IN-SPACe Short -Term Skill Development Course on Essentials of Space Data Products and Services

DIGITAL ELEVATION MODEL

SPACE TECHNOLOGY IN AGRICULTURE

DISASTER MANAGEMENT

URBAN DEVELOPMENT

BHUVAN

LIDAR

IN-SPACe Short -Term Skill Development Course on Essentials of Space Data Products and Services

Government of India under the visionary leadership of Hon'ble PM Shri Narendra Modi has initiated historic space sector reforms. The objective of space reforms is to make India a leading space economy globally, through increased private sector participation. Indian National Space Promotion and Authorization Centre (IN-SPACe) has been formed under Department of Space (DOS), to promote, enable, authorize and supervise Non-Government Entities (NGEs) and academia to undertake space activities.

Skill development of Industry and Academia in Space Sector

OBJECTIVE

COURSE INFORMATION

In order to transform the Government's vision to reality, IN-SPACe in association with ISRO, NGEs and Academia is pleased to announce registration for the Short-Term Course on Space Data Products and Services. This unique course is designed for the benefit of NGEs and Academia on Space Data Products and Applications.

ABSTRACT

The course on "Essentials of Space Data Products and Services" is curated to empower the participants with basic understanding of the various data products generated from space platforms and their applications including practical demonstrations. The course starts with an introduction to fundamentals of Remote sensing technology, spectrum of space-based platforms and sensors, data types and their characteristics. Subsequently, several technical aspects related to digital image processing, Microwave SAR, Photogrammetry and LIDAR data processing, Elevation models, value added products are touched upon. GIS, Geo portals, APIs, Geospatial applications in water security, Geo Sciences, Marine & Oceanic applications, Satellite Meteorology, Navigation and ground-based augmentation, Disaster management are addressed. Planetary surface observations, Data Quality Evaluation and industry perspectives including use cases are included for completion.

Inaugural Session (05-04-2026)			
Time	**Module**	**Keynote talk**	
15:00 - 17:00 Hrs.	Inaugural Session	Leveraging Geospatial data for Gatishakti National Master Plan	Shri. Subhash Chandra Karol, Director, DPIIT
DAY-1 (06-04-2026)			
Time	**Module**	**Title of Talk**	**Faculty/Course Instructor**
09:00 - 10:00 Hrs.	Remote Sensing Technology fundamentals	L1: Physical aspects of Remote Sensing (EMR properties, EM spectrum, atmospheric windows..)	Prof. R D Garg, IIT Roorkee
10:00 - 11:00 Hrs.	Remote Sensing Technology fundamentals	L2: Remote sensing Platforms and Sensors	Prof. Akshay Pandey, IITM Jabalpur
11:00 - 11:30 Hrs.	Tea Break		
11:30 - 12:30 Hrs.	Remote Sensing Technology fundamentals	L3: RS data types and Characteristics (Optical, Microwave, Thermal, Hyperspectral, Spectral signatures, image interpretation.)	Prof. R D Garg, IIT Roorkee
12:30 - 13:30 Hrs.	Digital Image Processing	L4: Digital Image Preparation (statistics, color composites, geometry& radiometry corrections, enhancements, rectification, fusion, spectral indices.)	Prof. Akshay Pandey, IITM Jabalpur
13:30 - 14:30 Hrs.	Lunch Break		
14:30 - 15:30 Hrs.	Digital Image Processing	L5: Change Detection and Image Classification / segmentation	Dr. Surendra Sharma, IIRS/ISRO, Dehradun
15:30 - 16:30 Hrs.	Value Added Product	L6: Value Added Products from Satellite data	Dr. Pramod Kumar, Ex-Dean Academics, IIRS/ ISRO
16:30 - 17:00 Hrs.	Tea Break		
17:00 - 18:00 Hrs.	Practical Aspects	P1: Satellite data browsing, download & visualization Bhoonidhi and ISRO's regional hub for Landsat & Copernicus data	Ms. Manju Sharma, Ex-DD, NRSC/ISRO

