report must include the following IN THIS ORDER:**

1. Start with a good discussion of the Societal Problem and Design Idea Contract covering both Fall and Spring Semesters with attention to the prototype feature set
2. Funding Proposals submitted both for outside funding and for internal team member funding
3. Project work breakdown structure (WBS) and project timeline including milestones.
4. Risk assessment and mitigation in WBS
5. Task assignments per team member to include hours per task and hours per team member.
6. User Manual (how to operate your project)
7. Design documentation – design overview that leads into sections 8 and 9 below.
8. Hardware
  - a) Block diagram & documentation at block level
  - b) Schematics and documentation to component level
9. Software
  - a) Block diagram & documentation at block level
  - b) Flowcharts, pseudo-code, and documentation to subroutine level
10. Mechanical: mechanical drawings and documentation
11. Test plan for hardware (place holder for 2<sup>nd</sup> semester)
12. Test plan for software (place holder for 2<sup>nd</sup> semester)
13. Integration plans – specifics on how the test results resulted in design idea or specific implementation modifications.
14. Appendixes - Addendums to the main body of the report should be in the form of appendixes. These appendixes should include (only) important device data sheets and reference articles.
  - a) Vendor contacts – who did you contact, receive personalized attention from, and/or who provided your team with parts, and other assistance? Prepare thank you letters to those who gave you team significant assistance or donated parts and/or money to your project. Include the thank you letters in this section of the appendix.
  - b) Important data sheets or device information – limit to most important
  - c) Important reference articles – limit to most important
  - d) Resume for each team member – omit personal information such as addresses, and phone numbers.

### **Electronic copy – ECS Hive – Fall Term**

- ◆ All device and component data sheets for any item used in your project.
- ◆ All reference material acquired during your project whether or not the material was of direct benefit to your project.
- ◆ All Fall term assignments.
- ◆ All Fall term periodic reports:
  - Team weekly reports,
  - Team member evaluations
  - Outgoing team leader reports,
  - Any special reports you were assigned.
- ◆ Photos of the team and prototype for the 1<sup>st</sup> semester.

Organize your team ECS Hive site!

Logical folders with material arranged conveniently.