

GRAPHIC ERA HILL UNIVERSITY, DEHRADUN

SEMESTER I and II

Name of Department: - Civil Engineering

1. Subject Code: **PCE 151/251** Course Title: **Basic Civil Engineering Laboratory**
2. Contact Hours: L: **0** T: **0** P: **2**
3. Examination Duration (Hrs): Theory **0** Practical **2**
4. Relative Weight: CIE **25** PRS **0** MSE **25** SEE **50** PRE **0**
5. Credits: **1**
6. Semester: **I/II**
7. Category of Course: **DSC**
8. Pre-requisite: **Basic Sciences**

9. Course Outcome**:	<p>After completion of the course the students will be able to:</p> <p>CO1: Examine the suitability of various construction materials.</p> <p>CO2: Execute angular and directional measurement.</p> <p>CO3: Distinguish various modern tools and techniques for field survey.</p> <p>CO4: Execute setting out of a building plan as per byelaws.</p>
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**** Describe the specific knowledge, skills or competencies the students are expected to acquire or demonstrate.**

10. Details of the Course:

Sl. No.	Contents	Contact Hours
1.	<p>Construction materials and components of a building</p> <p>Introduction to basic construction materials like bricks, cement and its type, sand and mortar.</p> <ol style="list-style-type: none"> Field tests on Brick, Cement, sand and compression strength test on Mortar. Construct a wall of height 50 cm and wall thickness 1½ bricks using English and Flemish bond (No mortar required) Casting and testing of plain cement concrete 	6

2.	<p>Introduction to linear measurements (Chain and Tape survey): Different methods of linear measurement and their accuracy; Measurement by chain and tape; Sources of errors and precautions; Corrections to linear measurements.</p> <p>4. Chaining of a line using chain and tape, measurements of area by cross staff survey. 5. Measurement of distance between two points when there is an obstacle for both chaining and ranging.</p> <p>Measurements of angles and directions (Compass & Theodolite survey): Demonstration of different types of compasses and theodolites; Concept of bearings; Magnetic declination; Traverse survey.</p> <p>6. To measure the angles between the lines with prismatic Compass. 7. Traversing with compass and chain by included angles and measurement of area -Plotting the points (at scale) on a graph sheet. 8. To measure the horizontal and vertical angles with Theodolite</p> <p>Modern tools and instruments for surveying and mapping: Introduction to Remote Sensing, GPS and GIS.</p> <p>9. Demonstration of distance and angle measurements using an EDM and Total Station Using Handheld GPS and mobile GIS for data collection</p>	12
3.	<p>Building Bye Laws and NBC 2016 Regulations Introduction- terminology- objectives of building byelaws- floor area ratio- principles of building byelaws- classification of buildings- open space requirements – built up area limitations- height of buildings- wall thickness – lighting and ventilation requirements.</p> <p>10. Preparation of a preliminary drawing for a building adjacent to a road (representing the centre line, building line, open space, height of the building as per the building byelaws).</p> <p>11. Setting out a building (single room only) as per the given building plan.</p>	4