GUJARAT TECHNOLOGICAL UNIVERSITY
Syllabus for B. Arch
EIGHTH SEMESTER

SUBJECT NAME: REMOTE SENSING AND G.I.S.

SUBJECT CODE: 1085007

FOCUS:

To introduce the students to the basic concepts and principles of various components of remote sensing and to provide an exposure to GIS and its practical applications in civil engineering.

CONTENT:

- EMR AND ITS INTERACTION WITH ATMOSPHERE & EARTH MATERIAL - Definition of remote sensing and its components – Electromagnetic spectrum – wavelength regions important to remote sensing – Wave theory, Particle theory, Stefan-Boltzmann and Wien's Displacement Law – Atmospheric scattering, absorption – Atmospheric windows spectral signature concepts – typical spectral reflective characteristics of water, vegetation and soil.
- PLATFORMS AND SENSORS -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 – Airborne and space borne TIR and microwave sensors.
- IMAGE INTERPRETATION AND ANALYSIS - Types of Data Products – types of image interpretation – basic elements of image interpretation- visual interpretation keys – Digital Image Processing – Pre-processing – image enhancement techniques – multispectral image classification – Supervised and unsupervised.
- GEOGRAPHIC INFORMATION SYSTEM - Introduction – Maps – Definitions – Map projections – types of map projections – map analysis –GIS definition – basic components of GIS – standard GIS software's – Data type – Spatial and non-spatial (attribute) data – measurement scales – Data Base Management Systems (DBMS).
- DATA ENTRY, STORAGE AND ANALYSIS - Data models – vector and raster data – data compression – data input by digitization and scanning – attribute data analysis – integrated data analysis – Modeling in GIS Highway alignment studies – Land Information System

REFERENCE BOOKS:

1. Lillesand, T.M., Kiefer, R.W. and J.W.Chipman. (2004). Remote Sensing and Image Interpretation.V Edn. John Willey and Sons (Asia) Pvt. Ltd., New Delhi. Pp:763.

2. Anji Reddy, M. (2001). Textbook of Remote Sensing and Geographical Information System. Second edn. BS Publications, Hyderabad