

## Material Testing Lab

### 01CP0104 (LC)

#### Objective of the Course:

- To demonstrate the various advanced concrete and advanced testing techniques used in field.
- 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. Identify, Describe and carry out lab tests relevant to use of civil engineering materials on site.
2. Understand the loading and behaviour of concrete.
3. Ensure the quality of engineering materials on site.
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	25	25	50

#### Detailed Syllabus

Sr. No.	List of Experiments
	<b>Mix Design and Destructive Testing</b>
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	Cylinder strength, split tensile strength and modulus of rupture.
6	Durability Test on concrete sample.
	<b>Non-destructing testing</b>
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
	<b>Tensile Test on Steel</b>

**Construction Project Management****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%

**Instructional Method and Pedagogy:**

1. Use of Learning Management system like canvas
2. Demonstration through presentations on power point and videos and lectures
3. Brainstorming and group discussion sessions
4. Collaborative learning