GIS FOR SUSTAINABLE DEVELOPMENT

Unit - I - Concepts of GIS

Introduction to GIS; History of GIS; Components of GIS; Application of GIS.

Unit -II – Spatial Data

Thematic Characteristics of spatial data; Other sources of spatial data;
Sources of error in GIS; Managing GIS errors.

Unit - III – Spatial Data Modeling

Spatial data model; Spatial data structures; Modeling surface;
Building computer worlds.

Unit - IV - Attribute Data Management

Database data models; Creating a database; GIS data base application.

Unit- V- Data Analysis and Modeling

Measurements; Queries; Buffering functions; Map overlay; Network analysis.

Unit VI – Cartography

Elements of cartography; Map as a tool in geographic studies; Types of Maps.

Unit VII - Remote Sensing

Concepts of Remote Sensing; Process; Source of Energy; Interpretation and Analysis; Applications of Remote Sensing; Advantages and Limitations; Platforms; Photographic Imaging; Digital Imaging; Microwave Remote Sensing; Visual Image Interpretation.

Unit VIII - Global Positioning System

History of GPS; Components of GPS; Basic concepts of GPS;
Application of GPS.

Unit IX - Photogrammetry

Concepts, Development and classification of Photogrammetry; Process; Acquisition of Imagery; Orientation and Triangulation; Stereo Model Compilation; Stereoscopic Measurement; DTM/Dem Generation; Contour map Generation; Orthorectification; Limitations of Photogrammetry; 3D Feature Extraction; 3D Scene Modeling; LIDAR; Radargrammetry.

Unit X - Aerial Photography

Concepts; Classification; Aerial photograph; Difference between Map and Aerial Photograph; Air Survey and Ground Survey; Applications of Photogrammetry; Flight Planning and Design; Mosaic; Aerial Cameras – Concepts; Sensitivity of Film Emulsion, Advantages and Disadvantages of Aerial Cameras; Stereoscopy; Mono-vision; Stereoscopic view and its Exaggeration; Interpretation of Aerial Photo; Grey Tone Criteria; Spectral Response.