

# GUJARAT TECHNOLOGICAL UNIVERSITY

## B. E. SEMESTER: V CIVIL ENGINEERING

Subject Name: **Disaster Assessment Using Geospatial Techniques**

Subject Code: **150606**

Teaching Scheme				Evaluation Scheme		
Theory	Tutorial	Practical	Total	University Exam (Theory) (E)	Mid Sem Exam (Theory) (M)	Internal Assessment (I)
4	0	2	6	70	30	50

### MODULE – I

1. Basic concepts of remote sensing, Airborne and space borne sensors, Data acquisition, Indian Space Program.

### MODULE – II

1. Digital Image Processing: Introduction, Image Processing Systems, Digital Image, Media for digital data recording, Storage, Data formats, Pre-processing, Image enhancement, Transformation and Classification.

### MODULE – III

1. Introduction to Microwave remote sensing and Global Positioning System.

### MODULE – IV

1. Geographical Information System: Concept of GIS, Functions and advantages of GIS, Spatial data model, Attribute management and metadata concept, Data sources, Linking spatial and attribute data, Organizing data for analysis, Geospatial analysis.

### MODULE – V

1. Integration of GIS and Remote Sensing, Analysis and Presentation.
2. Disaster Assessment: Types of natural disasters- landslides, earthquakes-tsunami-cyclones- floods-snow avalanche, Case studies for disaster assessment using Geospatial techniques, Use of Remote Sensing & GIS software for disaster assessment.

**Note:**

Each module has 20 percent weightage.

**List of Practical:**

1. Visual Image Interpretation: Photographic Products.
2. Digital Interpretation of True Colour Composite and False Colour Composite.
3. Study of Image Statistics and Subset of the Image.
4. Contrast and Edge Enhancement Techniques for an Image.
5. Image Transformation Techniques.
6. Multiband Image Operations.
7. Supervised Image Classification.
8. Unsupervised Image Classification.
9. Accuracy Assessment.
10. Spatial Data Generation.
11. Linking Of Spatial and Attribute Data.
12. Introduction to GPS.
13. Thematic Map Preparation.
14. Integration of GIS and RS Data for Disaster Assessment.

**Note:**

Term work shall be based on the above practical turns.

**Reference Books:**

1. A.M. Chandra and S.K. Ghosh, Remote Sensing and Geographical Information System, Narosa Publishing House, New Delhi.
2. B. Bhatta, Remote Sensing and GIS, Oxford University Press, New Delhi
3. G. Joseph, Fundamentals of Remote Sensing, University Press, Hyderabad
4. J.R. Jensen, Introductory Digital Image Processing, Prentice Hall, New Jersey
5. J.R. Jensen, Remote Sensing of Environment: An Earth Perspective, Pearson Education, Delhi
6. Kang-tsuug Chang, Introduction to Geographic Information Systems, Tata McGraw-Hill Publishing Co. Ltd., New Delhi
7. P.A. Burrough and R.A. McDonnell, Principles of Geographical Information Systems, Oxford University Press, Oxford, England
8. T.M. Lillesand and R.W. Kiefer and J.W. Chipman, Remote Sensing and Image Interpretation, John Wiley and Sons, India