Critical Design Review Report Evaluation Rubric v2023.1

NOTE: This rubric has a dual purpose: (1) to give a guideline for EE493-EE494 students about the criteria and overall expectations from the Critical Design Review Reports and (2) to establish a common guideline for us, the design studio coordinators, in evaluating the reports. Note that the rubric, being only a guideline at this point for all of us, should not be perceived as a strict set of requirements for the content of a successful report. However, we hope that the detailed comments below include a large number of clues to serve the preparation of such a report. An attempt was made to reflect the expectations of all design studio coordinators in the rubric. However, each corresponding coordinator will still be evaluating freely based on his/her best judgment.

	Excellent (9-10)	Good (7-8)	Marginally Satisfactory (5-6)	Needs Improvement (1-4)
Executive Summary	The executive summary is professional and creates curiosity in the reader to go further in the report.	The executive summary is just a correct compounding of the report content.	The executive summary resembles an introduction to the report. It lacks some of the important information about the project (e.g., motivation, problem statement, solution procedure, deliverables).	The executive summary is missing or exists but lacks a lot of relevant information about the project.
Introduction	The introduction contains a clear statement of the project, the current situation about the work on the project, the scope of the report, organization of the report.	The introduction contains a statement of the project, the current situation about the work on the project, the scope of the report; organization of the report.	The introduction contains a rough statement of the project.	The introduction provides an erroneous or ill posed statement of the problem without any meaningful depth.
Overall System Description 1	The report includes a clear top-down system description, supported by system and subsystem level block diagrams and flowcharts. All control and data signals within the system are illustrated clearly including any feedback paths. All the blocks and the signals are clearly labeled.	The report includes a top-down system description, supported by a system level block diagram showing some (not all) of the subsystems, and by flow charts with some missing details. Most of the control and data signals within the system are illustrated including any feedback paths. Most of the blocks and the signals are labeled.	The report includes a coarse system description, and/or does not provide a top-down system description. A system block diagram is given with missing some important subsystems. Some of the control and data signals within the system are illustrated. Most of the feedback paths are missing. Some of the blocks and the signals are labeled.	Inaccurate and/or incomplete system description. No top-down approach defining the system. System block diagram is either missing or the provided system block diagram is missing important components. Control and data signals within the system are not illustrated. The blocks and the signals are not labeled.
Overall System Description 2	3D drawings of the expected final product are provided including all required details.	Drawings of the expected final product are provided without some minor details.	Some drawings of the expected final product are missing.	Most drawings of the expected final product are missing.

Requirements	System and subsystem level requirements are finalized and illustrated in detail in a structural manner. Regarding the project definition, requirements are perfectly relevant and fully inclusive.	Requirements of some (not all) of the subsystems are provided, or some requirements of the whole system are missing. Requirements are relevant to the project definition to a great extent.	Requirements of many of the subsystems are missing and/or many of the requirements of the whole system are missing.	Requirements of the whole system and/or subsystems are not provided or described very coarsely.
Design modifications	No modifications to the conceptual design are done or design modifications at the system level and subsystem level are explained in detail with full justifications.	Modifications to the conceptual design and their justifications are adequately defined at the system level but subsystem level changes are missing detailed discussions.	Modifications to the conceptual design are defined without justifications at the system level. Very few discussions on subsystem level changes.	Modifications to the conceptual design are not discussed.
Compatibility analysis of subsystems in interface, software version, timing	A detailed discussion on the compatibility between subsystems is provided. Their signal interfaces are clearly described. Relevant standards to be complied with are given and justified.	Adequate discussion on the compatibility between subsystems is provided. Signal interfaces of subsystems are partially described.	A short discussion on the compatibility between subsystems is provided. Signal interfaces of subsystems lack many items.	Discussion on compatibility between subsystems is missing. Signal interfaces of subsystems are missing or inaccurate.
Compliance with Requirements	Confirm and explain your design decisions by comparing with the requirements. The match between the design decisions and the requirements is shown by a crosscheck table, and it is justified that the design decisions perfectly address all the requirements. Multiple (and possibly conflicting) requirements are clearly discussed and engineering trade-offs done to address these requirements are indicated. Compliance with the requirements is fully justified with associated test results. A discussion on the robustness of the system against possible error sources is provided.	Design decisions are in line with the requirements, with some scientific evidence. The match between the design decisions and the requirements is shown by a crosscheck table; however, there are some unaddressed or weakly addressed requirements. Multiple (and possibly conflicting) requirements are discussed and engineering trade-offs which are done to address these requirements are indicated, but are not supported by technical analyses. Compliance with the requirements is justified with associated test results but some test results are missing. A discussion on the robustness of the system against possible error sources is provided but not sufficient.	Some design decisions are somehow in line with the requirements, without scientific evidence. Some of the multiple (and possibly conflicting) requirements are discussed and engineering trade-offs which are done to address these requirements are indicated, but are not supported by measurements. Compliance with the requirements is not very well justified with associated test results. Many test results are missing. A discussion on the robustness of the system against possible error sources is either not provided or not sufficient.	Design decisions are not justified with the requirements. Multiple (and possibly conflicting) requirements are not discussed and engineering trade-offs which are done to address these requirements are not indicated. Compliance with the requirements is not justified with associated test results. Many test results are missing. A discussion on the robustness of the system against possible error sources is not provided.

