Geospatial Technology Applications in Hydrology
October 7, 2024 – October 18, 2024

Course Content

Week - I	Lectures & Hand-ons: Introduction to Geospatial Technology
	Lectures & Hand-ons: Introduction to Water Resources/Hydrology & Watershed Hydrology
Week - II	Lectures & Hand-ons: Geospatial Technology application in Water Resources Assessment, Development, and Management

Proposed Lecture Topics

1) Basics and Types of Remote Sensing
2) Platform and Sensors, Concepts of Resolution
3) Indian Remote Sensing Data, Data Products, Portals, Data Policy
4) Overview of Geospatial Technology
5) GIS Data Models and Data Formats & Handling
6) Overview of Application of Remote Sensing in Water Resources
7) Types of Hydrological Models, Hydro-met Observations, Concept of Variables and Parameters
8) Hydro-meteorological parameter retrieval using remote sensing
9) Digital Elevation Model (DEM) and its Applications in Water Resources
10) Hydrological Modelling using Geospatial Inputs
11) Snow, Glacier Mapping and Melt Runoff Modelling
12) Space Based Water Level Estimation & Applications in Hydrology
13) Flood Modelling using Geo-spatial Inputs
14) Application of Geospatial Technology in Irrigation Water Management
15) Soil Erosion/Sediment Yield Modelling using Geospatial Inputs
16) Reservoir Sedimentation Assessment using Remote Sensing
17) Site Suitability for Water Harvesting Structure
18) Flood Inundation Mapping, Damage Assessment and Modelling using Remote Sensing
19) Assessment and Monitoring of Droughts using Remote Sensing and Modelling Inputs
20) Ground Water Targeting and Recharge Estimation using Geospatial Tools

Proposed Practical

1) Remote Sensing Image Processing
2) GIS Data Handling and GNSS Demonstration
3) DEM Hydro-processing
4) Water Body, Snow and Glacier Mapping
5) Hydrological Modelling
6) Flood Modelling in GIS Environment
7) Estimation of Evapotranspiration using Remote Sensing
8) Soil Erosion Modelling
9) Reservoir Sedimentation Assessment using Remote Sensing
10) Flood Mapping and Damage Assessment

Note: There will be three (max) lecture sessions in a day followed by one practical/hand-on session covered in the day.