Marwadi University

Master of Technology

Structural Engineering

Material Testing Lab

01ST1107 (LC)

Objective of the Course:

- To provide skills for designing various types of concrete.
- To provide skills for carrying out non-destructive tests of structural elements.

Credit Earned: 2

Students learning outcomes:

After successful completion of the course, it is expected that student will be able to,

1. Design high strength concrete, self-compacting and pumpable concrete.
2. Evaluate the concrete strength in flexure, shear and axial.
3. Conduct non-destructive tests of concrete/steel specimen
4. Assess the strength of concrete by destructive and non-destructive testing.

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	CSE (I)	IA (M)	Viva (V)	Term Work (TW)	
00	00	04	02	00	00	00	50	50	100

Detailed Syllabus

Sr. No.	List of Experiments
	Mix Design and Destructive Testing
1	Mix design for high strength concrete using admixture/plasticizer.
2	Mix design for self-compacting concrete, pumpable concrete
3	Determination of strength of concrete in compression, flexure and tension.
4	Determination of failure pattern experimentally on beam.
5	Study of stress-strain curve different concrete, Correlation between cube strength, cylinder strength, split tensile strength and modulus of rupture.
6	Durability Test on concrete sample.
	Non-destructing testing
7	Rebound hammer test on concrete cubes of known strength and compare the predicted values of compressive strength.
8	Ultrasonic Pulse velocity test on a given sample of concrete

9	The cover thickness, bar diameter, spacing and location on a slab using cover meter.
10	Comparison of core test with destructive testing

Suggested Theory Distribution

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
5%	5%	20%	25%	25%	20%