IIT Mandi
Proposal for a New Course

Course number : **CE203P**
Course Name : **Building Materials Lab**
Credit : **1**
Distribution : **0-0-2-1**
Intended for : **B.Tech. (CE)**
Prerequisite : **None**
Mutual Exclusion : **None**

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1. Preamble:

The quality control of raw and finished materials based on the measurement of their physical, mechanical or thermal properties constitutes an important facet of all construction projects. This course aims to provide a hands-on training on the standard equipment, protocols, and reporting methods which are most relevant to the materials used in building construction practice.

2. Course Modules with quantitative lecture hours:

i. Static tension test of mild steel, cast iron and aluminum.
ii. Static compression test of fired clay brick, concrete blocks, cubes, cores and cylinders.
iii. Measurement of the flexural strength of tiles and concrete.
iv. Measurement of the wear/abrasion resistance of tiles and concrete.
v. Water absorption tests for fired clay brick and concrete.
vi. Measurement of thermal properties of concrete using hot wire method.
vii. Measurement of thermal conductivity of common insulation materials and glass using Lees' Disc apparatus.
viii. Particle shape and size analyses of aggregates.
ix. Specific gravity and water absorption tests for aggregates.
x. Crushing and Impact value tests for coarse aggregates.
xi. Fineness and specific gravity tests for cement.
xii. Standard consistency and setting time tests for cement.
xiii. Le Chatelier's and autoclave soundness tests for cement.
xiv. Use of moisture meter, ultrasonic pulse velocity and rebound hammer tests for the non-destructive assessment of concrete quality.

3. Text books:

1. Relevant BIS and ASTM standards

4. References:

1. Bahurudeen A., and Moorthi, P.V.P.., "Testing of Construction Materials", 1st edition, CRC Press, USA, 2021.

5. Similarity with the existing courses:

S. No.	Course Title	Course Code	Similarity Content	Approx. % of Content
1.	Design Lab-1	ME311P	Static tensile test	14%

6. Justification of new course proposal if cumulative similarity content is >30%: NA