GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code : 117AU01

Subject Name : Project 1

WEF Academic Year :	2023-24
Semester :	VII
Category of the Course :	Minor

Prerequisite :	
Rationale :	This particular module will enable the students to work on a live project involving a thorough investigation of any distressed infrastructure component. Students will quantify the degree of damage by performing various destructive, semi-destructive and NDT methods.

Course Scheme : Project 1

Teaching Scheme			Total Credits	Assessment Pattern and Marks				Total Marks
				Theory		Practical		
L	T	PR	C	ESE (E)	PA(M)	ESE (V)	PA (I)	
0	0	6	3	-	-	100	-	100

Course Content : Project 1

Sr. No.	Course Content	No. of Hours	% of Weightage
1	Working on a Live project maybe but not limited to 1] Concrete health tests- core Test, Permeability Test, Crack Microscopy, Concrete Cover measurement with Half Cell Potentiometer meter, Permeability Test ,Concrete Resistivity Test, Measurement of Carbonation, fracture and fatigue, performance under high temperature 2] Rebar location and corrosion measurement existing structure 3] Structural Health monitoring/ condition assessment/in-situ strength investigation of damaged/distressed structures 4] Destructive 5] Non-destructive 6] Semi destructive 7] Case study on Construction Project Forensics 8] SHM of steel building 9] SHM of Residential building	84	100

	10] SHM of Commercial Building 11] Failures and repairs in Masonry 12] Pavement Investigations-Bitumen Softening Point Test, California Bearing Ratio Test Apparatus, Standard Tar Viscometer, Bitumen Extraction Test" and "Falling Weight Deflectometer Test 13] Maintenance Problems and Their Solutions 14] Lab - Case studies of construction failures		
	Total	**84**	**100**

Reference Book :

1. Forensic Structural Engineering Handbook, Robert T. Ratay, McGraw-Hill Professional; 2nd edition (16 January 2010).
2. Forensic Engineering: Damage Assessments for Residential and Commercial Structures, Stephen E. Petty, CRC Press; 2nd edition (24 September 2021)
3. Structural Condition Assessment, Robert T. Ratay, John Wiley & Sons Inc; 1st edition (11 February 2005)
4. Repair And Rehabilitation Of Concrete Structures, Modi P.I. and Patel Chirag, PHI Learning Pvt Ltd (1 January 2016)

Course Outcome :

After Completion of the Course, Student will able to :

No	Course Outcomes	RBT Level*
01	Inspect a live distressed structure and compile all the findings in form of a detailed report	AP, CR

*RM: Remember, UN: Understand, AP: Apply, AN: Analyze, EL: Evaluate, CR: Create

Suggested Course Practical List:

1. Take up a detailed study of heavily damaged building and carry out the following activities:
   (a) Distress mapping of each damaged elements using any drawing software
   (b) Prepare preliminary investigation report based on the findings of RVS
   (c) Test all the cast samples using different equipments and prepare inferences based on test results

List of Laboratory/Learning Resources Required:

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