

GIS AND REMOTE SENSING

Module I

Remote sensing- Introduction, physics of remote sensing- electromagnetic radiations and their characteristics, thermal emissions, multi-concept in remote sensing, remote sensing satellites and their data products, sensors and orbital characteristics, spectral reflectance curves for earth surface features, methods of remotely sensed data interpretation- visual interpretation, concept of fcc, digital image processing- digital image and its characteristics, satellite data formats, image rectification and restoration, image enhancement- contrast manipulation, spatial feature manipulation, multi-image manipulation

Module II

Fundamentals of GIS: introduction, definition of GIS, evolution of GIS, roots of GIS, definition, GIS architecture, models of GIS, framework for GIS, GIS categories, map as a model, spatial referencing system, map projections, commonly used map projections, grid systems, cartographic symbolization, types of maps, typography, map design, map productions, map applications, data management, Models and quality issues: conceptual models, geographical data models, data primitives, data types - raster and vector approach, digital terrain modelling , approaches to digital terrain data modelling , acquisition of digital terrain data, data modelling and spatial analysis, sources of geographical data, data collectors and providers, creating digital data sets, data presentation, data updating, data storage

Module III

GIS data processing, analysis and visualization: raster based GIS data processing, vector based GIS data processing, human computer interaction and GIS, visualization of geographic information, principles of cartographic design in GIS, generation of information product, image classification and GIS, visual image interpretation, types of pictorial data products, image interpretation strategy, image interpretation process, Rainfall runoff modelling using remote sensing inputs,

Module IV

Flood and Drought Studies – Flood plain zoning –inundated areas – evaluation models – Drought assessment and Monitoring. Command Area Studies –Cropping patterns, conditions of crops, irrigation system performance – crop yield estimation.

References:

1. Meijerink A.M.J., H.A.M. de Brouwer, C.M. Mannaerts and C.R. Valenzuela, "Introduction to the use of Geographic Information Systems for Practical Hydrology", ITC Publication, Paris.
2. Lillesand T.M. and Kiefer R.W., "Remote Sensing and Image Interpretation", John Wiley and Sons, N York.
3. Swain P.H., and S.M. Davis, "Remote Sensing – The Quantitative Approach", McGraw Hill Publishing Company, N York.
4. Reddy M.A "Remote Sensing And GIS", , B.S. Publication, Hyderabad
5. Kang-Tsung Chang "Introduction Of GIS" , Tata Mcgraw-Hill, New Delhi
6. Lyon, J.G. and Mc Larchy, J. "Wetland and Environmental Application of GIS", Lewis Publishers, Washington.