GUJARAT TECHNOLOGICAL UNIVERSITY

CIVIL (CONSTRUCTION ENGINEERING AND MANAGEMENT) (14)

GEO INFORMATICS IN CONSTRUCTION MANAGEMENT

SUBJECT CODE: 2731405

M.E. 3rd SEMESTER

Type of course: Major elective

Prerequisite: Nil

Rationale: The course is design to provide fundamental knowledge of Geo Informatics in Construction Management.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
				Theory Marks		Practical Marks				
L	T	P	C	ESE (E)	PA (M)	ESE (V)		PA (I)		
						ESE	OEP	PA	RP	
4	2#	0	5	70	30	30	0	10	10	150

Content:

Sr. No	Course Content	Total Hrs	% Weighta
1	**Remote sensing:** Introduction, Multi concept, Electromagnetic radiation, energy interaction in the atmosphere and with, earth surface features, resolution, pixel, Sensors and Platforms. data products: data reception, transmission, and processing, Digital image processing	**12**	25
2	**GIS:** Introduction, component of GIS, input data, data acquisition, georeferencing, spatial data structures, modeling surfaces, networks, Spatial data analysis: data integration, spatial interpolation, surface analysis, network analysis, digital terrain visualization, Global Positioning System(GPS) and Ground-Penetrating Radar (GPR).	**12**	25
3	**Applications in Infrastructure Construction and Management :** • Planning and Developing Infrastructure, Infrastructure Life Cycle, data acquisition, design, construction, infrastructure data continuum, • Emerging Trends in Building Automation and Control Systems for Facilities Management, construction material procurement, network analysis. • Transport infrastructure,! Existing Underground Utilities, georeferencing, preventing Utility Damages, Safety of Construction crews, or the Public, Tunnel construction, site layout and inventory management. • Strategic spatial development, Regional and urban planning, Reducing construction waste and improving construction efficiency.	**24**	40
4	**GIS- based construction quality management**	**6**	10

Reference Books:

1. P.A. Burrough and R.A. McDonnell, Principles of Geographical Information Systems, 2nd ed. Oxford.
2. England, Oxford University Press.
3. B. Bhatia, Remote Sensing and GIS, Oxford University Press, New Delhi.
4. J.R. Jensen, Introductory Digital Image Processing, Prentice-Hall, New Jersey.
5. Prescribed Web references.

Course Outcome:

Student will be able to apply applications of remote sensing and GIS in construction management**.**

List of Tutorials:

1. Preparation of presentation for the assigned task.
2. Orientation of functional tools of ILWIS/ Erdas Imagine/ ArcGIS/ Garmin GPS

Review Presentation (RP): The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website.