

**Maulana Abul Kalam Azad University of Technology, West Bengal***(Formerly West Bengal University of Technology)***Syllabus for B. Tech in Civil Engineering**

(Applicable from the academic session 2018-2019)

<b>CE(PC)594</b>	<b>Soil Mechanics Laboratory</b>	<b>2P</b>	<b>1 Credits</b>
<b>Course Outcome</b>	After going through this course, the students will be able to: 1. Identify different types of soil by visual inspection. 2. Determine natural moisture content and specific gravity of various types of soil. 3. Estimate in-situ density by core cutter method and sand replacement method. 4. Analyze grain size distribution and Atterberg limits for soil. 5. Perform laboratory tests to determine permeability and compaction characteristics of soil. 6. Determine shear strength parameters of soil by unconfined compression test and vane shear test. 7. Determine shear strength parameters of soil by direct shear test. 8. Perform triaxial test to determine shear strength parameters of soil. 9. Determine California Bearing Ratio (CBR) of soil. 10. Prepare technical laboratory report		
<b>Prerequisite</b>	Soil Mechanics – I (CE(PC)401) and Soil Mechanics – II (CE(PC)504)		
<b>Experiment 1</b>	Field identification of different types of soil as per Indian Standards [collection of field samples and identifications without laboratory testing].		
<b>Experiment 2</b>	Determination of natural moisture content.		
<b>Experiment 3</b>	Determination of specific gravity of cohesionless and cohesive soils.		
<b>Experiment 4</b>	Determination of in-situ density by core cutter method and sand replacement method.		
<b>Experiment 5</b>	Determination of grain size distribution by sieve and hydrometer analysis.		
<b>Experiment 6</b>	Determination of Atterberg limits (liquid limit, plastic limit and shrinkage limit).		
<b>Experiment 7</b>	Determination of co-efficient of permeability by constant and variable head permeability tests.		
<b>Experiment 8</b>	Determination of compaction characteristics of soil by standard proctor compaction test.		
<b>Experiment 9</b>	Determination of unconfined compressive strength of soil by unconfined compression test.		
<b>Experiment 10</b>	Determination of shear strength parameters of soil by direct shear test.		
<b>Experiment 11</b>	Determination of undrained shear strength of soil by vane shear test.		
<b>Experiment 12</b>	Determination of shear strength parameters of soil by unconsolidated undrained triaxial test.		
<b>Experiment 13</b>	Determination of California Bearing Ratio (CBR) of soil.		
<b>Experiment 14</b>	Determination of relative density of soil.		
<b>Experiment 15</b>	Standard Penetration Test.		
<b>Reference</b>	1. Soil Mechanics Laboratory Manual by Braja Mohan Das (Oxford university press). 2. SP: 36 (Part - I and Part - II)		