

# 3D Printed Model Rocket Design Competition

## Scoring Rubric

### *Metric Units*

***Phase 1/2: DUE March 1, 2024***

#### **1) 500pts. Build CAD Model using SolidWorks:**

- ☐ *Submit Assembly model of 4 component rocket design suitable for 3D printing on single head extruder **with minimal support**.*
- ☐ **Assembly Components:** Nose, Camera, Body, Booster and Motor Mount ( sub-assembly given)
- ☐ Design accepts provided motor mount as sub-assembly
- ☐ Design integral launch lug (I.D. is critical)
- ☐ Design spy-camera mount
- ☐ Design shock cord attachment points on Nose and Booster
- ☐ Nose Cone must be hollow (to accept adjust C.G. with ballast)
- ☐ Fins must have an aerodynamic profile with fillet transition to Booster (smooth transitions, no sharps)

#### **2) 200pts. Analyze stability using *OpenRocket*:**

- ☐ *Calculate Stability Caliber for D12-3 engine (must be > 1.0)*
- ☐ *Submit OpenRocket data file (\*.ork)*
- ☐ *Google Sheet. Enter: rocket mass w/o engine (g), caliber, ballast (g), and altitude (m).*

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### *Phase 2/2: DUE Last Day of Finals*

#### **3) 200pts. Attend the Prelaunch Build Event:**

- ☐ Assemble all rocket components for flight

#### **4) 200pts. Attend the Launch Event**

- ☐ Preflight inspection  
(e.g. rocket determined flight worthy by instructor)
- ☐ Rocket launched
- ☐ Rocket recovered

#### **5) 300pts. Drawing of the Final Assembly:**

- ☐ Submit a drawing of your team's Final Assembly
  - ☐ Use "2. Design Intent" as your guide.
  - ☐ Reproduce "2. Design Intent" using your team's Final Assembly (5 drawing sheets)