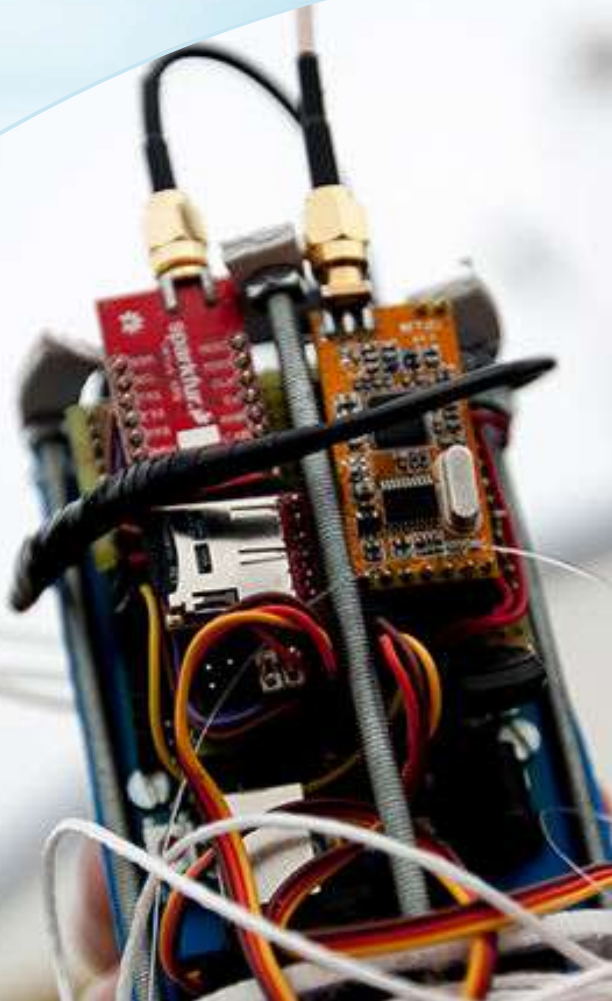
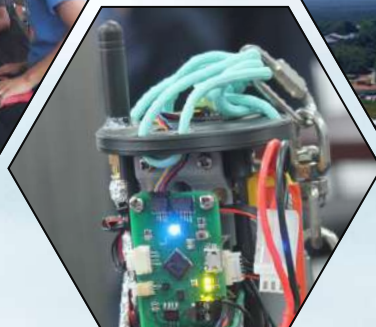




# ATAL SATELLITE COMPETITION



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# Introduction

The **Atal Satellite Competition 2025 (ASC)** is the first school-level satellite design and development competition in India. It is organised under the aegis of India Space Week, as part of its broader mission to promote space science education and technological innovation at the grassroots level.

In this competition, students will design and develop a model satellite in the shape of a can with specified dimensions. The satellite will be released from a drone at a defined altitude and is required to soft-land safely using a parachute system. During its descent, the satellite must transmit telemetry data to the Ground Control Station using a communication module. The mandatory data parameters include pressure, temperature, and altitude, along with data from any novel sensor integrated by the team.

The program supports the goals of the **National Education Policy (NEP) 2020**, which emphasises practical learning, creativity, and early exposure to emerging fields such as space science and engineering. By participating in ASC, students gain valuable experience in teamwork, problem-solving, and applying scientific principles to real-world challenges.

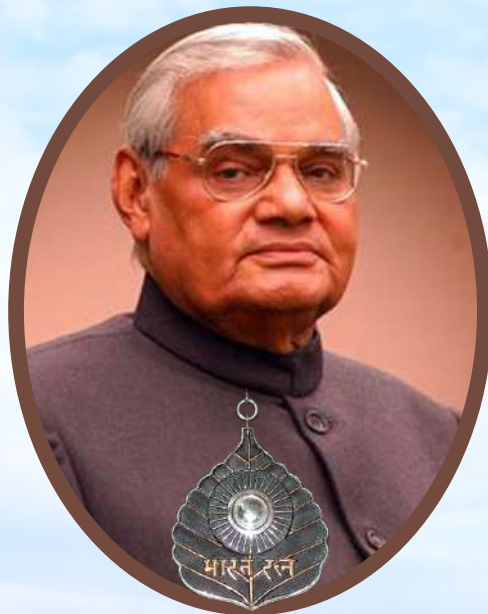


# A Tribute to Shri Atal Bihari Vajpayee Ji

The Atal Satellite Competition is dedicated to the legacy of **Shri Atal Bihari Vajpayee Ji**, Bharat Ratna and former Prime Minister of India, whose leadership was marked by a profound commitment to national development through science, technology, and strategic innovation. His vision for India was bold and transformative—an India that is self-reliant, forward-looking, and globally respected.

