



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code : N117AU01

Subject Name : Project 1

WEF Academic Year :	2026-27
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
L	T	PR	C	Theory		Practical		
				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



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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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