

1154CE108 (VTUR15)	APPLICATION OF REMOTE SENSING AND GIS IN DISASTER MANAGEMENT	L	T	P	C
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**COURSE CATEGORY:** Institute Elective

**A. PREAMBLE:**

To understand the basics of remote sensing and GIS for applications of disaster mitigation studies

**B. PREREQUISITES:**

Nil

**C. COURSE EDUCATIONAL OBJECTIVES:**

Students undergoing this course are expected to:

- Understand the GIS, background, development and components of GIS
- Study the sensor parameters.
- Analysis and demonstrate the various spatial and non-spatial data in GIS
- Enumerate the application of GIS in disaster mitigation

**D. COURSE OUTCOMES:**

After the completion of the course the students will be able to

CO	Course Outcomes	Level of learning domain (Based on revised Bloom's)
CO1	Explain the remote sensing principles and the characteristics of spectral reflectance of water, vegetation and soil.	K2
CO2	Compare the resolution concepts and payload characteristics of different sensors.	K2
CO3	Outline the fundamental concepts of spatial and non-spatial data in GIS.	K2
CO4	Relate the spatial communication system and mitigation system during disaster.	K2
CO5	Summarize the application of GIS in various fields.	K2

**E. CORRELATION OF COs WITH POs:**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L				M							
CO2					M							
CO3					M							
CO4					M	H						
CO5					M	H						M

**F. COURSE CONTENT:**

**UNIT I INTRODUCTION TO REMOTE SENSING 9**

Definition of remote sensing and its components – Electromagnetic spectrum – Wavelength regions important to remote sensing – Wave theory, Particle theory, Stefan-Boltzmann and Wein’s Displacement Law – Atmospheric scattering, absorption – Atmospheric windows – Typical spectral reflective characteristics of water, vegetation and soil.

**UNIT II PLATFORMS AND SENSORS 9**

Types of platforms – Orbit types, Sun-synchronous and geosynchronous – Passive and active sensors – Resolution concept – Pay load description of important earth resources and meteorological satellites

**UNIT III FUNDAMENTALS OF GIS 9**

Introduction to GIS - Components of a GIS – Hardware, software, data and methods – Standard GIS software – Open source software – Data type – Spatial and non-spatial data – Measurement scales – Data base management systems – Raster and vector data base management system (DBMS).

**UNIT IV DISASTER MITIGATION SYSTEM 9**

Needs and approach towards prevention – Principles and components of mitigation - Satellite communications during disasters: networks, use of Internets, warning system - Post disaster review – Case studies.

## **UNIT V APPLICATION OF GIS**

**9**

*Use of GIS in Resource mapping - Groundwater, flood monitoring, forest management - urban planning, agriculture and soil. Potential of GIS application in disaster mapping – Disaster management plan – Case studies*

**TOTAL: 45 PERIODS**

### **G. LEARNING RESOURCES**

#### **a) TEXT BOOKS**

1. Lo.C.P., Albert K.W. Yeung, Concepts and Techniques of Geographic Information Systems, Prentice-Hall India Publishers, 2006
2. Anji Reddy .M, “Remote sensing and Geographical information system”, B.S Publications, 2011.

#### **b) REFERENCES**

1. Chestern, “Geo Informational Systems - Application of GIS and Related Spatial Information Technologies”, ASTER Publication Co., 1992.
2. Jeffrey Star and John Estes, “Geographical Information System – An Introduction”, Prentice Hall, 1990.
3. Burrough .P.A, “Principles of GIS for Land Resources Assessment”, Oxford Publication, 1980.
4. Mohamed Gad Large scale disasters: prediction, control and mitigation, Cambridge university press, 2008
5. NDM – national disaster management guidelines. Includes SDM plans.