Tests procedures and assessment of test results	A test procedure for each subsystem is provided along with a detailed analysis of the test results. All tests provide quantitative results for the evaluation of success. Test results, encountered problems, and implemented or proposed solutions are clearly indicated and discussed. The match between the tests and the requirements is shown by a crosscheck table, and it is justified that the tests perfectly address all the requirements.	Test procedures for some of the subsystems are provided. Some tests do not provide expected quantitative results for success. Test results, encountered problems, and implemented/proposed solutions are indicated and roughly discussed. The match between the tests and the requirements are shown by a crosscheck table; however, there are some unaddressed or weakly addressed requirements.	Test procedures for many subsystems are missing and/or tests do not provide expected quantitative results for success. Some of the test results, encountered problems, and implemented/proposed solutions are indicated but they are not discussed adequately.	Test procedures are missing. Encountered performance shortcomings are not discussed. Test results, encountered problems, and implemented/proposed solutions are not indicated.
Resource Management 1	Updated cost breakdown and analysis are discussed in detail with clear justifications.	Updated cost breakdown and analysis are discussed in detail, but some items lack clear justifications.	Updated cost breakdown and analysis are discussed without clear justifications.	Updated cost breakdown is provided but cost analysis is missing.
Resource Management 2	A power distribution diagram and a power management analysis (resources and consumption) for the system are clearly described with associated test results.	A power distribution diagram and a power management analysis (resources and consumption) for the system are described with some test results.	A power distribution diagram and a power management analysis (resources and consumption) for the system are described without any test results.	A power distribution diagram and a power management analysis (resources and consumption) for the system are provided with major missing details.
Resource Management 3	Updated project schedule (with a Gantt Chart) is given with all required details.	Updated project schedule (with a Gantt Chart) is given with most required details.	Updated project schedule (with a Gantt Chart) is given but some important tasks are missing.	Updated project schedule (with a Gantt Chart) is given but most of the required details are missing.
Conclusion	A conclusion based on the analysis of the solution is included. It also includes concluding remarks about the content presented in the report.	A summary of the solution concludes the report. The conclusion briefly recaps the key points of the report. It includes the final conclusion about the content presented in the report.	A conclusion is included but is only a general summary.	The conclusion lacks a lot of relevant information about the project.
Format, Spelling, Punctuation, and Grammar	Submitted report fully complies with technical report writing rules. Spelling, punctuation and grammar mistakes are minimal. The organization of the report is easy to follow and understand.	Submitted report mostly complies with technical report writing rules. Seldom errors in spelling, grammar, and punctuation are observed in the report. The report presents information in a logical sequence which the reader can follow.	Submitted report partially complies with technical report writing rules. Frequent errors in spelling, punctuation, and grammar are observed in the report. The sequence of information presented in the report is difficult to follow.	Submitted report does not comply with technical report writing rules. Abundance of errors in spelling, punctuation and grammar are observed in the report. The organization of the report makes it impossible to understand.