Shri Vajpayee believed that the strength of a nation lies not only in its economy or defense, but in the intellectual and innovative spirit of its people. He championed the cause of scientific advancement and laid the foundation for several landmark initiatives that continue to shape India's technological landscape.

***Honoring the Visionary Who Believed in a Scientifically Empowered India***



**Bharat Ratna Shree Atal Bihari Vajpayee Ji**

**Former Prime Minister of India**

The competition is open to all school students from grades 6 to 12 enrolled in Indian schools.

1. Applicants shall apply in teams. Each team shall have a minimum of 3 members and shall not exceed 5 members.
2. Each team must have one faculty mentor (a teacher) from their school.
3. The role of the faculty mentor is to:
  - Provide a point of contact for the team, both with the school and the organising committee.
  - Ensure students' safety and discipline throughout the competition.
  - Provide general guidance and oversight during the competition.
  - The mentor shall not make design decisions or provide direct technical solutions.



# Guidelines

The team applying for the competition must provide an Approval Letter from the school, consisting of details of all team members, including:

- Name, Class, School ID, and Role in the team.
- Name of mentor teacher.
- The approval letter must be printed on the school's letterhead and signed by the Principal/Head of Institution. A scanned copy of the letter must be submitted after registration.

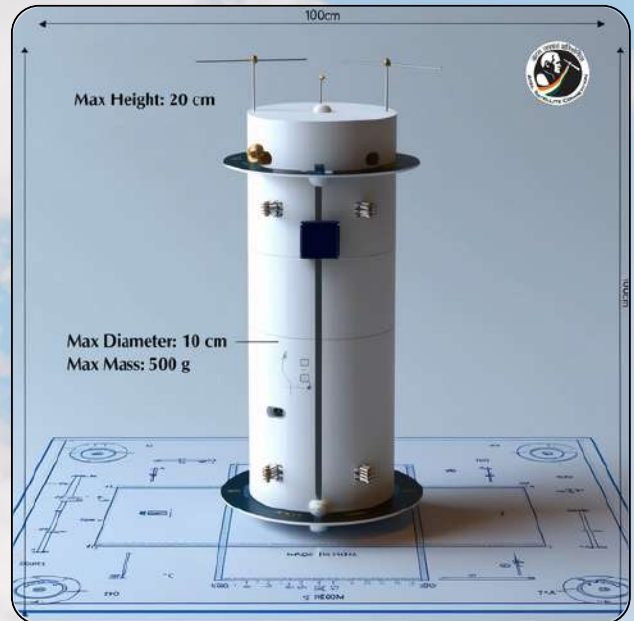
In case of any changes in the team after registration, an official request shall be made by the mentor teacher to the organisers with the subject line: Team Change Request – ATAL SATELLITE COMPETITION 2025.

Any changes in the team after the CDR stage will not be considered.



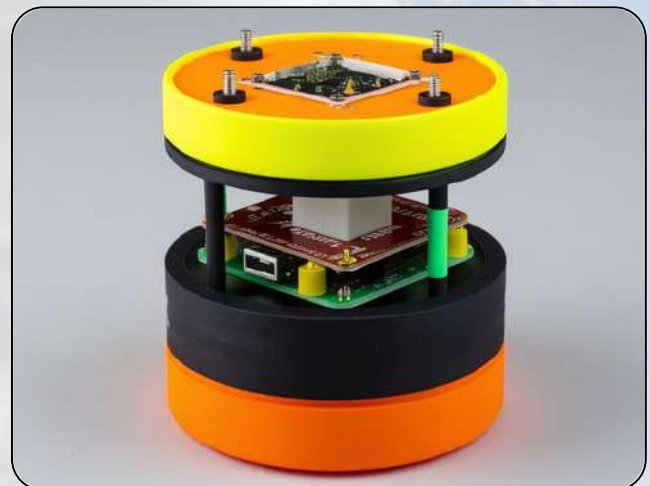
## 1. BASIC REQUIREMENTS

- The Model Satellite shall have a maximum height of 20 cm and a maximum diameter of 10 cm.
- The total mass shall not exceed 500 grams.
- The Model Satellite must strictly fit within the given size constraints.
- Teams are free to use any design process and materials, but sharp edges must be avoided for safety.
- The Model Satellite shall be designed for safe deployment and recovery without causing damage to itself or its surroundings.
- Mandatory onboard sensors must record and transmit the following real-time datasets: Temperature, Pressure, and Altitude.
- The collected data must be received and displayed on the Ground Control Software (GCS), which will be provided by the organizers.



