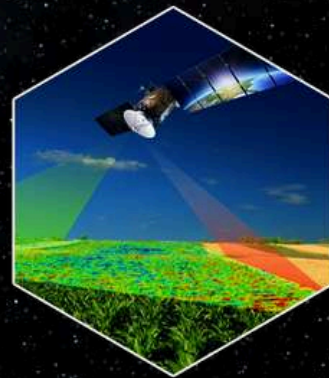




Winter Training Program 2025

(A Skill Training & Internship Program)



Training Coursework

भारत अंतरिक्ष अकादमी

अंतरिक्ष शिक्षा विभाग (आईएसडब्ल्यू)

बी ए/14 बी जनकपुरी

नई दिल्ली – 110058, भारत

दूरभाष संख्या : 011-44749707, 8130317917

ईमेल: info@isa.ac.in, contact@isa.ac.in

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Ref - ISA/IND/WI/243/2025

Date: 08 November 2025

Winter Training on Space Science and Technology 2025 (A Skill Training & Internship Program)

IMPORTANT UPDATE

In view of the representations received from students and faculty members of various universities and academic institutions, and considering the ongoing examination schedules during the month of December, the Organising Committee has approved the following revisions to the Winter Training Program:

1. Extension of Registration Deadline

The last date for registration has been extended from **10 November 2025** to **30 November 2025**.

This extension has been granted to facilitate wider participation and to accommodate requests received from multiple stakeholders.

2. Rescheduling of Program Commencement

The Winter Training Program shall now commence from **January 2026** instead of December 2025.

This decision has been taken in the interest of academic convenience and to ensure that students and faculty members are able to participate without conflict with their institutional examination schedules.

These modifications are aimed at enhancing accessibility, reducing academic overlap, and ensuring optimal engagement in the training program.

All concerned are requested to take note of the above and disseminate the information through appropriate channels.

“विकसित भारत @2047 – आत्मनिर्भर, सशक्त और उन्नत भारत”

भवदीय

निदेशक/Director

भारत अंतरिक्ष अकादमी/India space Academy

नई दिल्ली/New Delhi

निदेशक कार्यालय/Director Office

भारत अंतरिक्ष अकादमी/India Space Academy

भारत अंतरिक्ष अकादमी

अंतरिक्ष शिक्षा विभाग (आईएसडब्ल्यू)

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Ref- ISA/IND/Circular/121/2025

Date: 01 October 2025

From

Director

India Space Academy

New Delhi.

To

Registrar, Vice Chancellor, Principal,

All Central Universities, State Universities, Deemed Universities,

State Private Universities, Colleges, Institutions,

All States - India.

Subject: Regarding the registration of students and faculty of your University/College/institution in winter training on Space Science and Technology 2025 (A Skill training and internship program).

Respected Sir/Madam,

Under the leadership of **Hon'ble Prime Minister Shri Narendra Modi**, India's space sector has witnessed accelerated growth through strategic reforms and national missions. The introduction of the **Indian Space Policy 2023 and the Geospatial Policy 2022** has opened avenues for private participation and projected a **₹1 lakh crore geospatial economy by 2030**. The government has **launched research fellowships, internship schemes, and capacity-building programs to strengthen academic engagement**. Fields such as astronomy and astrophysics are gaining prominence through ISRO-led missions and international collaborations. Drone technology is being integrated into agriculture, surveillance, and disaster response, while remote sensing and GIS are vital for urban planning and environmental monitoring. **To meet rising demand, academia and industry are jointly advancing skill development through technical training, project-based learning, and AI-integrated geospatial analytics**. Initiatives under Skill India, NEP 2020, and Viksit Bharat@2047 aim to equip youth with domain expertise, fostering a self-reliant and innovation-driven space ecosystem.

The **National Education Policy (NEP) 2020** emphasises the importance of fostering quality research within the Higher Education system. Research and innovation are key components for enhancing the academic excellence of Higher Education Institutions (HEIs). Addressing the societal challenges of our nation requires a robust and dynamic higher education ecosystem, prioritizing research, innovation, and technological advancements. The integration of these elements forms the cornerstone of **Atma-Nirbhar Bharat (Self-reliant India)**.

India Space Academy, under the **Department of Space Education of India Space Week**, aims to promote space education, innovation, technology, and employment among students and teachers of the nation. The academy is organising the **winter training on Space Science and Technology 2025**.

