Approval: 9th senate meeting

Course Number: CE 354P

Course Name: Building and Pavement Materials Laboratory

Credits: 0-0-2-1

Prerequisites: None

Intended for: UG

Distribution: Discipline Core

Semester: Odd/Even

Preamble: The testing of construction materials constitutes an essential facet of Civil engineering practice and research. While the know-how of standard test procedures is imperative for an engineer to keep a check on the quality of materials being used at a project, the same is also necessary for a researcher to correlate their behavioral aspects to composition and structure. The necessity to develop greener alternatives meeting at the same time the rising demands of quality and performance renders the skill of experimental characterization and evaluation absolutely essential for a modern day civil engineer

Course Outline: The list of experiments has been designed to cover the basic techniques relating to the testing of concrete ingredients, concrete, bricks, reinforcement bars and bituminous materials used in building and pavement construction works.

Modules:

1. Determination of specific gravity, fineness and soundness of different cements.
2. The study of setting and hardening characteristics of different cements.
3. Determination of specific gravity, moisture content, bulking and water absorption of aggregates.
4. The study of abrasion, attrition, hardness, shape, grading and packing characteristics of aggregates.
5. The study of water absorption, sorptivity and permeability characteristics of concrete and brick samples.
6. Assessing the presence of organic impurities and fines in aggregates.
7. Assessment of surface hardness, flexural strength, compressive strength and stress-stain characteristics of cement paste, mortar, concrete and clay & fly-ash bricks.
8. Testing of filling ability and passing ability of self compacting concrete.
9. The study of stress-strain characteristics of reinforcement bars, other metals and alloys.
10. The study of consistency and ductility of bitumen samples.
11. Determination of flash and fire points of bitumen samples.
12. Determination of softening point of bitumen samples.
13. Determination of viscosity of bitumen samples.
14. To determine the optimum binder content for a bituminous mix by Marshall's method.