## 2. STRUCTURE REQUIREMENTS

- All electronic components must be enclosed and protected, with only necessary sensors exposed.
- The structure must be able to withstand drone release and landing impact without functional damage.
- Circuit boards must be mounted using proper standoffs, screws, or adhesives to prevent dislocation during descent.
- Team name, ID, and contact details must be marked visibly on the structure for recovery assistance.
- The Model Satellite must include a visible marking or fluorescent paint for easy spotting during recovery.



## 3. POWER REQUIREMENTS

- The Model Satellite shall have an accessible external power switch with an indicator.
- The power system shall support at least 1 hour of wait time on the launch pad plus sufficient energy for flight operations.
- Teams may use rechargeable batteries such as Li-ion or Ni-MH. Lithium Polymer batteries are not allowed unless in LiPo Li-ion Protection Bag (e.g., 18650-type) cells.
- The battery compartment must allow quick installation/removal without complete disassembly.



## 4. DESCENT & RECOVERY REQUIREMENTS

- The Model Satellite must descend safely after release from a drone at the specified altitude by the organizers.
- The primary descent mechanism shall be a parachute or equivalent safe descent system.
- The descent rate must ensure a safe landing without damage to internal electronics.
- The Model Satellite must be recoverable in working condition after landing.



## 5. COMMUNICATION REQUIREMENTS

- Teams are advised to use a LoRa communication module for telemetry transmission.
- The Model Satellite shall transmit mandatory data parameters (temperature, pressure, altitude) to the Ground Control Station in real time.

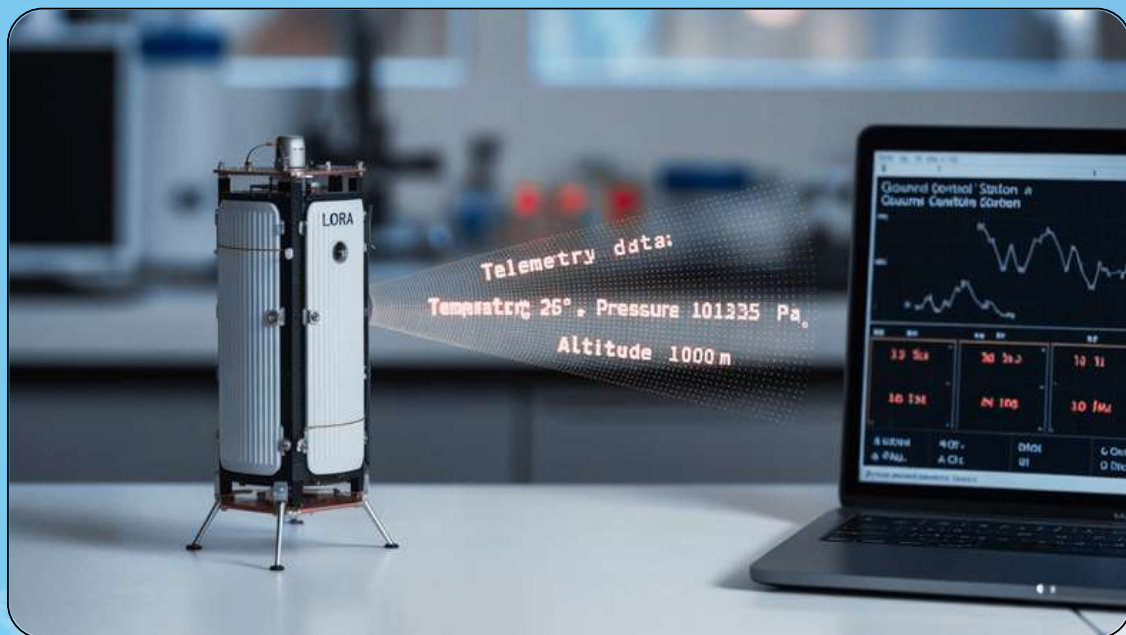
## 6. GROUND STATION

- The Ground Control Software (GCS) will be provided by the organizers.
- All telemetry data shall be displayed in SI units (Celsius, Pascal, meters, etc.) in real time.
- Teams must ensure proper integration of their telemetry system with the provided GCS.

## 7. OPTIONAL OBJECTIVES

Teams are encouraged to enhance their Model Satellite with innovative features such as:

- Controlled Parachute Deployment Mechanism for smoother landing.
- Camera Payload for capturing images or live video during descent.
- Unique Sensor Payloads such as air quality, UV, gas, or vibration sensors.
- Student Innovation Payloads like mini solar panels, environmental monitoring sensors, or experimental modules.