भारत अंतरिक्ष अकादमी

अंतरिक्ष शिक्षा विभाग (आईएसडब्ल्यू)

बी ए / 14 बी जनकपुरी

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The winter training aligns with the vision of the Prime Minister of transforming India into a global leader in technology, sustainability, and space sciences. The programme covers Astronomy & Astrophysics, Advanced Drone Technology, and Remote Sensing & GIS with AI applications. Sessions will be led by experts from ISRO, NASA, IITs, and industry, featuring lectures and hands-on project work. Participants will gain practical exposure to scientific tools, geospatial analysis, and emerging space technologies.

We are delighted to invite all students and teachers of the university/college/institution to register for the program. This training is an excellent opportunity for students/teachers to gain hands-on experience, interact with leading experts from ISRO, NASA, and IITs, and apply knowledge in real-world scenarios.

A formal announcement and brochure of the training program is attached to this letter

The Chancellor/Vice-Chancellor/Director/Principal/Registrar/Head of Departments are requested to circulate the information among the students and teachers of your institutions and ensure their registration so that they can benefit of from the program.

Your active participation will significantly contribute to enhancing the technical skills and innovation potential of students and teachers.

NOTE:

Registration Star: 1st October 2025

Registration End: 10th November 2025 till 11:55 PM

Program Start: Will Be Announced Later

Program Mode: Online

Registration Link: <https://isa.internship.indiaspaceweek.org/>

Tuition Fee: ₹1750/- (Non-Refundable)

“विकसित भारत @2047 – आत्मनिर्भर, सशक्त और उन्नत भारत”

भवदीय
Aman Kumar

निदेशक/Director

भारत अंतरिक्ष अकादमी/India space Academy

नई दिल्ली/New Delhi

निदेशक कार्यालय/Director Office

भारत अंतरिक्ष अकादमी/India Space Academy



India Space Academy

Remote Sensing & GIS From Basics To Ai-Powered Geospatial Analysis

Winter Training on Space Science and Technology 2025
(A Skill Training & Internship Program)

(December to January)

This training programme introduces participants to the fundamentals of Remote Sensing (RS) and GIS, then gradually integrates Artificial Intelligence (AI) and Machine Learning (ML) techniques for geospatial data analysis. The course is designed to provide both conceptual knowledge and practical hands-on skills, enabling participants to independently apply AI-powered geospatial workflows in agriculture, forestry, disaster management, and climate studies.

Tentative Topics:

- 1) GeoVision Basic
- 2) Smart Earth Data
- 3) Map Intelligence
- 4) Applied Geo-AI



Registration Start Date: 01/10/2025
Registration End Date: 10/11/2025 till 11:55 pm
Registration Link: <https://isa.intership.indiaspaceweek.org/>



India Space Academy



Astronomy & Astrophysics

Winter Training on Space Science and Technology 2025
(A Skill Training & Internship Program)

(December to January)

Awarded for distinguished participation, demonstrating knowledge in celestial science, exoplanet exploration, astrophotography, and research methodology with paper writing, showcasing dedication to advancing skills and excellence in the field of astronomy and astrophysics.

Tentative Topics:

- 1) Introduction to Astronomy & Astrophysics
- 2) Exoplanets
- 3) Astrophotography
- 4) Research Methodology & Paper Writing



Registration Start Date: 01/10/2025

Registration End Date: 10/11/2025 till 11:55 pm

Registration Link: <https://isa.intership.indiaspaceweek.org/>



India Space Academy



Advance Drone Technology

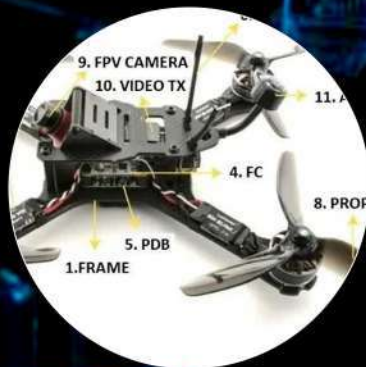
Winter Training on Space Science and Technology 2025
(A Skill Training & Internship Program)

(December to January)

This training explores the complete journey of drone development, from **structural design and assembly** to **flight controller integration** and fine-tuning. Participants will also learn **drone automation** using advanced flight software. The course combines theory and hands-on practice to build fully functional and efficient drones.

