IIRS OUTREACH PROGRAMME

The IIRS outreach programme, which was started in 2007 with 12 universities/ institutions has now grown substantially to 4000+ network institutes. The beneficiaries of the programme may include:

- Central/State/Private Universities & Academic Institutions
- Central & State Government Departments
- Forest Resource Professionals
- State Forest Departments/Forest Training Academies
- Research Institutes
- Geospatial Industries
- NGOs

FEEDBACK MECHANISM

IIRS takes continuous feedback from participating institutions to improve the quality of future courses.

AWARDS

IIRS has received national awards for excellence intraining for outreach and e-learning programme during 1st National Symposium on Excellence in Training conducted during April 11-12, 2015 in New Delhi by Department of Personnel & Training (DoPT), Govt. of India in collaboration with United Nations Development Programme (UNDP).

ABOUT IIRS

Indian Institute of Remote Sensing (IIRS) under Indian Space Research Organisation (ISRO), Department of Space, Govt. of India is a premier Training and Educational Institute set up for developing trained professionals in the field of Remote Sensing, Geoinformatics and GNSS Technology for Natural Resources, Environmental and Disaster Management. Formerly known as Indian Photo-interpretation Institute (IPI), founded in 1966, the Institute boasts to be the first of its kind in entire South-East Asia. While nurturing its primary endeavour to build capacity among the user community by training mid-career professionals, the Institute has enhanced its capability and evolved many training and education programmes that are tuned to meet the requirements of various target groups, ranging from fresh graduates to policy makers including academia.

IIRS also conducts e-learning programme on Remote Sensing and Geoinformation Science (http://elearning.iirs.gov.in).

CONTACT DETAILS

Dr. Harish Chandra Karnatak
Course Director

Shri. Ravi Bhandari
Course Coordinator

Dr. Poonam S Tiwari
Programme Coordinator

IIRS DLP Team
Mr. Janardan Vishwakarma
&
Mr. Ashok Ghildiyal
0135-2524130
dlp@iirs.gov.in

Indian Institute of Remote Sensing,

IndianSpace ResearchOrganisation
Department of Space, Govt. of India,
4-Kalidas Road, Dehradun

176th IIRSOutreachProgramme

Geodata Processing using Python and Machine Learning

February 09-20, 2026

Organised by

Indian Institute of Remote Sensing

IndianSpace Research Organisation
Department of Space, Govt. of India
Dehradun

www.iirs.gov.in

ABOUT THE COURSE

In today's world, vast quantities of satellite imagery and geospatial data are being generated from diverse sources, many of which are available at little or no cost. When integrated with advanced Geographic Information Systems (GIS), these datasets become powerful assets for a broad spectrum of applications, including environmental management, disaster response, climate change assessment, natural resource planning, wildlife conservation, and land-cover classification. The principal challenge, however, lies not in data availability but in the ability to process these extensive datasets efficiently and extract meaningful insights. Leveraging machine learning techniques through Python offers a robust solution to this challenge. Machine learning enables the automation of complex analytical tasks, the detection of intricate patterns, and the generation of reliable predictions—thereby accelerating data processing while significantly enhancing analytical precision.

CURRICULUM

- Overview of GIS and different geospatial data types
- Overview to Python programming
- Raster Data Processing and Analysis
- Vector data processing and analysis
- Basics of Machine Learning

EXPECTED OUTCOME

By the end of this course, participants will be able to:

- **Develop Python programs to read, write, and process various raster data formats.**
- **Develop Python programs to read, write, and process different vector data formats.**
- **Demonstrate a clear understanding of fundamental machine learning concepts.**
- **Apply selected machine learning algorithms for geospatial data analysis and processing.**

TARGET PARTICIPANTS

- The candidates who want to participate in the course should be a student of final year undergraduate course or postgraduate course (any year).Technical/Scientific Staff of Central/State Government/Faculty/researchers at university/institutions are also eligible to apply for this course. Applications of participants have to be duly sponsored by university/institute and forwarded through coordinators from respective centres.

COURSE PRE-REQUISITES

- Knowledge of Basics of Remote Sensing and GIS
- Basic knowledge of computer programming
- Basic knowledge of python is desirable but no mandatory

COURSE STUDY MATERIAL

Course study materials like lecture slides, video recorded lectures, open source software & handouts of demonstrations, etc.will be made available through e-class. Video lectures will also be uploaded on e-class (https://www.eclass.iirs.gov.in/login).

COURSE FEE

There is no course fee for attending this programme.

COURSE REGISTRATION

- Course updates and other details will be available on URL- http://www.iirs.gov.in/Edusat-News/
- **Registered through Nodal** centres. The participant's registration must be approved by the coordinator of nodal centers.
- The participants can register and see their application status through URL- https://elearning.iirs.gov.in/edusatregistration/ . In case, the application is pending for approval then participants are advised to contact the coordinator of respective nodal center.

Registered as "Individual registrations"-

- The participants provided. All the registered participants will get their login credentials for ISRO Learning Management System (LMS)- https://isrolms.iirs.gov.in

COURSE FUNDING & TECHNICAL SUPPORT

Theprogrammeissponsoredby Indian Space Research Organisation, Department of Space, Government of India.

PROGRAMME RECEPTION

Programme canbe received throughe-class platform of IIRS-ISRO using internet connectivity. No specific is recommended good internet connectivity at user end. To run the programme in class room, following hardware will be required:

- Desktop computer with web camera microphone and output speakers or laptop with microphone camera and output speaker. Large display
- screen/projector/TV.

IMPORTANT LINKS

To participate in this programme the interested organisations /universities/departments/institutes have to identify coordinator at their end. The identified coordinator will register online his/her institute as nodal centre in IIRS website (https://elearning.iirs.gov.in/edusatregistration/coordinator)

AWARD OF CERTIFICATE

Registered throughNodal centres: Based on 70% attendance, students will be awarded a "Courses Participation Certificate."

Individual Registration: A "Course Participation" certificate will be given to everyone who devotes at least 70% of each session's hours to the course. The course participation certificate will be available for download in ISRO LMS.

There are a limited number of seats.
Registration will be done on a first-come, first-served basis.