

# Bioengineering Decision Matrices and Pugh Analyses

Instructor: Z. Maria Oden

Team Name: \_\_\_\_\_

|        |  | Cycle 1 | Regrade Cycle 2* |
|--------|--|---------|------------------|
| 1.     | Decision matrices used for comparing initial design solution ideas             | /15     |                  |
| 2.     | Ideas are narrowed with decision screening                                     | /10     |                  |
| 3.     | Decision scoring is used for ranking and scoring a final slate of design ideas | /10     |                  |
| 4.     | A clear quantitative path to a final design idea is demonstrated.              | /15     |                  |
| TOTAL: |  | /50     |                  |

\*Teams can earn up to 100% of points lost in previous grading cycle

Note: Decision screening involves qualitative comparison of concepts against key design goals using a +/-0 scale and is used to narrow and combine choices. Decision scoring is when a fewer number of more developed design ideas are compared using a weighted list of design goals and scored on a scale of 1-5. See course notes for additional information.

**REGRAIDING: We anticipate that many teams may not get to the decision screening stage by the end of TC 1. Teams therefore have the option to submit this assignment for a regrade in TC 2. In addition to being assessed again according to the criteria above, regraded assignments will also be evaluated on how well they address comments and feedback provided by grader in the prior cycle. We expect teams to consider the *substance* of a grader’s suggestions and comments, not merely to correct typos or change wording.**

## Grading elements in Decision Matrices and Pugh Analyses

|  | Excellent (max pts)   | Average (mid pts)   | Poor (lowest pts)   |
|--|---|---|---|
| Decision matrices used for comparing initial design solution ideas | Appropriate decision matrices are constructed to compare complete design ideas or individual component options within a design project. Appropriate design goals are selected for evaluating the various design options.  | Team has constructed decision matrices, but comparisons may not be thorough enough to be truly functional and selected design goals may not be the best ones for evaluating the various design options. | Decision matrices are not constructed or are inadequate for making valid comparisons of initial design ideas.                                 |
| Ideas are narrowed with decision screening                         | Decision matrices are used to narrow design ideas. After initial scoring, team combines or modifies ideas to continue further screening. Team may use more than one round of decision screening to narrow design options. | Decision matrices are used to narrow design ideas, but only cursorially. Grader sees ways to more rigorously compare and narrow ideas.  | Decision matrices are poorly used to narrow design ideas. Little work is performed to narrow and combine ideas to determine a final solution. |
| Decision scoring is used   | New, weighted decision matrices are used score design concepts. Weighting choices are well thought out and thorough.  | Weighted decision matrices are used score design concepts, but choices do not sufficiently guide the team.  | Decision scoring is not performed or conducted inadequately.  |
| A clear quantitative path to a final design idea is demonstrated   | Team uses graphs and text to chart a clear decision path to a final design option.  | Team partially presents a path to their final design choice.  | Clear decision path to the final design option is unclear or nonexistent.   |