

Report 1B - Individual Design Report Criteria

The design document should examine aspects of the product specific to your allocated sub-system(s). The design should show that the sub-system will completely meet all specifications. Examination of the sub-system should be based on documented specifications of components, software, and engineering theory, rather than experimentation with prototypes.

The report should contain the following:

- An Executive Summary outlining the novel design aspects of the sub-system and any issues in the design that have arisen.
- Problem Description: In your own words, a brief summary of the problem you are trying to solve. Include some different viewpoints of the problem that may not be immediately obvious from the product sub-system description. Describe how your sub-system(s) integrate with the rest of your product design. Find the problems within the problem.
- Proposed Solution: Overall description of your proposed approach to solving the problem. Depending on your sub-system(s), your report could include one or more of the following:
 - Mechanical Layout: A neat drawing of your proposed sub-system with sufficient detail to explain the operation described in subsequent sections. Mechatronics students are expected to provide adequate technical drawings for your design.
 - Operation Manual: Describe how a user would use your sub-system. This section should also illustrate the user interface for your product (including your software).
 - Electronics: Describe the electronics to be used in your sub-system. Break the electronic design into coherent modules illustrated in a block diagram. Explain. Show schematics for each module and explain in detail the operation of each block.
 - On-Board Software: Describe the software to be used in your sub-system. Break the software into modules illustrated in a block diagram or by pseudo code. Explain. Show code fragments or pseudo code for each module and explain in detail each module.
 - PC based Software: Describe the software to be used on the PC. Break the software into modules illustrated in a block diagram or by pseudo code. Explain. Show code fragments or pseudo code for each module and explain in detail each module.
- Verification of Solution: Show that the part described above will form a cohesive sub-system that meets the specifications and integrates into the rest of the product. This section should demonstrate that you have considered and understood the problem as a whole, and not just as a number of loosely connected sub-problems.
- Project Plan: When will your sub-systems need to be completed? Are there other sub-systems that require your sub-system to function before they may be designed. Break down the work required on your sub-systems into individual tasks, create an estimate of which sprints these tasks will take place. Add time estimates to these tasks.

The report should have a title page with the report title, author name and student number, team number, and a list of the other team members. The report should include an executive summary and may include relevant appendices at the end of the document. All figures should be kept as near as practical to the text which refers to them.

The report should total less than 10 pages, including diagrams but excluding title page and appendices.

Assessment Criteria (report 1):

- **Excellent (85-100%):** Your statement of the problem is far more than a reproduction of the sub-system description. You have highlighted the difficulties with designing the sub-system

and brought them to the foreground. If applicable, you have provided a mechanical layout that shows that the sub-system meets mechanical specs, and when used in conjunction with the operation manual shows how the sub-system will be physically operated. If applicable, your operation manual is clear, and shows that the sub-system will be easy to use for any operator. Any electronic and software designs are fully and clearly explained. Your designs are well justified. You have shown that all of the parts integrate consistently into a cohesive unit, and proven that the design will meet all specifications.

- **Very Good (75-85%):** Your statement of the problem is more than a reproduction of the sub-system description. You have highlighted some of the difficulties with designing the sub-system and brought them to the foreground. If applicable, you have provided a mechanical layout that shows that the sub-system meets mechanical specs, and when used in conjunction with the operation manual shows how the sub-system will be physically operated. If applicable, your operation manual is clear, and shows that the sub-system will be easy to use for most operators. Any electronic and software designs are well explained. Your designs are justified. You have shown that all of the parts integrate consistently into a cohesive sub-system, and provide evidence that the design will meet all specifications.
- **Good (65-75%):** Your statement of the problem is somewhat more than a reproduction of the sub-system description. You have attempted to highlight some of the difficulties with designing the sub-system. If applicable, you have provided a mechanical layout that attempts to show that the sub-system meets mechanical specs, and when used in conjunction with the operation manual shows how the sub-system will be physically operated. If applicable, your operation manual is understandable, and shows that the sub-system will be useable. Any electronic and software designs are explained. Your designs are weakly justified. You have shown that all of the parts integrate, but with minor inconsistencies. You have provided evidence that the design will meet most specifications.
- **Satisfactory (50-65%):** Your statement of the problem is barely more than a reproduction of the sub-system description. If applicable, you have provided a mechanical layout, which when used in conjunction with the operation manual shows how the sub-system will be physically operated. If applicable, your operation manual is understandable, and shows that the sub-system will be useable. Any electronic and software designs have been explained, but may not be adequately justified. There are a number of inconsistencies in the integration of the parts. You have attempted to provide evidence that the design will meet most specifications.
- **Poor (25-50%):** You have a brief statement of the problem. If applicable, there is some form of mechanical diagram. If applicable, you have attempted an operation manual, but it makes little sense. Any electronic and software designs are not adequately described, and have little or no justification. There are many inconsistencies in the integration of the parts, and little or no evidence that the design will meet specifications.
- **Very Poor (0-25%):** You have not stated the problem. There is no form of mechanical diagram. You have not attempted an operation manual. The electronic and software designs are not described. You have not attempted to integrate the design.
- **Disaster (Resubmit with -50% penalty on following Monday):** Your report is over length, unreadable because of poor grammar, spelling and/or scrawled hand writing **or** your report contains work with no academic merit.