NIRMA UNIVERSITY

Institute of Technology

School of Engineering

Bachelor of Technology - Civil Engineering

Semester- V/VI/VII

L	T	P	C
3	0	0	3

Course Code	2CLOEXX
Course Title	Remote Sensing, GIS and GPS

Course Outcomes:

At the end of the course, students will be able to -

1. apply principles of Remote Sensing in Engineering
2. demonstrate applications of Geographical information system (GIS) in Engineering domains
3. illustrate applications of Global Positioning System (GPS) in Engineering domains.

Syllabus: Teaching Hours: 45

Unit 1: Remote Sensing Hours: 15

Definition, sources of energy, electromagnetic radiation, interaction with target and atmosphere, concept of signatures, sensors characteristics, satellites, spatial and spectral resolution, digital image format, digital image processing, visual image interpretation; Data integration, analysis & presentation; Applications.

Unit 2: Geographic Information System Hours: 15

Concept, components, Data: source, capture, processing, analysis; attribute data management, metadata and spatial data, Applications.

Unit 3: Global Navigation Satellite Systems Hours: 15

Basics of reference system, types of datum, transformation, coordinate systems, map projection systems, Navigation satellites systems, Global Positioning System: segments, principles, signal, receivers, positioning methods, code and carrier phase observable, data processing, location based applications.

Self-Study:

The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents.

Suggested Readings:

1. Bhatt B., *Remote Sensing and GIS*, Oxford University Press.
2. Reddy, M. A. *Remote Sensing and Geographical Information System*, B S Publication.

3. Chang, K. *Introduction to Geographic Information Systems*, McGraw-Hill.
4. Kiefer, L. *Remote sensing and image interpretation*, John Wiley & Sons.
5. Rabbany, A. *Introduction to Global Positioning System*, Artech house.

L= Lecture, T= Tutorial, P= Practical, C= Credit