



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India

DEPARTMENT OF CIVIL ENGINEERING

IV Year – I Semester		L	T	P	C
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REMOTE SENSING AND GIS					

Course Learning Objectives:

The course is designed to

1. Introduce the basic principles of Remote Sensing and GIS techniques.
2. learn various types of 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

At the end of the course the student will be able to

- a. Be familiar with ground, air and satellite based sensor platforms.
- b. interpret the aerial photographs and satellite imageries
- c. create and input spatial data for GIS application
- d. apply RS and GIS concepts for application in Civil Engineering

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, types of resolutions - advantages & limitations

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 & Recent satellite.

UNIT – II

Image analysis: Introduction, elements of visual interpretations, digital image processing- image pre-processing, image enhancement, image classification, supervised classification, unsupervised classification. : Overlay function-vector overlay operations; raster overlay operations, network analysis.

UNIT – III

Geographic Information System: Basic Principles, components, application areas of GIS, map projections.

Data entry and preparation: spatial data structures, raster and vector data formats, data inputs, data manipulation, data retrieval, data analysis and data display.

UNIT – IV

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

