REMOTE SENSING & GIS

Course objectives

- To understand the basics of Remote Sensing and learn its applications
- To have knowledge Remote Sensing Platforms and Remote Sensing techniques
- To acquire idea about Digital Image Processing and other relevant image analysis techniques
- To carry out Integration of GIS and Remote Sensing for practical applications

Module I

Introduction, Types, Application and importance of Remote Sensing; Physics of Remote Sensing; The Electromagnetic spectrum; Spectral Reflectance Curves; Spectral signatures; Resolution.

Module II

Remote Sensing Platforms: Ground, airborne and satellite based platforms; Some important Remote Sensing Satellites. Sensors: Passive and Active Sensors; Major Remote Sensing Sensors; Satellite band designations and principal applications; Colour / False Colour; Aerial Photography/ Aerial Photo Interpretation.

Module III

Digital Image Processing: Pixels and Digital Number; Digital Image Structure; Format of Remote Sensing Data; Image Processing functions: Image Restoration, Image Enhancement, Image Transformation, Image Classification and Analysis; Image interpretation strategies. Geographic Information System: Introduction; Preparation of thematic map from remote sensing data; Co-ordinate systems; GIS components: Hardware, software and infrastructures; GIS data types: Data Input and Data Processing; DEM/ DTM generation.

Module IV

Integration of GIS and Remote Sensing – Application of Remote Sensing and GIS – Water resources –Urban Analysis – Watershed Management – Resources Information Systems. Spatial planning approach. Global Positioning System – an introduction.

Course outcomes

After successfully studying this course, students will able to:

- Understand the basis concept of remote sensing and its capability
- Develop skill for identification of different surface features on the earth surface from satellite images
- Develop skill for processing satellite images for retrieving features and evaluate the accuracy of image classification
- Develop skill for processing spatial and attribute data and prepare thematic maps and apply remote sensing and GIS technique for solving different of geological and environmental challenges

Text books:

- M Anji Reddy, Remote Sensing and GIS , The Book Syndicate, Hyderabad,
- P A Burrough and R. A. McDonnell Principles of Geographical Information Systems -OUP, Oxford,
- D.P. Rao, Remote Sensing for Earth Resource- AEG Publication, Hyderabad,
- K. T. Chang, Geographic Information System- Tata Mc Graw Hill, Publication Edition,