



REMOTE SENSING AND GIS FOR LANDSCAPE MODELING (A CSIR - Integrated Skill Initiative)

November 18-22, 2024



CSIR- NATIONAL GEOPHYSICAL RESEARCH INSTITUTE
Uppal Road, Hyderabad - 500007



सीएसआईआर
CSIR
भारत का नवाचार इंजन
The Innovation Engine of India



CSIR Integrated Skill Initiative

ABOUT THE INSTITUTE

CSIR-National Geophysical Research Institute (CSIR-NGRI) is a premier R&D institution dedicated to studying the solid earth for geodynamics processes, earthquake hazard assessment, mineral exploration and groundwater sustainability. The earth surface process sculpts the bedrock terrain, producing landscape variability primarily by fluvial processes. Understanding the attributes of the landscape is important for analysing hydrological potential and natural hazards such as landslides, floods and erosion prone zones. Remote sensing and GIS have powerful applications in landscape characterisation, such as LULC, NDVI, morphometry, overlay analysis, hazard zonation, morphotectonics and transient landscape modelling. Various modern GIS platforms, such as ArcGIS and QGIS, are widely used to analyse and generate maps from satellite imagery. Programming-based tools such as MATLAB and Python are used for modelling. Emerging InSAR methods provides helpful quantification of spatial and temporal deformation of landscape.

The Geology group, CSIR-NGRI, deals with remote sensing and GIS applications to determine the active deformation of the landscape. NGRI is also engaged extensively in shallow surface mapping to determine ground deformation and buried utilities using the GPR system. Being a national institute, CSIR-NGRI has been imparting training to postgraduate students, research scholars and professionals on Remote sensing and GIS for landscape modelling to enhance their skills in their respective fields of work.

TRAINING FOR WHOM

The programme targets individuals who desire to acquire high-level skills in Remote sensing and GIS methods and their application in various landscape characterisation. We emphasise practical work applications. Participants will be introduced to various remote sensing data and tutorials for landscape analysis, from basic to advanced. Participants are requested to bring their own laptops with good computational power (>8 GB RAM), Windows OS, MATLAB (Trial/Student/Commercial) version.

Part of the course also provides a brief theory on Remote sensing, GIS and landscape processes. The training focused on hands-on practicals on various GIS and MATLAB tools

and their application on fluvial processes from morphotectonic characterisation to landscape modelling. The present coursework will be helpful for various researchers working in active tectonics, hydrology, engineering geology, and environmental and hazard studies.

COURSE STRUCTURE

The course is practical intensive, with 50% hands-on demonstrations. There will be enough lectures (50%) on the theoretical basis to understand the governing principles. The concept of the course is “Experiential Learning”, with a mixture of classroom lectures and live demonstrations. The focus is on the concepts, practical tools and applications. Keeping in mind the target participants of different specialisations within Earth science, essential theoretical equations will be included in the teaching material. The basic idea is to make participants learn from the practical examples, apply the basic principles of mathematics, gain confidence in the obtained results and applied in diverse fields such as active tectonics, hydrology, natural hazards, environmental and engineering geology. A clear need for geospatial methods will be envisaged, with objectives and solutions for the formulation of a tractable problem in different geological terrains.

MANAGEMENT AND FACULTY

The training will be performed by experts at NGRI and other universities with many years of experience

SELECTION PROCEDURE

Depending upon the number of applicants, the selection cut-off will be decided. However, we would prefer candidates with minimum 60% in their qualifying education and who are for the course with first-come- first-serve basis.

METHODS OF INSTRUCTION

Instruction methods involve show-how, hands-on practice and field problems. Field visits and hands-on training to provide an awareness of real field conditions will be

compulsory. The medium of instruction will be in English.

SPONSORSHIP

Established academic institutions/ Government organisations/ industrial sectors are welcome to sponsor candidates of their interest.

SALIENT FEATURES OF THE TRAINING

- 50% Theory and 50% Practical sessions as per the course curriculum.
- Hands-on practical exposure to GIS and MATLAB tools for landscape analysis.
- Continuous Monitoring system for individual trainees.
- Lectures, assisted with models and multimedia aids.
- Tutorials (personal attention)
- Interactive session.
- Guest lecturers from experts.

EVALUATION OF TRAINEES

Evaluation will consist of the following components:

- Interactive session (5%)
- Internal Assessments include fieldwork, model assignments, teamwork, attendance, etc. (25%)
- Written examination (50%)
- Field based Examination, (20%)

CERTIFICATION

A certificate will be issued to the participants for the successful completion of the course.

Education Qualification	Diploma or equivalent in Engineering (civil), Master's in Geology, Geophysics, Geoinformatics, Water resources, GIS Users, Hydrology perusing Doctorate program in respective fields.
Nationality	Indian Nationals
Duration	November 18-22, 2024

Venue	CSIR- National Geophysical Research Institute, Uppal Road, Hyderabad - 500007
Last Date for Applying	October 27, 2024, 05:00 PM
Number of Seats	30
Course Fee*	Rs. 1,500/- + 18% GST = 1770/- (for Master, Diploma/Degree students) Rs. 3,000/- + 18% GST = 3540/- (for Ph.D. Students) Rs. 6,000/- + 18% GST = 7080/- (for Faculty and Industry sponsored)
Food	Breakfast and Dinner will be available at nominal rates at the CSIR-NGRI Campus payable by the participants.
Accommodation Charges	CSIR-NGRI guest house on twin sharing basis at the rate of Rs. 300/- per head per day for the first 6 days and 7 th day onward Rs. 600/- per day per head. Skills Development quarters (Rs. 100/- per head per day) and staff quarters/research scholars' hostel (Rs. 50/- per head per day) on twin sharing basis
Course Coordinators	Dr. Anand K Pandey (e-mail: akpandey@ngri.res.in) Dr. Nilesh K Jaiswara (e-mail: Nileshjs@ngri.res.in)

* Course fee includes training fee, course material, working Lunch, Tea, and Snacks. It should be paid online by the shortlisted participant