



# Engineering Design Board

|                                                               |                                                                                                                                                        |                                                                                                                                            |                                                                                                                                                             | Team Number:                                                                                                                                                                                     |                |
|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|                                                               |                                                                                                                                                        |                                                                                                                                            |                                                                                                                                                             | Team Name:                                                                                                                                                                                       |                |
|                                                               |                                                                                                                                                        |                                                                                                                                            |                                                                                                                                                             |                                                                                                                                                                                                  | Achieved Score |
| <b>Engineering Problem Definition and Design Requirements</b> | Design objectives and requirements are unclear. Little evidence of defined targets or constraints.                                                     | Basic objectives and constraints are identified, with limited engineering justification.                                                   | Clear design objectives, measurable KPIs, and relevant constraints are established and explained.                                                           | Requirements and targets are evidence-based, and students explain how they shaped the design approach.                                                                                           |                |
|                                                               | 0 - 3                                                                                                                                                  | 4 - 7                                                                                                                                      | 8 - 11                                                                                                                                                      | 12 - 15                                                                                                                                                                                          | Out of 15      |
| <b>Aerodynamic Understanding and Design Selection</b>         | Limited understanding of aerodynamic forces. FBD, aerofoil selection, or wing selection is missing or poorly justified.                                | Basic aerodynamic principles explained. Limited comparison of aerofoils and wing configurations.                                           | Correct FBD and relevant aerodynamic reasoning. Aerofoil and wing choices are supported by calculations, graphs, or comparisons.                            | Strong aerodynamic understanding is supported by evidence. Students defend aerofoil and wing choices, explain trade-offs, and link theory to design.                                             |                |
|                                                               | 0 - 7                                                                                                                                                  | 8 - 15                                                                                                                                     | 16 - 22                                                                                                                                                     | 23 - 30                                                                                                                                                                                          | Out of 30      |
| <b>Aircraft Configuration and Stability Design</b>            | Aircraft configuration is poorly justified. CG, moment balance, or static margin calculations are missing or incorrect.                                | Basic configuration and CG calculations presented. Limited explanation of stability.                                                       | Configuration is supported by CG, moment balance, and static margin calculations. Students explain the relationship between these parameters and stability. | Stability and configuration are quantitatively justified. Students defend calculations, assumptions, and choices when questioned.                                                                |                |
|                                                               | 0 - 7                                                                                                                                                  | 8 - 15                                                                                                                                     | 16 - 22                                                                                                                                                     | 23 - 30                                                                                                                                                                                          | Out of 30      |
| <b>Engineering Analysis, Simulation and Results</b>           | Little meaningful analysis. Simulation setup is missing or incorrect. Results are absent or poorly interpreted.                                        | Basic calculations or simulations. Limited explanation of inputs, assumptions, boundary conditions, and real-life conditions.              | Relevant calculations and simulations are presented with documented setup and meaningful results. Students explain how the results relate to the design.    | Analytical methods and simulation setups are evidence-based. Students consider realistic conditions, critically interpret results, and defend assumptions and engineering conclusions.           |                |
|                                                               | 0 - 8                                                                                                                                                  | 9 - 15                                                                                                                                     | 16 - 26                                                                                                                                                     | 27 - 35                                                                                                                                                                                          | Out of 35      |
| <b>Design Iteration and Engineering Decision-Making</b>       | Only the final design is presented. Little evidence of iteration or engineering reasoning.                                                             | Some design changes are shown, but reasons and supporting evidence are limited.                                                            | Multiple meaningful iterations are demonstrated. Changes are linked to calculations, simulation results, or identified problems.                            | Design evolution is clear. Students justify changes, compare alternatives, explain engineering trade-offs, and support major decisions with evidence.                                            |                |
|                                                               | 0 - 5                                                                                                                                                  | 6 - 10                                                                                                                                     | 11 - 15                                                                                                                                                     | 16 - 20                                                                                                                                                                                          | Out of 20      |
| <b>Manufacturing Planning and Implementation</b>              | Manufacturing methods, materials, and construction steps are poorly understood or justified.                                                           | Basic manufacturing approach identified, with limited process details and supporting evidence.                                             | Appropriate materials, tools, processes, and manufacturing sequence are explained. Manufacturing constraints are considered.                                | Manufacturing decisions are justified. Students explain processes, equipment, constraints, construction challenges, and supported solutions.                                                     |                |
|                                                               | 0 - 6                                                                                                                                                  | 7 - 12                                                                                                                                     | 13 - 18                                                                                                                                                     | 19 - 25                                                                                                                                                                                          | Out of 25      |
| <b>Engineering Evidence, Practices and Technical Defense</b>  | Students struggle to explain their methods, calculations, or decisions. Claims lack supporting evidence, and major inconsistencies remain unexplained. | Basic understanding is demonstrated. Some answers refer to calculations, CAD, or simulation, but explanations and evidence are incomplete. | Students explain their engineering methods and assumptions. Relevant calculations, models, results, and manufacturing evidence support most answers.        | Students show strong technical ownership by defending assumptions, verifying calculations, interpreting results, acknowledging limitations, and answering challenges consistently with evidence. |                |
|                                                               | 0 - 7                                                                                                                                                  | 8 - 15                                                                                                                                     | 16 - 22                                                                                                                                                     | 23 - 30                                                                                                                                                                                          | Out of 30      |
| <b>Glider Build Quality and Assembly,</b>                     | Incomplete glider with poor assembly or major construction defects.                                                                                    | Basic construction with inconsistent alignment or assembly quality.                                                                        | Well-assembled glider with acceptable alignment, structural integrity, and finish.                                                                          | Accurate assembly, sound construction, appropriate component alignment, and good finishing.                                                                                                      |                |
|                                                               | 0 - 3                                                                                                                                                  | 4 - 7                                                                                                                                      | 8 - 11                                                                                                                                                      | 12 - 15                                                                                                                                                                                          | Out of 15      |
| <b>TOTAL SCORE:</b>                                           |                                                                                                                                                        |                                                                                                                                            |                                                                                                                                                             |                                                                                                                                                                                                  | Out of 200     |