**Academic Prompt with Rubric Checklist**

**Design a Solution**

**ENGR 353 Fluid Mechanics**

**Assignment Steps**

1. Identify the problem.
2. Identify criteria and constraints.
3. Brainstorm possible solutions.
4. Select a design.
5. Build a model or prototype.
6. Test the model and evaluate.
7. Refine the design.
8. Share the solution.

**Rubric Checklist for the Assignment**

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| **Category** | **Score** |
| Brainstorm to Identify the Problem and Constraints   * The problem is identified and explained in detail. * All criteria and constraints are listed and clarified. * Possible solutions are listed from the brainstorming session. * The work others have done to solve the problem is included. |  |
| Generate Ideas, Possibilities, and Design Choice   * Two or three ideas are selected from brainstormed list. * Detailed sketches are created for the selected ideas. * Sketches are labeled with dimensions and materials for each component. * One design is selected to construct with reasons for the choice. |  |
| Build the Model or Prototype   * Detailed list of materials is included. * Detailed procedures are included and followed. * Materials are handled and stored appropriately. * Safety rules are followed. |  |
| Test the Model and Evaluate   * Hypothesis following an “if.., then...” format is developed for the design. * Strengths of the design are listed. * Weaknesses of the design or compromises of the design are listed. * Results are accurately recorded. * Data tables are complete and well organized. * The chosen design effectively addresses the identified problem. |  |
| Refine the Design   * Modifications to improve the design are based on test results. * Modifications to the design are documented. * Additional trials are conducted. * Reflections show great insight and understanding of process and goals of project. |  |
| Share the Design   * Presentation is well-organized. * Presentation covers all areas of the design process. * Presentation is clearly communicated (verbally or visually) with appropriate data, sketches, graphs or pictures. * Presentation includes contributions from all team members. |  |
| Total points (out of 24 possible) |  |

4=excellent (all criteria met), 3=good (most criteria met), 2=fair (many criteria not met), 1=poor (most criteria not met), 0=no effort to meet criteria. 24-21=A, 20-17=B, 16-14=C, 13-11=D, 10 or less=F