DAY-2 (07-04-2026)			
Time	**Module**	**Title of Talk**	**Faculty/Course Instructor**
09:00 - 10:00 Hrs.	Photogrammetry & LIDAR data processing	L7: Fundamentals of photogrammetry (Stereo, Aerial, Satellite & UAV) & LIDAR data processing	Prof. (Retired) Sanjay Ghosh, Civil Engg, IIT, Roorkee
10:00 - 11:00 Hrs.	Elevation Models	L8: Digital Elevation Models, Digital Terrain Models and Digital Surface models	Shri. B Gopala Krishna Ex-DD, NRSC / ISRO
11:00 - 11:30 Hrs.	Tea Break		
11:30 - 12:30 Hrs.	Multi Sensor quality Evaluation and Quality Control	L9: Satellite data quality Evaluation and Quality Control of Optical, SAR, Hyperspectral & Thermal sensors data	Dr Surendra Sharma, IIRS/ISRO Dehradun
12:30 - 13:30 Hrs.	Geographical Information system (GIS)	L10: Introduction to GIS, Database Management System, Spatial data Analysis and Multi-criteria decision models	Shri. Vinod Bothale, Ex-AD, NRSC/ISRO, Resident Expert, IN-SPACe
13:30 - 14:30 Hrs.	Lunch Break		
14:30 - 15:30 Hrs.	Geoportals and Geo-data repositories	L11: Data and Services from MOSDAC and VEDAS	Shri. Shashi Kant Sharma, Ex-GD, SAC
15:30 - 16:30 Hrs.	Geoportals and Geo-data repositories	L12: Bhuvan Geoportal for governance and services, Disaster risk reduction through Bhuvan & NDEM	Shri. Vinod Bothale, Ex-AD, NRSC/ISRO, Resident Expert, IN-SPACe
16:30 - 17:00 Hrs.	Tea Break		
17:00 - 18:00 Hrs.	Practical Aspects	P2: Installing QGIS, Downloading sample data and generaltools	Dr. Alka Rani, Assistant Professor, IIT, Roorkee

DAY-3 (08-04-2026)			
Time	**Module**	**Title of Talk**	**Faculty/Course Instructor**
09:00 - 10:00 Hrs.	Advanced Data Processing Techniques	L13: AI and ML overview & usecases for Remote sensing data processing, Artificial Nerual Networks, Big data, Analysis Ready Data (ARD)	Shri. Harish Karnataka, Scientist, IIRS/ISRO Dehradun
10:00 - 11:00 Hrs.	Geospatial Applications	L14: Geospatial Applications in Forestry, Ecology and Environmental Sustainability	Dr. C S Jha, Ex-CGM, NRSC/ISRO
11:00 - 11:30 Hrs.	Tea Break		
11:30 - 12:30 Hrs.	Geospatial Applications	L15: Geospatial Applications in Agriculture and food security	Dr. Prashant Rajankar, Sr Scientist & Project Manager, MahaAgriTech, MRSAC, Nagpur
12:30 - 13:30 Hrs.	EO Applications	L16: Geospatial Applications in water security, resource assessment and monitoring	Dr. P V Raju, Ex-GD, NRSC/ISRO
13:30 - 14:30 Hrs.	Lunch Break		
14:30 - 15:30 Hrs.	Geospatial Applications	L17: Data vs Data as service, OGC compliance, Buiding Geoportals	Dr Harish Karnataka, Scientist, IIRS/ISRO Dehradun
15:30 - 16:30 Hrs.	Industry Talk - 1	L18: Business use cases of satellite data – Experience Sharing	Ms. Preeti Chaudhary Harvest Global,
16:30 - 17:00 Hrs.	Tea Break		
17:00 - 18:00 Hrs.	Practical Aspects – Data analysis in earth Engine	P3: Working with Earth Engine – Data Catalogue, Time Series Data & Analysis Ready Data, Image Classification, Data export, ISRO's cloud based data analytics	Dr. Siddhartha Khare, CEO & Co-Founder, Bhoomicam & Asst Prof, IIT Roorkee

