PEHD5104 REMOTE SENSING AND GIS (3-0-0)

Fundamentals of Remote sensing: Concept of satellite remote sensing : Types of satellites: Sun-synchronous and geostationary satellites; Platforms and sensors; Stages of remote sensing; Electromagnetic radiation (EMR); Electromagnetic Spectrum; Interaction with atmosphere; interaction with the earth surface; Remote sensing sensors and their characteristics; Spectral signature; Types of resolutions; Satellite data types and their uses; IRS satellites series, LANDSAT series, IKONOS, Quick bird and WV; Remote sensing data acquisition.
Fundamentals of GIS: Basic concepts of Geographic Information System; Concept of geo-informatics; Components of GIS; GIS data formats; Types of Data structure; spatial and non-spatial; Vector and raster data structure; Data models; tabular, hierarchical, network, relational, object oriented; Errors and accuracies in GIS.
Spatial Data Input and analysis: Methods of data capture and input; Geo-referencing; Projection and datum; Coordinate transformation and re-sampling; Digitalization of maps and satellite images; Generation spatial data base; Attribute generation; Linking spatial and non-spatial data; Generation of thematic maps.
Manipulation, Analysis and Output: Data manipulation techniques; Spatial data analysis; overlay operations and proximity analysis; Data interpolation; point and line data; Network analysis and suitability analysis; Creation of data base; contours, spot heights; 3D modeling; digital elevation models (DEM), slope and aspect; Query in GIS; Data output and presentation.

References:

1. Burrough PA and Rachael A. McDonnell, Principles of Geographic Information Systems, 2nd Ed.
2. Lo CP & Yeung AKW, 2004, Concepts and Techniques of GIS, Prentice-Hall of India, New Delhi
3. Heywood I, Cornelius S, Carver S, 2000, Introduction to GIS, Addison Wesley Longman, New York
4. Liliesand T M & Keller R W 2000. Remote Sensing and Image Interpretation, John Wiley & Sons, New York
5. George Joseph 2003, Fundamentals of Remote Sensing, University Press, Hyderabad
6. Sabinss, F F, 1986, Remote Sensing; Principles and Interpretation, Freeman, New York
7. Rashid S M & Mazhar A K, 1993 Dictionary of remote sensing, Manak Publishing House, Delhi
8. Fazal S & Rahman A, 2007, GIS Terminology, New Age International Publishers, New Delhi
9. Wolf, P.R., Elements of Photogrammetry, 2nd ed., Mcgraw Hill, New York, 1983.
10. Jeneson J R, Introductory Digital Image Processing A Remote Sensing Perspective, 2nd Eds. Prentice Hall, New Jersey
11. American Society of Photogrammetry, Manual of Remote Sensing, 2nd ed., Falls Church,Va., 1983.
12. Rampal K.K.,1996, Handbook of Aerial photography and interpretation, Concept publishing company, New Delhi