	L	T	P	C

III Year I Semester
Code: 17CE503

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REMOTE SENSING & GIS APPLICATIONS

Course Objectives:
1. Introduce the basic principles of Remote Sensing and GIS techniques.
2. Learn various types of satellite sensors and platforms
3. Learn concepts of visual and digital image analyses
4. Understand the principles of spatial analysis
5. Appreciate application of RS and GIS to Civil engineering

Course outcomes:
1. Be familiar with ground, air and satellite based sensor platforms.
2. Interpret the aerial photographs and satellite imageries
3. Create and input spatial data for GIS application
4. Apply RS and GIS concepts in water resources engineering
5. Gains knowledge related to General Applications
6. Gains Knowledge related to Hydrology, Disaster management

SYLLABUS

UNIT – I
Introduction to Remote Sensing: Basic concepts of remote sensing, electromagnetic radiation, electromagnetic spectrum, interaction with atmosphere, energy interaction with the earth surfaces, Characteristics of remote sensing systems.
Sensors and Platforms: Introduction, types of sensors, airborne remote sensing, spaceborne remote sensing, image data characteristics, digital image data formats-band interleaved by pixel, band interleaved by line, band sequential, IRS, LANDSAT, SPOT, MODIS, ASTER,RISAT and CARTOSAT.

UNIT – II
Image Analysis: Introduction, elements of visual interpretations, digital image processing-image preprocessing, image enhancement, image classification, supervised classification, unsupervised classification.

UNIT – III
Geographic Information System: Introduction, key components, application areas of GIS, map projections. **Data entry and preparation**: spatial data input, raster data models, vector data models.

UNIT – IV

Spatial Data Analysis: Introduction, overlay function-vector overlay operations, raster overlay operations, arithmetic operators, comparison and logical operators, conditional expressions, overlay using a decision table, network analysis-optimal path finding, network allocation, network tracing and buffer analysis.

UNIT – V

RS and GIS Applications General: Land cover and land use, agriculture, forestry, geology, geomorphology, urban applications.

UNIT – VI

Applications of Hydrology, Water Resources and Disaster Management: Flood zoning and mapping, groundwater prospects and potential recharge zones, watershed management and disaster management with case studies.

TEXT BOOKS:
1. Remote sensing and GIS, Bhatta B (2008) , Oxford University Press.
2. Remote Sensing and Image Interpretation, Lillesand, T.M, R.W. Kiefer and J.W. Chipman (2013), Wiley India Pvt. Ltd., New Delhi.
3. Fundamentals of Geographic Information Systems, Demers, M.N, Wiley India Pvt. Ltd, 2013.

REFERENCES:
1. Fundamentals of Remote Sensing, George Joseph, Universities Press, 2013.
2. Concepts and Techniques of Geographical Information System, Chor Pang Lo and
   A K W Yeung, Prentice Hall (India), 2006.
3. Remote Sensing and its Applications, Narayan LRA, Universities Press, 2012.
4. Introduction to Geographic Information Systems, KandTsung Chang, McGraw Hill Higher Education, 2009.
5. Basics of Remote sensing & GIS, Kumar S, Laxmi Publications, New Delhi, 2005.

6. Principals of Geographical Information Systems, Burrough P A and R.A. McDonnell, Oxford University Press, 1998.
7. Remote Sensing, Schowenger, R. A (2006), Elsevier publishers.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	1	1	2	1	2	1	1	1	1	2	2	2	2
CO2	1	2	1	1	2	1	2	1	1	1	1	2	2	2	2
CO3	1	2	1	1	2	1	2	1	1	1	1	2	2	2	2
CO4	2	1	1	1	2	1	2	1	1	1	1	2	2	2	2
CO5	1	2	1	1	2	1	2	1	1	1	1	2	2	2	2
CO6	1	2	1	1	2	1	2	1	1	1	1	2	2	2	2