

3D Printed Model Rocket Design Competition

Scoring Rubric

1,000 points max

Metric Units

Phase 1: DUE April 23, 20201

1) 500pts. Build CAD Model using SolidWorks:

- Submit Assembly model of 3 component rocket design suitable for 3D printing on single head extruder with minimal support. (e.g. zero support = scores highest.)*
- Assembly: Nose, Body, Base, Motor Mount (given)
- Design accepts provided motor mount as sub-assembly
- Design integral launch lug
- Design integral exhaust gas baffle
- Design shock cord attachment points on Nose and Body
- Nose Cone must be hollow (to accept ballast)
- Fins must have airfoil profile (not simply flat)

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

- Calculate Stability Caliber (1.0-1.5) for D12-3 engine*
- Submit OpenRocket analysis report (File > Print/Export PDF)*
- Google Sheet: Enter Assembly mass (g), Caliber, Ballast, and Theoretical Altitude (m)*

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Phase 2: DUE Last Day of Finals

5) 300pts. PowerPoint based Design Review:

- Submit PowerPoint
 - Introduction
 - Design Intent
 - Analysis Results: OpenRocket
 - Rocket Shop Drawings, use design intent prints as your guide
 - Discussion