

Robot Design Project Report Guidelines

(last revised 1/13/15)

Follow these guidelines for what should be included and how you should write your report on the Robot Project. The goal in writing your report is to document your work in a concise, clear and complete way, so that a peer could take your report, understand the design problem you faced, and be able to replicate your design. Your “audience” is a peer who has not yet taken Engr 10.

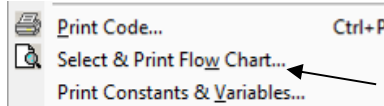
Report Section Checklist (One report per group)

- Title Page
- Project Summary
- Table of Contents
- Introduction
- Design and Assembly Description
- Design Test and Performance
- Conclusions
- Recommendations for Future Work
- References
- Appendices (**Required: Appendix A** - a copy of the “**flow chart**” portion of your program, using the “*Select and Print Flow Chart...*” command (see below); **Appendix B** - evaluates the quality of the teamwork; **Other appendices** as needed)

Detailed Description of Report Sections

- **Title page** lists at minimum: the title of the project (descriptive and specific), the entity for which the report was written, i.e., San José State University, Charles W. Davidson College of Engineering, E10 Introduction to Engineering, names of the team members, section and team number, section instructor, and the date of submission.
- **Project Summary:** (½ to 1 page)
This section succinctly and specifically states: what you did, how you did it, and what happened/what was learned. You can think of the Project Summary section as the ‘Reader’s Digest’ version of your report. The Project Summary gives the key aspects of the project in a concise form. State: The objectives of the project and a summary of the robot performance as specified in the guidelines (tasks, time, weight, etc.)
- **Table of Contents** comes after the Project Summary: Number report pages starting with page 1 as the Introduction page. Table of Contents should include all the sections / subsections headings with the starting page number for each.
- **Introduction:** (½ to 2 pages)
This section describes the project goals and other relevant background information. To write this section, refer to the Project Description, which is found in the Project Guidelines. Make sure that you include sufficient sketches, drawings, and/or photographs and verbiage to clearly explain to someone unfamiliar with this project what it is all about. You may use sketches from the Project Guidelines, but cite your source.
- **Design Description** (as many pages as you need)
This section describes your mechanical, electrical and programming design in **DETAIL**. This section should have figures (i.e., drawings, photos, flow charts, or sketches all with proper *annotation* that document your design. Cite sources for figures from manual or class PowerPoints.) *Suggested* content (talk with your lab instructor about their won content requirements)
- **IRB assembly process:**
 1. Name at least five (5) types of IRB components soldered on the IRB board.

2. Name at least three (3) types of IRB components whose orientation, during soldering on the board, was critical for the IRB operation.
- Robot assembly process.
 1. Motors/Servos: How many and in which capacity were used?
 2. Sensors: How many and in which capacity were used.
 3. Cables/Connections: Using any of the controller schematics, on pages 3-4 of this guideline, mark the connection of the various components onto the controller. (*Use copy and paste*)
 - Software: Discuss the main features of your program. Include a copy of the “**Flow Chart**” portion of your program on Appendix A.
Select: “*Select & Print Flow Chart...*” then “*Print*”



Include only the portion that you developed / modified, such as “Move”, “Main”

- **Design Performance** (as many pages as you need)

This section addresses the outcome of the project. This section describes the testing and performance of your robot and how well it worked or did not work. Describe the “Performance Tasks” your design completed during the competition runs and state the time of the best run.

- **Conclusions** (1 to 2 pages)

Summarize the work done, what was learned, and the outcomes of the project. Use bulleted sentences or short paragraphs.

- **Recommendations for Future Work** (1/2 to 2 pages)

This explains what you would do if you had more time to improve the design or what you might have done differently knowing what you know now. Here you want to make sure to give *specific* recommendations for improvements or further work. For example, a poorly written recommendation might say something like, “... we would make the arm that turned off the beacon lighter.” A better one might read, “... we would make the arm that turned off the beacon lighter by replacing the three steel channels with one beam having a square cross section, approximately 0.75 in by 0.75 in.”

- **Reference** section. Any references listed should be cited in your report. Examples of how to cite references can be found in:

<http://www.lib.nus.edu.sg/lion/s/citeapa.html>

<http://www.lib.nus.edu.sg/lion/s/apastyle.ppt>

Note that the reference list must be alphabetized. Remember that any material you include in your report that you did not create by yourself or that is common knowledge, ***must be*** cited as reference, or else you are committing the ethical violation of plagiarism (which must be reported to the Office of Student Conduct and Ethical Development). You must cite any of the materials from the E10 web site.

- **Appendices** contain any other information that, in your judgment, might be a big help to someone trying to do a similar project (data sheets, catalog pages, etc.).
 - **Appendix A** must include a flow chart of your program code.
 - **Appendix B** evaluates teamwork by answering the following questions:
 - Who worked on each aspect of the project
 - Who contributed to each section of the report
 - Describe one challenge the team faced, how the team resolved it, and a lesson the team learned from that experience.

- Rank (on a scale of 5 to 1) your team performance in the following six areas (5= we all did this all of the time to 1= did not do this at all)

Teamwork Skill	Performance Level
1) open and honest communication among members	
2) each individual carried his/her own weight	
3) collaboration in decision making	
4) team set goals and milestones	
5) people listened to each other	
6) leadership was shared among the members	

