

## 2.1.4 Aerodynamic Design Rubric



Score: \_\_\_\_\_/72 points

| Documentation [12 points]           |     |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                          |                                                                                                                                                                                |                                                                                                                                                                      |
|-------------------------------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Topics/Multiplier                   |     | 4 points                                                                                                                                                                                                                                                                                                                | 3 points                                                                                                                                                                                                                 | 2 points                                                                                                                                                                       | 1 point                                                                                                                                                              |
| Professional Appearance             | 1 x | Includes all required sections, has page numbers and appropriate headings for the different sections.                                                                                                                                                                                                                   | Includes most required sections, has page numbers and appropriate headings for the different sections.                                                                                                                   | Does not include all required sections, has page numbers, but headings for the different sections should have been titled better.                                              | Is missing several required sections, has page numbers, but headings for the different sections should have been titled better.                                      |
| Title Page                          | 1 x | Includes all components required for a complete title page.                                                                                                                                                                                                                                                             | Includes 80% or more of the necessary components for a complete title page.                                                                                                                                              | Includes 60% or more of the necessary components for a complete title page.                                                                                                    | Includes 50% or more of the necessary components for a complete title page.                                                                                          |
| Design Brief                        | 1 x | Includes all parts of a design brief organized into one page. Clearly details the design problem and constraints.                                                                                                                                                                                                       | Includes all parts of a design brief organized into one page.                                                                                                                                                            | Includes most parts of a design brief organized into one page.                                                                                                                 | Includes some parts of a design brief organized into one page.                                                                                                       |
| Individual Write-ups [28 points]    |     |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                          |                                                                                                                                                                                |                                                                                                                                                                      |
| Design Description                  | 3 x | Paragraph description clearly describes the purpose of the design and rationale for any modifications made from previous design(s). Obvious thought taken into consideration to improve at the iteration and considered failures well explained and thought out. Spelling, grammar, and punctuation correct throughout. | Paragraph description describes the purpose of the design and rationale for any modifications made from previous design(s). Considered failures explained. Spelling, grammar, and punctuation mostly correct throughout. | Paragraph description describes the purpose of the design, but rationale for changes not clear or not purposeful. Many spelling, grammar, and punctuation mistakes throughout. | Paragraph description describes the the design, but rationale for changes not clear or not purposeful. Many spelling, grammar, and punctuation mistakes throughout.  |
| Image                               | 1 x | High quality image shows an appropriate view of the design. Organized on the page well. Parts labeled to explain main components of the design.                                                                                                                                                                         | Image shows an appropriate view of the design. Parts labeled to explain main components of the design.                                                                                                                   | Image shows an appropriate view of the design.                                                                                                                                 | Image of design included, but view does not represent the design well.                                                                                               |
| Data Table                          | 1 x | Table set-up and neatly completed with initial velocity, angle, time, and x-y-distances. All distance values correctly calculated. Units included.                                                                                                                                                                      | Table set-up properly with values correctly calculated. Units on values included.                                                                                                                                        | Table set-up with some values correctly calculated.                                                                                                                            | Table set-up but values mostly incorrect.                                                                                                                            |
| Scatter Plot                        | 2 x | Scatter plot created accurately and correctly with appropriate titles & trendline. Values well-chosen to show the path that best mimics performance. Size and placement well-organized on page.                                                                                                                         | Scatter plot created with appropriate title and min/max values. Size and placement organized on page.                                                                                                                    | Scatter plot created with appropriate title and min/max values.                                                                                                                | Scatter plot included.                                                                                                                                               |
| Individual Deliverables [32 points] |     |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                          |                                                                                                                                                                                |                                                                                                                                                                      |
| Design Brief Notes                  | 1 x | A section titled neatly for this project with notes about the key points in design brief clearly included. Team norms and consequences recorded.                                                                                                                                                                        | A section titled neatly for this project with notes about the key points in design brief included.                                                                                                                       | A section titled for this project with key points in design brief included.                                                                                                    | A section titled for this project but missing most of the design brief.                                                                                              |
| Brainstorming Ideas                 | 1 x | Produces a detailed sketch or description of at least TWO viable brainstorming ideas or modifications. All sketches include labels and descriptions for clear understanding; sketches are neat, signed and dated.                                                                                                       | Produces a sketch or description of at least TWO viable brainstorming ideas or modifications. All sketches include labels, are neatly drawn, signed and dated.                                                           | Produces sketches or descriptions of at least one viable brainstorming idea or modification. Sketch(es) may be difficult to understand from lack of detail or neatness.        | Produces sketches or descriptions of at least one viable brainstorming idea or modification. Sketch(es) are difficult to understand from lack of detail or neatness. |
| Table of Measurements               | 2 x | One table of all rocket measurements for each day. Distance, time, and angle included with proper units. Tables are all set-up and filled in neatly.                                                                                                                                                                    | One table of for each day recorded. Distance, time, and angle included                                                                                                                                                   | One table with your rocket data for each day done.                                                                                                                             | One table with your rocket data donet.                                                                                                                               |
| Calculations (Initial Velocity)     | 2 x | Work shown for initial velocity calculation for each rocket. Each calculation clearly & neatly shows the equation used, the work done, and the answer circled.                                                                                                                                                          | Calculations are accurately completed. Not all work is shown and/or the work in not neatly written.                                                                                                                      | Not all work is shown and/or the work in not neatly written.                                                                                                                   | Calculations are not complete, work is missing, and/or difficult to read.                                                                                            |
| Conclusion                          | 2 x | All four questions answered thoroughly and correctly with full explanation demonstrating mastery of concepts learned.                                                                                                                                                                                                   | All questions answered correctly with explanation demonstrating concepts learned.                                                                                                                                        | All questions answered but incorrectly and/or lacking explanation demonstrating concepts learned.                                                                              | Not all questions answered.                                                                                                                                          |