

Intercollegiate Rocket Engineering Competition

First Quarter Report – Rules and Regulations

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Experimental Sounding Rocket Association

- ESRA is a non-profit organization that seeks to further the field of experimental sounding rocketry
- ESRA hosts an intercollegiate engineering competition for rocket teams from all over the country and around the world
- Two categories of the competition exist: Basic and Advanced
- Basic category involves COTS motor delivering payload to 10,000 ft. AGL
- Advanced category involves student designed motor delivering payload to 10,000-30,000 ft. AGL

Launch Vehicle Rules

Propulsion

- Propulsion must use non-toxic fuels
 - May be Commercial Off The Shelf (COTS), COTS Hybrid, or Student Designed
 - If Student Designed, the final design must undergo static-test fire
 - Only one propulsive stage allowed
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Launch Vehicle Rules

Flight Requirements

- The vehicle should attain a speed of 100 ft/s before leaving launch rail for stability
 - If 100 ft/s not attainable in design, must prove rocket is stable with alternate flight testing
 - Launch rail of 18 ft. provided
 - The vehicle must attain an altitude of 10,000 ft. AGL
 - More than Plus/Minus 2,500 ft. from target receives no points
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Launch Vehicle Rules

Recovery System Requirements

- All components must be recoverable
- Parachute or Parafoil requires dual event:
 - Initial parachute deploys at apogee
 - Initial parachute slows rocket to 75-150 ft/s
 - Main parachute deployed at no higher than 1500 ft.
 - Main Parachute slows rocket to 30 ft/s
- Rocket must have an altimeter and record data using a flight computer
- Rocket and all separable components must have radio beacons

Payload Rules

Specifications

- Payload should be scientific or engineering related
 - Payload must be at least 8.8 lbs
 - Payload must be easily removable and nonhazardous
 - No live animals
 - Cannot affect the stability of the rocket
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Payload Rules

Flight Requirements

- Payload must be totally recoverable
 - Must remain within 3 nautical miles within launch site
 - If deployable, it must have a recovery system
 - Must be slower than 30ft/s before reaching 1500 ft.
 - Must have redundant critical wiring
 - The vehicle must be able to reach 10,000 ft. without the aid of the payload
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