DAY-4 (09-04-2026)			
Time	**Module**	**Title of Talk**	**Faculty/Course Instructor**
09:00 - 10:00 Hrs.	Microwave SAR	L19: Microwave SAR fundamentals and applications (geometry, processing, calibration/validation, applications)	Dr Shashi Kumar, IIRS/ISRO, Dehradun
10:00 - 11:00 Hrs.	Geospatial Applications	L20: Geospatial applications in Urban & Regional studies and infrastructure planning	Dr. Venupopal, Ex-GD, NRSC/ISRO
11:00 - 11:30 Hrs.	Tea Break		
11:30 - 12:30 Hrs.	EO Applications	L21: EO for Marine, Oceanic and Coastal Processes	Dr. K Hanumant Rao, Ex-GD, NRSC/ISRO
12:30 - 13:30 Hrs.	Geospatial Applications	L22: Geospatial Applications in Geosciences	Dr. A K Joshi, Ex-Director, MRSAC, Nagpur, Ex-GH, NRSC/ISRO
13:30 - 14:30 Hrs.	Lunch Break		
14:30 - 15:30 Hrs.	EO for climate change studies	L23: Study of Global Warming, Green House gases, Snow & Glacier, Permafrost, Coral beach, Sea Surface Temperature, NICES	Dr. CBS Dutt, Ex-Program Director, ISRO GBP, Ex-DD, NRSC/ISRO.
15:30 - 16:30 Hrs.	Industry Talk - 2	L24: Use cases – Solutions using RS data and AI/ML/DL	Mr. Amit Kumar, Co-founder, Suhora Technologies, Noida
16:30 - 17:00 Hrs.	Tea Break		
17:00 - 18:00 Hrs.	Practical Aspects in GIS & multi-layer modelling	P4: Open street map data download, spatial overlay & analysis, multi-layer modelling	Mr. Prasoon Kumar Gupta, IIRS , Dehradun

DAY-5 (10-04-2026)			
Time	**Module**	**Title of Talk**	**Faculty/Course Instructor**
09:00 - 10:00 Hrs.	Satellite Meteorology and Atmospheric studies	L25: Space based observations for weather monitoring & prediction	Dr. Atul Varma, Ex-GD,SAC/ISRO
10:00 - 11:00 Hrs.	Satellite based navigation and ground based augmentation	L26: GNSS, DGPS, GAGAN, IRNSS (NavIC)	Shri. Anil Kumar, Group Head, GTOPG, IIRS/ISRO
11:00 - 11:30 Hrs.	Tea Break		
11:30 - 12:30 Hrs.	Data Services, APIs and building Geoportals	L27: EO for disaster risk reduction (natural, climate change induced, Hydrological, environmental, geological), International frame work for disaster risk reduction	Dr. G Srinivas Rao, Ex-DD, NRSC/ISRO
12:30 - 13:30 Hrs.	Quiz		
13:30 - 14:30 Hrs.	Lunch Break		
14:30 - 15:30 Hrs.	Planetary Missions & Scientific implications	L28: Planetary missions overview, planetary surface observations from Indian missions	Dr. Mamta Chauhan, Scientist, IIRS/ISRO
15:30 - 16:30 Hrs.	Industry talk - 3	L29: Geospatial solutions in agriculture sector	Dr. Siddhartha Khare, CEO & Co-Founder, Bhoomicam & Asst Prof, IIT Roorkee
16:30 - 17:00 Hrs.	Tea Break		
17:00 - 18:00 Hrs.	Industry Talk - 4	L30: Building Geospatial data models leveraging Edge computing technology	Shri. Vishesh Vatsal, CTO Hyspace
18:00 - 19:00 Hrs.	Feedback / Valedictory Session / Distribution of certificates		

How to Apply

Interested applicants can submit their details along with course fee at www.inspace.gov.in.

Who can Apply?

Academicians, Industry Executives, Graduates, Postgraduates and Researchers & Final year appearing graduate students

Course Director: Shri Vinod Bothale, Resident Expert IN-SPACe

Prof. Sanjay Upadhyay, Head, CSST, IIT Roorkee

Course Coordinator: Dr. Vaibhav Gaur , Asst. Director, IN-SPACe,

Dr. Alka Rani & Dr. Sanchita Pal, Asst. Professor, CSST, IIT Roorkee

Commencement of Course: April 05, 2026

Course Duration: April 05 -April 10, 2026

Course Venue: GNEC IIT Roorkee, Plot No 20, Knowledge Park 2, Greater Noida, UP.

Course Fee : ₹ 15,000/- + 18% includes food charges (Non-refundable)

Accommodation: Accommodation at Course venue is available on request. Payment to be made at the time of check-out.

Course participants are advised to report at venue on April 05, 2026, before 14:00 Hrs.

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