II Year - I Semester | **L** | **T** | **P** | **C**
20CE3003 | **3** | **0** | **0** | **3**

RS & GIS APPLICATIONS

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

Course Outcomes:
On completion of the course, the students will be able to:

- Demonstrate the working principle of remote sensing
- Describe about Platforms, Sensors, Resolutions and image data characteristics
- Analyze and classify images
- Discuss about concepts of Geographic Information System
- Examine spatial data and explain about 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.

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.

REFERENCES:

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