About the course

This session familiarizes learners with essential spectral indices used in remote sensing, including NDVI, NDMI, NDWI, NDBI, and NDSI. The course covers the conceptual framework, mathematical equations, interpretation of index values, and practical demonstration of computing and visualizing these indices with QGIS software. It aims to provide fundamental competencies in environmental monitoring, agriculture, water resource management, urban planning, and catastrophe risk assessment.

Learning Objectives

- Learn about spectral (remote sensing) indices.
- Explain and evaluate NDVI, NDMI, NDWI, NDBI, and NDSI.
- Calculate indices from remote sensing data using math.
- QGIS displays index results from raster data analysis.
- Use spectral indicators to assess vegetation health, water stress, built-up density, and snow cover.

Target Audience

This course is ideal for:

- Environmental science students and researchers
- GIS and remote sensing professionals
- Urban planners and policymakers
- Agriculture and forestry officers
- Disaster management professionals
- NGO staff and sustainability advocates

Time Duration: 4–6 hours

Course Title: General Monitoring of Environmental Indices

Module 1: Introduction to Spectral Indices

- What are Remote Sensing/Spectral Indices?
- Importance of Spectral Indices in Environmental Monitoring
- Applications in land use, vegetation, water bodies, urban development, and disaster management.

Module 2: Indices

- NDVI
- NDMI
- NDWI
- NDBI
- NBR

Module 3: Practical Demonstration in QGIS

- Step-by-step calculation of indices using Raster Calculator
- Visualization of output using symbology
- Interpretation of visual results