# Competition Phases

- **Critical Design Review (CDR):** Submission of detailed design, cost report, and risk plan. Based on the evaluation, shortlisted teams will be allowed for the next phase.
- **Flight Readiness Review (FRR):** Teams must assemble their CanSat and conduct all required environmental tests (drop test, communication test, thermal test, and vibration test). A detailed report of these tests must be submitted. Based on the evaluation, shortlisted teams will be allowed for the final launch.
- **Final Launch & Post-Flight Review:** The shortlisted CanSats will be launched by the organisers using drones. Teams will perform live data monitoring, parachute deployment checks, and post-flight analysis. Winners will be announced on the basis of CanSat performance.

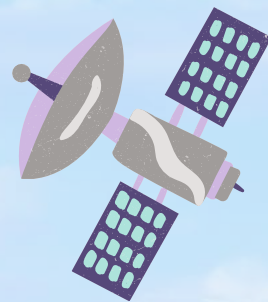
## Note

Even disqualified teams will be honoured with a certificate of participation, recognising their effort and enthusiasm

## Training & Mentorship

**Compulsory online training will be conducted by the organisers for all registered teams. The training program will include the following activities:**

- CanSat design methodology.
- Avionics and sensor integration.
- Parachute system and deployment.
- Physical testing methods and safety precautions.
- Ground control software usage.



# Achievement



## WINNERS

First Prize

₹ 100000

Second Prize

₹ 50000

Third Prize

₹ 25000



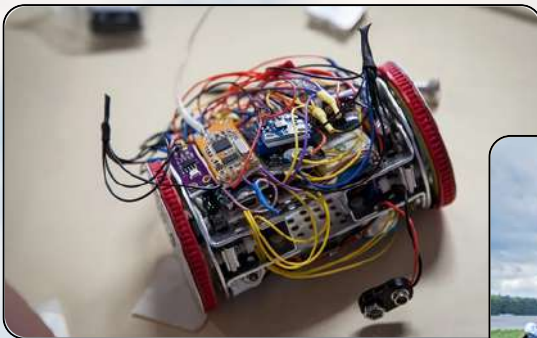
Each team shall pay a non-refundable registration fee of Rs. 11,000/- (Rupees Eleven Thousand Only).

This fee will cover:

- Online training and skill development workshops, wherein students will learn the basics of satellite systems, which will aid them in further phases of the competition.
- A CanSat Development Kit consisting of microcontrollers, sensors, and supporting components.
- Hands-on training classes and guidance sessions to help students build and integrate their CanSat payloads.



- After the registration timeline is complete, participants will be provided with a Mission Requirement Document (MRD) for the CanSat competition.
- The teams can start a marketing pitch to attract sponsorships for supporting their CanSat project. The organising committee may also introduce college/lab visits, technical interactions, or mentoring sessions at any stage of the competition. Teams are encouraged to approach potential sponsors or adopt-a-team initiatives for financial support, subject to committee approval.
- After successful qualification at the Critical Design Review (CDR) stage, each team shall be required to submit their Flight Readiness Review (FRR) document. After the Flight Readiness Review, the shortlisted teams will be allowed to launch their CanSats in the Grand Finale, using launchers provided by the organisers. Post-flight performance reviews will be conducted to decide the winners. Further guidelines, training schedules, and evaluation criteria will be intimated in due course.





# Benefits to Students



- **Hands-on Exposure to Space Technology**
  - Students gain practical experience in designing and developing miniature satellites, introducing them to real-world applications of aerospace engineering.
- **Alignment with NEP 2020 Goals**
  - The competition supports the National Education Policy's emphasis on experiential learning, interdisciplinary education, and early exposure to emerging technologies.
- **Skill Development in STEM**
  - Participants enhance their understanding of science, technology, engineering, and mathematics through structured project work and technical challenges.
- **Teamwork and Leadership**
  - Working in teams fosters collaboration, communication, and leadership skills—essential qualities for academic and professional success.
- **Mentorship and Guidance**
  - Students receive mentorship from educators and technical experts, helping them navigate complex concepts and improve their problem-solving abilities.
- **Academic Recognition**
  - Participation in a national-level competition adds value to students' academic profiles and can support future opportunities in higher education and scholarships.
- **Awards and Incentives**
  - Top-performing teams are eligible for recognition and monetary awards, motivating students to strive for excellence.

- **Institutional Prestige**

- Representing the school in a national-level competition enhances its reputation for promoting innovation and academic excellence.

