COURSE CONTENT

MATERIAL TESTING LABORATORY

III Semester: CE

Course Code	Category	Hours/ Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
2530171	Core	0	0	2	1	40	60	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 30				Total Classes: 30		

Prerequisites: NIL

Course Overview :

Material Testing Laboratory for Civil Engineering introduces students to testing methods for construction materials like cement, aggregates, concrete, steel, and bitumen. It develops practical skills, understanding of material properties, quality control, standards, and safe laboratory practices essential for engineering applications.

Course Objectives: The objectives of the course are to

- Know the various procedures to determine the characteristics of cement
- Understand the test procedures to evaluate the characteristics of aggregates
- Know the test procedures to find the properties of fresh concrete
- Understand the test procedures to find mechanical properties of hardened concrete

Course Outcomes: After completion of the course, the student should be able to

- Perform various tests required to assess the characteristics of cement
- Test and evaluate the properties of fine and coarse aggregates and determine its suitability for construction
- Evaluate the fresh and hardened properties of concrete
- Design the concrete mix for required strength and test its performance characteristics

LIST OF EXERCISES:

1. **Tests on Cement:**
   a) Soundness.
   b) Compressive strength.

2. **Tests on Aggregates:**
   a) Specific gravity of fine aggregate.
   b) Specific gravity of coarse aggregate.
   c) Bulking of fine aggregate.
   d) Grading of fine aggregate

3. IS method of mix design of normal concrete as per IS:10262

4. **Tests on Fresh Concrete:**
   a) Slump cone test.
   b) Compacting factor test.
   c) Vee-Bee consistometer test.

5. **Tests on Hardened Concrete:**
   a) Compressive &Tensile strength tests.
   b) Modulus of elasticity of concrete.
   c) Non-destructive testing of concrete.

MATERIALS ONLINE:

1. Course template
2. Lab Manual
3. Open-ended experiments
4. E-Learning Readiness Videos(ELRV)