**Resource**

**Engineering Challenge Rubric**

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|  | **Does not meet expectation** (1 point) | **Approaches expectation**(2 point) | **Meets expectation**(3 points) | **Exceeds expectation**(4 points) |
| **Identifying the Problem** | Relevance and context of the problem is unmentioned. Scope and constraints are poorly defined resulting in unclear direction for investigation. | Relevance and context of the problem is included, but vaguely defined. Scope, criteria for success and constraints are included but only superficially. | Problem is specifically defined in a relevant way with context. Criteria for success are defined. Investigation considers relevant constraints. | Problem is specifically defined, as are root causes. Constraints are identified, specific, and testable. |
| **Building a Model or Prototype** | Constructs only one concept or solution to the problem. | Describes multiple solutions although without principles to guide how they address the problem at hand. | Multiple concepts or solutions are proposed with justification based within the constraints of the problem. | Multiple concepts or solutions are proposed with not only justification from constraints, but from external research. |
| **Testing and Evaluating the Design** | Evidence for design success is unsupported by testing. | Evidence for design success is weakly aligned to metrics that represent criteria and constraints. | Evidence for design success is well aligned to metrics that capture the criteria and constraints being explored. | Considers multiple metrics that align to several relevant criteria and constraints. |
| **Optimizing the Design** | Makes no iterative modifications to test changes in performance. | Makes changes to the original model, but the changes are not iterative or are not guided by evidence from data. | Uses iterative modifications based on evidence from data. | Uses iterative modifications based on testing and justifies final design from data. |
| **Sharing the Solution** | Documentation of results does not cite references and lacks crucial information. | Documentation is organized but contains very little evidence and suggestions for further work. | Documentation communicates design strengths and weaknesses and makes recommendations for further work. | Documentation communicates design strengths and weaknesses. Evaluates tradeoffs between relevant constraints. |

**Total: / 20**