Tentative Topics:

- 1) Structural design of drone
- 2) Drone assembly
- 3) Flight controller integration and fine tuning
- 4) Drone automation using flight software



Registration Start Date: 01/10/2025

Registration End Date: 10/11/2025 till 11:55 pm

Registration Link: <https://isa.intership.indiaspaceweek.org/>



ASTRONOMY AND ASTROPHYSICS

Day	Topic	Description
1	Foundations of Astronomy	Explore celestial systems, observational frameworks, and astronomical relevance to space missions.
2	Celestial Mechanics & Orbital Dynamics	Analyse planetary motion, orbital elements, and simulation techniques for mission planning.
3	Stellar Structure & Evolution	Study stellar life cycles, internal physics, and classification using HR diagrams.
4	Astrophysical Processes	Understand radiation, magnetism, and energy transfer in celestial environments.
5	Cosmology & Large-Scale Structure	Examine universe models, dark matter/energy, and cosmic background radiation.
6	Exoplanetary Science: Overview	Classify exoplanets and explore planetary formation and system architectures.
7	Detection Techniques & Instrumentation	Learn transit, radial velocity, and imaging methods with mission-based data.
8	Habitability & Atmospheric Characterisation	Assess habitability indices and analyse exoplanet atmospheres for biosignatures.
9	Astrophotography: Theory & Techniques	Master imaging principles, telescope optics, and night sky photography.
10	Image Processing & Data Analysis	Apply stacking, photometry, and astrometry using advanced software tools.
11	Observational Astronomy & Field Methods	Conduct sky observations and prepare proposals for telescope time.
12	Research Methodology in Space Science	Design research frameworks, formulate hypotheses, and plan experiments.
13	Literature Review & Meta-Analysis	Perform scholarly reviews and synthesise findings from existing datasets.
14	Scientific Writing & Technical Communication	Draft research papers in LaTeX format and prepare them for peer review.
15	Research Ethics, IP & Publication Strategy	Learn ethical practices, IP rights, and journal submission protocols.

Note: The above topics are tentative. The organizing team can change the topic as per the requirement of the coursework.

DRONE TECHNOLOGY

Day	Topic	Description
1	Introduction to Drones and UAVs	Brief history, types of drones, and their evolution
2	Science of Flight	Principles of aerodynamics, lift, thrust, drag, and weight
3	Drone Parts and Configurations	Frame types, motors, propellers, ESCs, batteries, and configurations (X, +, H)
4	Drone Design using SolidWorks (Part 1)	Introduction to CAD modelling and designing a drone structure
5	Drone Design using SolidWorks (Part 2)	Advanced CAD design and 3D visualisation
6	Drone Structure Simulations/ Thrust Calculation	Finite element analysis, CFD
7	Flight Computers and Sensors	Understanding flight controllers, IMU, GPS, barometer, and compass
8	Fly with Arduino – PID Control	Hands-on understanding of Arduino-based control and PID tuning basics
9	Basics of Python for Drone Applications (Part 1)	Introduction to Python Programming
10	Basics of Python for Drone Applications (Part 2)	Introduction to Python Programming
11	Computer Vision for Drones	Object detection, tracking, and OpenCV integration
12	AI/ML in Drone Technology	Applications of AI/ML in navigation, surveillance, and agriculture
13	Entrepreneurship in the Drone & UAV Industry	Drone regulations, startups, licensing, and business models
14	Structure Manufacturing	3D Printing, Composite manufacturing and Laser Cutting
15	DIY Drone Assembly & Flight Testing (Part 1)	Assembling the frame, motors, and flight controller setup
16	DIY Drone Assembly & Flight Testing (Part 2)	Calibration, flight test, troubleshooting, and assignment submission

Note: The above topics are tentative. The organizing team can change the topic as per the requirement of the coursework.

Remote Sensing and GIS

Week	Day	Topic
Week 1	1	Inaugural Session & Orientation – Introduction to RS, GIS, and AI
	2	Fundamentals of Remote Sensing & Satellite Systems
	3	RS Processes & Image Resolutions; Image Interpretation
	4	Satellite Data Acquisition & Preprocessing
	5	Fundamentals of GIS & Spatial Data Handling in QGIS
	6	Vegetation & Water Indices (NDVI, EVI, SAVI, NDWI, MNDWI)
Week 2	7	Terrain Mapping & DEM Analysis
	8	Introduction to Machine Learning for RS
	9	Image Classification – Supervised & Unsupervised
	10	AI/ML-Based LULC Mapping using Python
	11	Multi-Temporal Change Detection using RS & ML
	12	Deep Learning for Object Detection in Satellite Images
Week 3	13	GIS Spatial Analysis & AI Integration
	14	Applications in Agriculture, Forestry & Disaster Management
	15	Project Presentation & Valedictory Session

Tools / Software: QGIS (Open-source GIS), Google Earth Engine (GEE), Python (Google Colab / Jupyter Notebook), Scikit-learn, TensorFlow/Keras (Introductory Level)

Note: The above topics are tentative. The organizing team can change the topic as per the requirement of the coursework.