- **Faculty Engagement**

- Teachers serving as mentors gain exposure to emerging technologies and interdisciplinary teaching methods, enriching their professional development.

- **Promotion of STEM Culture**

- Schools foster a culture of scientific inquiry and innovation, aligning with national goals for education and technological advancement.

- **Networking and Collaboration**

- Participation opens avenues for collaboration with other institutions, experts, and organizations involved in space science and education.

- **Student Motivation and Retention**

- Engaging students in high-impact learning experiences increases motivation, curiosity, and long-term interest in academic pursuits.

- **Integration with Curriculum Goals**

- The competition complements existing science and technology curricula, offering practical extensions to classroom learning.



| S.No | Activity                 | Start Date    | End Date      |
|------|--------------------------|---------------|---------------|
| 1    | Registration             | 22 Sep 2025   | 30 Nov 2025   |
| 2    | Training - 1             | 05 Dec 2025   | 10 Dec 2025   |
| 3    | CDR Submission           | 30 Jan 2026   | 30 Jan 2026   |
| 4    | Training - 2             | 05 April 2026 | 10 April 2026 |
| 5    | Mission Readiness Review | 30 May 2026   | 30 May 2026   |
| 6    | Lunch                    | TBA (June)    | TBA (June)    |

## ATAL SATELLITE COMPETITION - 2025 COMPETITION TIMELINE





विज्ञान एवं  
प्रौद्योगिकी मंत्रालय  
MINISTRY OF  
SCIENCE AND  
TECHNOLOGY

सत्यमेव जयते



## Our Partners



# Design Expectation

- Microcontrollers
- Arduino Nano
- Raspberry Pi Pico
- ESP32
- BLE
- Actuators
- Servo Motors
- Sensors
- MPU6050
- BMP280
- GPS NEO-6M
- Power
- Lithium-ion Cells
- Communication
- LoRa Module
- Body Frame
- 3D Printed
- Cardboard
- Innovative Materials



Parachute  
Compartment

Electronics  
Sensors/Microcontroller/  
GPS etc

Battery  
Compartment



To ensure a smooth and complete registration process for the ASC event, please follow the steps below and fill out all required fields accurately.

## Section 1: Team Details

- Provide the following information about your team and school:
  - Team Name: Choose a unique and appropriate name for your team.
  - School Name: Full name of the participating school.
  - School Address: Include street, city, state, and postal code.
  - Principal Name: Full name of the school principal.

## Section 2: Mentor Details

- Each team must have one designated mentor. Please provide:
  - Name: Full name of the mentor.
  - Designation: Role or title (e.g., Teacher, Coordinator).
  - Gender: Male / Female / Other.
  - Mobile Number: Active contact number.
  - Email ID: Valid email address for communication.
  - Photo: Recent passport-size photo (JPEG/PNG format).
  - Signature: Digital or scanned signature.
  - ID Proof Number: Valid government-issued ID (e.g., Aadhaar, PAN, Passport).

## Section 3: Team Members' Details

- Each team can have 3 to 5 student members. For each member, provide:
  - Name: Full name as per school records.
  - Gender: Male / Female / Other.
  - Class: Current academic class/grade.
  - Student ID Number: Unique ID issued by the school.
  - Photo: Recent passport-size photo (JPEG/PNG format).

**Note:** Minimum number of members required is 3, maximum is 5.



# Registration Guidelines



## Submission Instructions

- Ensure all fields are filled clearly and correctly.
- Attach all required photos and signatures in the specified format.

## Important Reminders

- Incomplete or incorrect forms may lead to disqualification.
- All information must be verifiable.
- Submission deadline must be strictly followed.
- Each school can submit only one team.

## COMPETITION FEES

**₹11000 per team**

Registration Fees: ₹ 1000

Training Fees: ₹ 5000

Kit Fees: ₹ 5000

**\* Non-Refundable \***

**Start Date** : 22 September 2025

**End Date** : 30 November 2025, till 11:55 PM

**Registration Link:** [https://asc.ind.in/registration\\_form/](https://asc.ind.in/registration_form/)

## INDIA SPACE WEEK (Head Office)

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Phone no: 011-44749707

Mobile no: 7290071471, 81303 17917

Website: [www.asc.ind.in](http://www.asc.ind.in), [www.indiaspaceweek.org](http://www.indiaspaceweek.org)

## INDIA SPACE WEEK "Regional Office"

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**"From Atal ji's vision of Chandrayaan-I to Modi ji's success of Chandrayaan-III – India's journey to the Moon inspires every young mind."**

