| **Conceptual Design Report Assessment Guidelines v.2023.1** | | | | |
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| **NOTE:** This rubric has a dual purpose: (1) to give a guideline for EE493-EE494 students about the criteria and overall expectations from the Conceptual Design 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 (10-9)** | **Good (8-7)** | **Marginally Satisfactory (6-5)** | **Unsatisfactory (4-0)** |
| **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 and**  **Conclusion** | The introduction contains a clear description of the project, the current situation about the work on the project, the scope of the report, organization of the report.  The objectives related to the product are well justified with a literature/market survey.  A conclusion based on the analysis of the main solution and its alternatives is included. It also includes concluding remarks about the content presented in the report. | The introduction contains a statement of the project, the current situation about the work on the project, the scope of the report, and organization of the report.  The objectives related to the product are justified with a literature/market survey.  A summary of the main conceptual solution concludes the report without mentioning any alternatives. The conclusion briefly recaps the key points of the report. It includes the final conclusion about the content presented in the report. | The introduction contains a rough statement of the project.  The objectives related to the product are justified with a very limited literature/market survey.  A conclusion is included but is only a general summary. | The introduction provides erroneous or ill-posed statements of the problem without any meaningful depth.  No literature/market survey.  No conclusion is provided. |
| **Problem Statement** | Describe the underlying engineering problems in developing and producing your product from a technical point of view. | Problems are not expressed in full detail. There is at least one missing problem statement to cover the project and/or some missing statements and flaws for a given problem. | Many problem definitions are missing to successfully develop and produce the product. | The problem statement is given as a description of the project. |
| **Objectives and Requirements** | Objectives and system level requirements are refined and supported by justifications. | Objectives and system level requirements are refined with inadequate justifications. | Objectives and system level requirements are updated with no justifications. | Objectives and system level requirements are not updated. |

| **Solution:**  **Overall**  **System** | Overall description of the system with a block diagram and system operation with a functional flow diagram are clearly indicated.  The main solution is justified with a weighted objective tree.  The diagrams include subsystem interactions and interfaces with relevant protocols or standards.  Expected weight, dimensions, and total power consumption of the product are clearly provided.  A rough 3D drawing is provided.  Relevant standards to be complied with for your marketable product are given and discussed. | Overall description of the system with a block diagram and system operation with a functional flow diagram are indicated.  The diagrams include major subsystem interactions and interfaces, but lack some interactions and interfaces.  Relevant protocols or standards are partially provided.  Expected weight, dimension, and total power consumption of the product are provided.  Some of the relevant standards are given and discussed. | Overall description of the system with a block diagram and system operation with a functional flow diagram are partially indicated.  The diagrams partially include subsystem interaction and interfaces.  Most of the relevant protocols or standards are missing.  Expected weight, dimensions, total power consumption of the product are partially provided.  A discussion on the standards exists but lacks a lot of relevant standards. | Overall description of the system with a block diagram and system operation with a functional flow diagram are missing.  Relevant protocols or standards are not provided.  Expected weight, dimensions, total power consumption, etc. of the product are not provided.  There is no discussion on the standards. |
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| **Solution:**  **Subsystem** | Individual subsystems are clearly described.  Subsystem level requirements and their relation to system level requirements are clearly identified via a table.  Solution for each sub system and relevant algorithms are clearly provided. Plan B for critical subsystems are clearly indicated. | Individual subsystems are described.  Subsystem level requirements and their relation to system level requirements are identified.  Solutions for each subsystem and relevant algorithms are provided. Plan B for critical subsystems are indicated. | Individual subsystems are partially described.  Subsystem level requirements and their relation to system level requirements are partially identified.  Solution for each subsystem and relevant algorithms are partially provided. Plan B for critical subsystems are partially indicated. | Individual subsystems are not and relevant algorithms are not  mentioned.  Subsystem level requirements and their relation to system level requirements are missing. Plan B for critical subsystems are not indicated. |
| **Solution:**  **Test Results** | Test procedures and test results for subsystems (evaluated to date) are clearly presented.  Evaluation of the test results with respect to the subsystem level requirements and standards is discussed.  Alternative solutions are evaluated and design decisions are made based on comparative analyses of the test and/or simulation results. | Test plans and test results for subsystems (evaluated to date) are presented. Evaluation of the test results with respect to the subsystem level requirements is partially discussed.  Alternative solutions are evaluated but evaluations are partially based on analyses of the test and/or simulation results. | Test plans and test results for subsystems (evaluated to date) are partially presented.  Evaluation of the test results is partially made but the results are not evaluated with respect to the subsystem level requirements.  Alternative solutions are partially evaluated. | Test plans and test results for subsystems (evaluated to date) are missing.  Evaluation of the test results and alternative solutions are missing. |

