II Year-I Semester
(20CE3003) RS & GIS Applications

Int. Marks	Ext. Marks	Total Marks	L	T	P	C
30	70	100	3	-	-	3

Pre- Requisites: Fundamentals of Surveying

Course Objectives:

- To demonstrate the working principle of remote sensing
- To Describe the Platforms, Sensors, Resolutions and image data characteristics
- To analyze the image analysis techniques
- To discuss about the concepts of Geographic Information System
- To examine the spatial data analysis and applications of remote sensing and GIS

UNIT-I:

Basics of Remote Sensing: Components of remote sensing - Electromagnetic radiation, electromagnetic spectrum - EMR interaction with atmosphere - EMR interaction with Earth Surface Materials - Atmospheric Windows and its Significance.

UNIT-II:

Platforms Sensors and Resolutions: Types of platforms- ground, airborne, and space born platforms, Types and classification of sensors - Sensor resolution-spectral, radiometric and temporal - Image data characteristics - Digital image data formats- band interleaved by pixel, band interleaved by line, band sequential.

UNIT-III:

Image Analysis: Introduction, elements of visual interpretations, digital image processing, image enhancement, image classification, supervised classification, unsupervised classification

UNIT-IV:

Geographical Information System: Introduction, key components, map projections, Data – Spatial and Non-Spatial, spatial data input, raster data models, vector data models, raster versus vector.

UNIT-V:

Spatial data analysis: Introduction overlay function-vector overlay operations, arithmetic operators, comparison and logical operators, conditional expressions, overlay using a decision table RS and GIS Applications: Land use and Land cover, agriculture, forestry, geology, geomorphology, urban applications, flood zone delineation and mapping.

Course Outcomes:

S.No	Course Outcomes	BTL
1	Demonstrate the working principle of remote sensing	L2
2	Describe about Platforms, Sensors, Resolutions and image data characteristics	L2
3	Analyze and classify images	L4
4	Discuss about concepts of Geographic Information System	L2
5	Examine spatial data and explain about applications of Remote Sensing and GIS	L3

Correlation of COs with POs& PSOs:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	-	-	-	2	-	2	-	-	-	-	2	2	2	2
2	2	-	-	-	2	-	2	-	-	-	-	2	2	2	2
3	2	2	-	-	2	-	2	-	-	-	-	2	2	2	2
4	2	2	-	-	2	-	2	-	-	-	-	2	2	2	2
5	1	1	-	-	2	-	2	-	-	-	-	2	2	2	2

Text Books:

1. LRA Narayan (2018), Remote Sensing and its Applications, Kindle Universities Press (India) Private Limited.
2. Peter A Burrough, Rachael A. Mc Donnell and Christopher D. Lloyd (2016), Principles of Geographical Information Systems, 3rd edition, Oxford University Press.

Reference Books:

1. S.Kumar (2016), Basics of Remote sensing & GIS, 1st edition, Laxmi Publications,.
2. Chor Pang Lo and Albert K.W. Yeung (2016), Concepts & Techniques of GIS, 2nd Edition, Pearson Education,
3. Kang – tsung Chang (2017), GIS, 4th edition, McGraw-Hill Education
4. M.Anji Reddy (2012), Text Book of Remote Sensing and Geographical Information systems, 4th edition, BS Publications/BSP Books