

Element F: Consideration of design viability

This entry would be likely to receive a **score of 0**, based on the EDPPSR. The engineering educators who reviewed this portfolio found that there was no evidence provided that the proposed design for an automatic rain-sensitive window roll up system was reviewed based on any ****extra-functional considerations**. It should be noted that in the entry for Element C (Presentation and justification of solution design requirements), the student(s) had identified at least one extra-functional consideration—that of cost (staying within a \$50 budget). Neither this feature nor any other extra-functional considerations are addressed in the entry for Element F, however. Instead, the student(s) merely indicate that an expert was consulted on the matter of design viability and he confirmed that the design was in fact viable.

The student(s) understood the need for review but neglected to direct the focus to extra-functional considerations. In this instance, as in many others, a careful reading of—and attention to—the criteria articulated in the EDPPSR would have made clear the specific focus of this element. Any evidence whatsoever of attention to that focus would have ensured a higher (perhaps significantly higher) score.

Engineering Design Process Portfolio Scoring Rubric Component and Element Titles

Component I: Presenting and Justifying a Problem and Solution Requirements

- Element A: Presentation and justification of the problem
- Element B: Documentation and analysis of prior solution attempts
- Element C: Presentation and justification of solution design requirements

Component II: Generating and Defending an Original Solution

- Element D: Design concept generation, analysis, and selection
- Element E: Application of STEM principles and practices
- **Element F: Consideration of design viability**

Component III: Constructing and Testing a Prototype

- *Element G: Construction of a testable prototype*
- Element H: Prototype testing and data collection plan
- Element I: Testing, data collection and analysis

Component IV: Evaluation, Reflection, and Recommendations

- Element J: Documentation of external evaluation
- *Element K: Reflection on the design project*
- Element L: Presentation of designer's recommendations

Component V: Documenting and Presenting the Project

- Element M: Presentation of the project portfolio
- Element N: Writing like an Engineer

Please Note: Elements M and N require no submission from the portfolio author(s) and are intended to be scored based on the portfolio work as a whole from what has been submitted from Elements A through L

Element F: Consideration of design viability

- 5** The proposed design was carefully reviewed based on several relevant extra-functional considerations; a judgment about design viability based on those considerations—the capacity of the proposed solution to address the problem—is clearly realistic and well supported with credible evidence.
- 4** The proposed design was adequately reviewed based on several relevant extra-functional considerations; a judgment about design viability based on those considerations—the capacity of the proposed solution to address the problem—is generally realistic and adequately supported with credible evidence.
- 3** The proposed design was partially reviewed based on one or two relevant extra-functional considerations; a judgment about design viability based on those considerations—the capacity of the proposed solution to address the problem—is only somewhat/sometimes realistic and is only partially supported with credible evidence.
- 2** The proposed design was superficially reviewed based on one or two relevant extra-functional considerations; a judgment about design viability based on those considerations—the capacity of the proposed solution to address the problem—may be generally although not completely unrealistic and/or may be inadequately supported with credible evidence.
- 1** The proposed design was superficially reviewed based on one or two extra-functional considerations of marginal relevance; a judgment about design viability based on those considerations—the capacity of the proposed solution to address the problem—may be unrealistic and/or not supported with any credible evidence.
- 0** There is no evidence provided that the proposed design was reviewed based on any extra-functional considerations.



Rain Detection Vehicle Window Roll-Up System - REDACTED

CONSIDERATION OF DESIGN VIABILITY F

Before we actually fabricated our design, we contacted experts to gain feedback on whether our solution was a viable one.

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- Mr. Ahmed told us that our solution was in fact viable, but he suggested we used different sensors because he wasn't sure the ones we had would be reliable or not.
- He also offered us advice on components to use for our design.