
B.Tech	IV Year	L	T	P	To	C
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CE435 REMOTE SENSING AND GIS APPLICATIONS**(Dept. Elective - III)****Course Description and Objective:**

These sensors collect data in the form of images and provide specialized capabilities for manipulating, analyzing, and visualizing those images. Remote sensed imagery is integrated within a GIS. A geographic information system (GIS) is a computer-based tool for mapping and analyzing features and events on earth. GIS manages location based information and provides tools for display and analysis of various statistics, including population characteristics, economic development opportunities, and vegetation types.

Course Outcomes:

- Retrieve the information content of remotely sensed data
- Analyse the energy interactions in the atmosphere and earth surface features
- Interpret the images for preparation of thematic maps
- Analyze spatial and attribute data for solving spatial problems

UNIT – I

Basic Principles: Introduction, Electromagnetic waves and their properties, interaction with Earth surface materials, recent developments in Remote sensing, Social and legal implications of Remote Sensing, status of Remote Sensing.

Geographic Information System: Introduction, GIS definition and terminology, GIS categories, components of GIS, fundamental operations of GIS, A theoretical framework for GIS.

UNIT – II

Data Acquisition Platforms & Sensors: Introduction, Characteristics of imaging and remote sensing instruments, satellite remote sensing system – a brief over view, other remote sensing satellites.

Pre-Processing Of Remotely Sensed Data: Introduction, cosmetic operation; Geometric connection and registration, atmospheric correction.

UNIT – III

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, Image Classification- Unsupervised and Supervised Classification, Classification Accuracy, Details of digital image processing software packages.

UNIT - IV

GIS Spatial Analysis: Computational Analysis Methods (CAM), Visual Analysis Methods (VAM), Data storage-vector data storage, attribute data storage, overview of the data manipulation and analysis. Integrated analysis of the spatial and attribute data.

UNIT – V

Applications of remote sensing in Natural resources management, Environmental impact assessment and water resources management.

TEXT BOOKS:

1. LRA Narayana, "Remote Sensing and its applications" 3rd ed., University Press, 1999.
2. C.P.Lo. & Albert K.W. Yonng, "Concepts & Techniques of GIS", 2nd ed., Prentice Hall (India) Publications, 2009.

REFERENCE BOOKS:

1. John R Jensen, "Introductory Digital Image Processing, A Remote Sensing Prospective", 4th ed., Printicehall, 1986.
2. Paul Jumani, "Principles of Remote Sensing", 4th ed., ELBS, 1985.
3. Peter A Burragh and Rachael A. Mc Donnell, "Principals of Geo physical Information Systems", 1st ed., Oxford Publishers, 2010.
4. M.Anji Reddy, "Remote Sensing and Geographical Information systems", 3rd ed., B.S.Publications, 2010.
5. S.Kumar, "Basics of Remote sensing & GIS", 1st ed., Laxmi Publications, 2005.