



# GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3151308

Semester - V

Subject Name: Basics of Remote Sensing & GIS

**Type of Course:** Mandatory Subject

**Prerequisite:** None

**Rationale:** To impart the knowledge of applications of Remote sensing and GIS in Environmental Engineering field

**Teaching and Examination Scheme:**

Teaching Scheme			Credits C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
2	1	0	3	70	30	0	0	100

Sr. No.	Content	Total Hrs
1.	Concept of Remote Sensing Definition of remote sensing, remote sensing process, source of energy, energy interaction in atmosphere, energy interaction with earth surface, interpretation and analysis, analog (visual) image interpretation, digital image processing, process of remote sensing data analysis.	05
2.	Photographic Imaging and Digital Imaging Types of Camera, Types of Filter, Types of film, difference between photograph and image, scale of the photograph, Geometry of Aerial Photograph, Types of Sensor, Hyper-spectral Imaging, Thermal Remote Sensing	08
3.	Ground truth data and GPS (Global Positioning System) Introduction, requirements of ground truth data, instruments for ground truthing, parameters of ground truthing, factors of spectral measurement, working principle of GPS.	06
4.	Visual image interpretation Information extraction by human and computer, its comparison, remote sensing data products, image interpretation, elements of visual interpretation, thermal image interpretation.	05
5.	Application of remote sensing Land cover and land use, agriculture application, forestry application, hydrology, oceans and coastal monitoring, environmental impact assessment	07
6.	GIS Definition of GIS, key components of GIS, function of GIS, advantages and limitation of GIS	05

**Suggested Specification table with Marks (Theory): (For BE only)**

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
30 %	40 %	20 %	10 %	--	--

**Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)**

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.



# GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3151308

## Reference Books:

1. Remote sensing and GIS by B Bhatia, Oxford University Press
2. Geoinformatics for Environmental Management by M Anji Reddy, B S Publications

## Course Outcome:

Sr. No.	CO statement	Marks % weightage
CO-1	Analyse the principles and components of remote sensing	20
CO-2	Describe the Photographic Imaging and Digital Imaging	30
CO-3	Compute an image visually and digitally	30
CO-4	Explain the concepts, Application and fundamentals of GIS	10
CO-5	Compute knowledge of remote sensing and GIS	10

## List of Tutorials:

1. Introduction to Remote Sensing
2. Study of Photographic Imaging
3. Principle and Application of GPS
4. Application of Remote Sensing
5. Assignment on GIS

List of Open Source Software/learning website: QGIS, Google Earth, NPTEL