| **Plans:**  **Management** | Detailed breakdown of the planned work and other responsibilities among the team members is clearly presented.  The updated time schedule is given professionally as a Gantt chart supported by justification of sequential and parallel tasks. Team member allocation is shown. Steps from concept to completion have been scheduled efficiently and in detail including possible vacation days.  An extensive risk analysis, including technical, cost, and timeline risks, is incorporated both for the main solution approach and at least one alternative approach is proposed.  A detailed cost analysis is provided to indicate the estimated cost of the project.  Deliverables are completely listed.  All relevant ethical concerns are discussed. | Detailed breakdown of the planned work and other responsibilities among the team members is presented.  The time schedule is given as a Gantt chart supported by justification of sequential and parallel tasks. Steps from concept to completion have been scheduled.  There is a risk analysis incorporated to some extent.  A cost analysis is provided but missing some items.  Deliverables are listed.  Ethical concerns are partially discussed. | Breakdown of the planned work and other responsibilities among the team members is partially presented.  The time schedule is given as a Gantt chart but lacks justification of sequential and parallel tasks.  Risk analysis has been conducted vaguely.  A cost analysis is provided but missing many items, and/or provides erroneous costs.  Deliverables are partially listed.  A discussion on ethical concerns does not exist. | Breakdown of the planned work and other responsibilities among the team members is missing. The time schedule is missing.  There is no awareness of or concern about risks.  A cost analysis is missing. Deliverables are not listed. |
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| **Plans:**  **Engineering** | Test plans and measures of success for subsystems (yet to be built) are clearly explained.  Integration plans, test procedures, and measure of success for the complete system are clearly described. | Test plans and measures of success for subsystems (yet to be built) are explained. Integration plans, test procedures, and measure of success for the complete system are described. | Test plans and measure of success for  subsystems (yet to be built) are partially explained.  Integration plans, test procedures, and  measures of success for the complete system are partially described. | Test plans and measure of success for subsystems (yet to be built) are not explained.  Integration plans, test procedures, and measure of success for the complete system are not described. |
| **English Use, Spelling,**  **Punctuation, Grammar** | Good command of English. Rare errors in spelling, punctuation, and grammar are observed in the report. | There are occasional difficulties with the use of language. Some errors in spelling, punctuation, and grammar are observed in the report. | The use of English is problematic, sometimes making it difficult to understand the material. Frequent errors in spelling, punctuation, and grammar. | The use of English is very hard to understand. No attention is given to the proper use of language. Text is full of errors in spelling, punctuation, and grammar. |

| **Organization and**  **Appearance of the Report** | The report is bound and has a professional format with a consistent style.  All required sections of the report exist and supporting details are included as appendices as necessary.  Clear and accurate, neatly captioned diagrams are included and support the understanding of the text.  A proper list of references is present with correct citations in the text and figures. | The report is bound and has an acceptable format with minor issues with the style. Most of the required sections of the report exist and supporting details are included as appendices as necessary.  Diagrams are included and support the understanding of the text.  A list of references is present with correct citations in the text and figures. | The report has many issues with the style. Some of the required sections of the report are missing.  Some diagrams are missing.  A list of references is present but no citations are provided or reference numbers are incorrect. | The report has many fundamental mistakes related to the style. Many of the required sections of the report are missing.  Many diagrams are missing. A list of references is not provided. The quality (resolutions) of the figures is poor. |
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