

Course Type	Course Code	Name of Course	L	T	P	Credit
DSC2	NCEC102	Material Testing Laboratory	0	0	2	1

Course Objective
The objective of the course is to conduct various tests and evaluate the engineering characteristics of building/construction materials by laboratory procedures.
Learning Outcomes
Upon successful completion of this laboratory, students will: <ul style="list-style-type: none"> <li>Be able to perform the laboratory tests on different construction materials</li> <li>Able to compute and analyze the results of the respective laboratory tests</li> </ul>

Experiment No.	Experiments to be Covered	Laboratory	Learning Outcome
1	<b>Water content and Specific Gravity of Soil:</b> Oven dry method; Specific gravity by density bottle.	1	Water content and specific gravity determination of soils.
2	<b>Particle Size Analysis of Soil:</b> Dry sieve analysis	1	Grain size distribution of given coarse grain soil samples.
3	<b>Particle Size Analysis of Soil:</b> Hydrometer analysis	1	Grain size distribution of given fine grain soil samples.
4	<b>Tests on Aggregates:</b> Specific gravity of fine and coarse aggregates	1	Determine the specific gravity of fine and coarse aggregates.
5	<b>Tests on Aggregates:</b> Bulking of fine aggregate, Fineness modulus of fine and coarse aggregates	1	Bulking and fineness modulus of fine and coarse aggregates
6	<b>Tests on Cement:</b> Specific gravity, Fineness, Consistency, Initial setting time, Final setting time and Soundness of cement	1	Tests on basic properties of cement
7	<b>Workability of Concrete:</b> Slump Cone test, Compaction factor/Vee-Bee consistometer tests	1	Evaluate the workability of given concrete.
8	<b>Strength of Cement and Concrete:</b> Compressive strength of cement, Compressive strength of concrete, and Split tensile strength of concrete	1	Strength properties of cement and concrete.
9	<b>NDT of Structures:</b> Non-destructive testing of concrete/structures by rebound hammer, etc.	1	Perform the non-destructive testing on concrete structures
10	<b>Tests on Bricks:</b> Compressive strength of bricks, and Water absorption of bricks	1	Strength and water absorption of bricks
11	<b>Project, Revision and Evaluation</b>	4	Project on testing of materials

**Textbooks/References:**

- Respective Bureau of Indian Standard/ International Standard Codes of Practices.
- Bowles, J.E. (2012). Engineering Properties of Soil and their Measurement, 4th Edition, McGraw Hill (India) Publishers.
- Purushothama, R. (2017). Testing Methods for Civil Engineering Materials, New Age International Publishers.