WORLD SPACE WEEK 2026

CREATIVE AIR-ROCKETRY CHALLENGE

SCHOOL-LEVEL COMPETITION

ORGANISED BY

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OFFICIAL COMPETITION GUIDELINES

Technical Specifications, Rules & Regulations, and Judging Criteria

Document Type	Competition Guideline — Official Release
Category	School Level (Classes as notified by the Organizing Committee)
Event Window	4th October 2026
Venue	Haldwani, Uttarakhand
Organized By	Astroverse Experience Pvt Ltd

1. Preamble

Astroverse Experience Pvt. Ltd. is pleased to host the Air Rocketry Challenge as part of the World Space Week 2026 programme. The challenge introduces students to aerodynamics, compressed-air propulsion, structural design, stability and engineering optimisation through the design, construction, testing and launch of a lightweight air-powered rocket.

This document constitutes the official guideline for the competition and shall apply to all participating teams, mentors and accompanying faculty. Participants are expected to read the complete document before registration and retain a copy for reference throughout the competition.

2. Objective

The primary objective of the Air Rocketry Challenge is to successfully achieve the highest possible altitude using pressurized air propulsion.

3. Eligibility & Team Composition

- Teams must register within the official registration period (15 August – 20 September 2026)
- Eligible classes : 3rd to 5th
- Team size: 1–2 students
- Participants must comply with all technical, safety and launch instructions issued by the Organizing Committee and Technical Team.

4. Technical Specifications

4.1 Approved Rocket Airframe

The rocket shall be a lightweight compressed-air vehicle compatible with the official competition launcher.

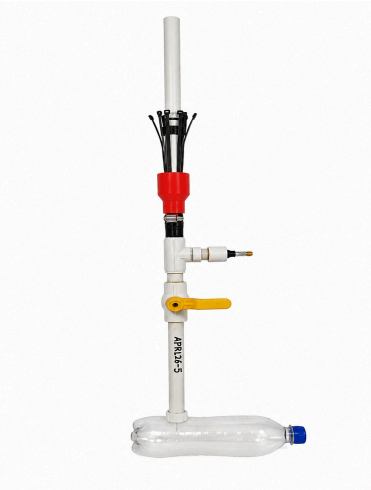
Parameter	Specification
Recommended body mass	Approximately 50 g before payload
Launcher specification	22.5 mm
Recommended body-tube diameter	Approximately 23 mm; compatible with the competition launcher
Nose cone	Mandatory; shape and material may be customized
Fins	3 or 4 fins recommended

Payload	Optional/customizable, subject to declared mass and safety limits
Material	Customizable, provided it is safe and approved by the Organizing Committee
Rocket dimensions	Within dimensions specified by the Organizing Committee

4.2 Launcher Interface

- Launcher specification: 22.5 mm.
- Recommended body-tube diameter: approximately 23 mm.
- A rocket that cannot be safely mounted on the official launcher shall not be approved for launch.

The launcher consists of a 2 L PET air chamber, Launch Guide Tube, air-pressure connection and release mechanism.Compressed air builds up inside the system and, when released, pushes the rocket upward through the Launch Guide Tube.
The pressure and launch are controlled by the Technical Team for safe and consistent operation.



4.3 Permissible Customisation

Within the mandatory requirements, teams may customize the following:

· Nose-cone shape

· Fin shape, geometry and placement

· Fin material

· Body material

· Surface finish

· Colour and visual design

· Payload design, where permitted

· Overall aerodynamic profile

All customized components must remain structurally secure, launcher-compatible and safe for the approved launch conditions.

4.4 Propulsion & Launch Parameters

The Air Rocketry Challenge uses compressed air as the propulsion medium. Launch conditions shall be established and controlled by the Organizing Committee or authorized instructors.

Parameter	Specification
Propulsion medium	Compressed air
Launch pressure	60–100 PSI, as determined and controlled by the Organizing Committee/instructors
Pressure control	Authorized Technical Team/instructors only
Launch condition	Technical inspection and launcher-compatibility approval required before pressurisation

Note:Participants shall not independently alter, exceed or control the prescribed launch pressure.

4.5 Payload

· Payload is optional and may be customized within the mass and safety limits declared by the Organizing Committee.

· The payload shall be securely mounted and shall not interfere with structural integrity, stability or launcher compatibility.

· Any payload presenting a safety risk may be rejected during inspection.

5. Mandatory Pre-Launch Preparation Protocol

Every team shall complete the required pre-launch checks before the rocket is admitted to the launch queue. Only rockets approved by the Technical Team shall be allowed to launch.

5.1 Visual Inspection

1. Inspect the complete airframe for cracks, loose components, deformation or visible damage.
2. Confirm that the nose cone, fins and body are securely assembled.
3. Confirm that no component presents an obvious flight or safety hazard.

5.2 Launcher Compatibility Check

1. Confirm compatibility with the 22.5 mm competition launcher.
2. Confirm the recommended approximately 23 mm body-tube configuration can be accommodated.
3. Confirm secure positioning before launch.

5.3 Fin, Nose-Cone & Aerodynamic Inspection

1. Verify correct fin alignment and secure attachment.
2. Verify that the nose cone is securely fitted and free from unsafe protrusions.
3. Check that the aerodynamic profile is suitable for controlled flight.

6. Safety Regulations & General Rules of Conduct

- All participants shall comply with instructions issued by the Organizing Committee and Technical Team.
- Only authorized personnel shall operate pressurisation and launch systems.
- Participants shall not independently pressurise the rocket or trigger the launch mechanism.
- Launch pressure shall remain within the organizer-controlled 60–100 PSI range.
- Spectators and non-launch personnel shall remain behind the designated safety line during pressurisation and launch.

7. Judging Criteria & Scoring

Each rocket shall be evaluated by the judging panel against the following criteria:

7.1 Range – Primary Criterion

The horizontal distance from the designated launch point to the rocket's landing point shall be measured and recorded. The rocket achieving the greatest valid range shall rank highest under this criterion.

7.2 Aerodynamic Stability

· Straight and controlled flight

· Minimal wobbling

· Proper fin alignment

· Stable trajectory

· Controlled landing

7.3 Design & Creativity

· Originality of design

· Effective use of materials

· Thoughtful fin and nose-cone design

· Engineering reasoning

7.4 Determination of Winner

The rocket achieving the greatest valid range shall rank highest, subject to technical approval and a valid flight. If two rockets achieve the same range, the rocket demonstrating better aerodynamic stability shall rank higher.

8. Project Report Submission

Submission of a Project Report is mandatory for every participating team. Each team shall complete the report corresponding to the Air Rocketry Challenge and submit it within the timeline notified by the Organizing Committee.

8.1 Report Content

The report shall document the team's design approach, construction process, testing, modifications and final flight performance. Teams are encouraged to include sketches, photographs, tables and recorded observations wherever appropriate.

8.2 Submission Requirements

· Online Submission: Submit the completed Project Report online before the competition by the date specified by the Organizing Committee.

· Competition-Day Submission: Bring one printed copy of the submitted report to the venue on the day of the event.

· Final Details & Specifications: Final rocket height, mass, dimensions and other results shall be recorded and verified on competition day following inspection.

· Physical Submission: Submit the completed and verified physical copy to the Organizing Committee following inspection.

Important: The Project Report must be prepared in the prescribed format issued for this challenge. Online and physical copies must correspond to the final competition entry.