

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. Civil (Town and Country Planning) (Branch Code - 048)

Year – I (Semester – II) (W.E.F. January 2013)

1. MAJOR ELECTIVE – II

1) GEOSPATIAL TECHNIQUES& PLANNING (CODE: 1724803)

SR. NO.	COURSE CONTENT
1	Concepts and fundamentals, energy sources, energy interactions, ideal and real remote sensing systems, fundamentals of air photo interpretation, keys, elements of air photo interpretation for terrain evaluation, Data acquisition, various remote sensing platforms, satellites, sensors, multi spectral scanners, microwave sensing.
2	Data acquisition, various remote sensing platforms, satellites, sensors, multi spectral scanners, microwave sensing. Digital image processing, equipments used for remote sensing, other aspects of interpretation, ground truth.
3	Structure of GIS: Cartography, Geographic mapping process, transformations, map projections, Geographic Data Representation, Storage, Quality and Standards, database management systems, Raster data representation, Vector data representation, Assessment of data quality, Managing data errors, Geographic data standards.
4	GIS Data Processing, Analysis and Modeling: Raster based GIS data processing – Vector based GIS data processing – Queries – Spatial analysis – Descriptive statistics – Spatial autocorrelation – Quadrant counts, and nearest neighbor analysis – Network analysis – Surface modeling – DTM. GIS Applications: Case studies.
5	GPS: Basic concepts, components, factors affecting, GPS setup, accessories, segments-satellites & receivers, GPS applications, Case studies. Applications of remote sensing GIS and GPS, Engineering applications, land use/land cover mapping, applications to urban and regional planning, Water resources, environmental studies, transportation engineering, other civil engineering fields.

Term Work: It shall be based on subject content in view to increase the exposure to students.

REFERENCE BOOKS:

1. Lo, C.P. & Yeung A.K.W., Concepts and Techniques of Geographic Information Systems, Prentice Hall of India, New Delhi, 2002.
2. Anji Reddy, M., Remote Sensing and Geographical Information Systems, B.S. Publications, Hyderabad, 2001.
3. Burrough, P.A., Principles of Geographical Information Systems, Oxford Publication, 1998.

4. Clarke, K., Getting Started with Geographic Information Systems, Prentice Hall, New Jersey, 2001.
5. DeMers, M.N., Fundamentals of Geographic information Systems, John Wiley & Sons, New York, 2000.
6. Kennedy M., The Global Positioning System & GIS: An Introduction, Ann Arbor Press, 1996.