GEOTECHINICAL ENGINEERING LABORATORY			
Course Code	21CVL55	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	0+0+2	SEE Marks	50
Credits	1	Exam Hours	3

Course objectives:

This course will enable students to

1. To carry out laboratory tests and to identify soil as per IS codal procedures
2. To perform laboratory tests to determine index properties of soil
3. To perform tests to determine shear strength and consolidation characteristics of soils

Sl.NO	Experiments
1	Specific gravity test(pycnometer and density bottle method).Water content determination by oven drying method
2	Grain Size Analysis Sieve Analysis
3	In-situ density tests Core-cutter method Sand replacement method
4	Consistency limits Liquid limit test (by casagrande's and cone penetration method) Plastic limit test
5	Standard compaction test(light and heavy compaction)
6	Co-efficient of permeability test Constant head test Variable head test
7	Shear strength tests Unconfined compression test Direct shear test Triaxial test (unconsolidated undrained test only)
8	Consolidation test: to determine preconsolidation pressure only(half an hour perloading-test).
	Demonstration Experiments (For CIE)
9	Field identification of soil
10	Hydrometer analysis,
11	Rapid moisturemeter method.
12	Shrinkage limit test,
13	Swell pressure test,
14	Standard penetration test and boring equipment
15	laboratory vane shear test

Course outcomes (Course Skill Set):

At the end of the course the student will be able to:

1. Physical and index properties of the soil
2. Classify based on index properties and field identification
3. To determine OMC and MDD, plan and assess field compaction program
4. Shear strength and consolidation parameters to assess strength and deformation characteristics
5. In-situ shear strength characteristics(SPT-Demonstration)

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each course. The student has to secure not less than 35% (18 Marks out of 50) in the semester-end examination(SEE).

Continuous Internal Evaluation (CIE):

CIE marks for the practical course is **50 Marks.**

The split-up of CIE marks for record/ journal and test are in the ratio **60:40.**

- Each experiment to be evaluated for conduction with observation sheet and record write-up. Rubrics for the evaluation of the journal/write-up for hardware/software experiments designed by the faculty who is handling the laboratory session and is made known to students at the beginning of the practical session.
- Record should contain all the specified experiments in the syllabus and each experiment write-up will be evaluated for 10 marks.
- Total marks scored by the students are scaled downed to 30 marks (60% of maximum marks).
- Weightage to be given for neatness and submission of record/write-up on time.
- Department shall conduct 02 tests for 100 marks, the first test shall be conducted after the 8th week of the semester and the second test shall be conducted after the 14th week of the semester.
- In each test, test write-up, conduction of experiment, acceptable result, and procedural knowledge will carry a weightage of 60% and the rest 40% for viva-voce.
- The suitable rubrics can be designed to evaluate each student's performance and learning ability. Rubrics suggested in Annexure-II of Regulation book
- The average of 02 tests is scaled down to **20 marks** (40% of the maximum marks).

The Sum of scaled-down marks scored in the report write-up/journal and average marks of two tests is the total CIE marks scored by the student.

Semester End Evaluation (SEE):

SEE marks for the practical course is 50 Marks.

SEE shall be conducted jointly by the two examiners of the same institute, examiners are appointed by the University

All laboratory experiments are to be included for practical examination.

(Rubrics) Breakup of marks and the instructions printed on the cover page of the answer

script to be strictly adhered to by the examiners. **OR** based on the course requirement evaluation rubrics shall be decided jointly by examiners.

Students can pick one question (experiment) from the questions lot prepared by the internal /external examiners jointly.

Evaluation of test write-up/ conduction procedure and result/viva will be conducted jointly by examiners.

General rubrics suggested for SEE are mentioned here, writeup-20%, Conduction procedure and result in -60%, Viva-voce 20% of maximum marks. SEE for practical shall be evaluated for 100 marks and scored marks shall be scaled down to 50 marks (however, based on course type, rubrics shall be decided by the examiners)

Change of experiment is allowed only once and 15% Marks allotted to the procedure part to be made zero.

The duration of SEE is 03 hours

Rubrics suggested in Annexure-II of Regulation book

Suggested Learning Resources:

ReferenceBooks:

1. PunmiaBC,SoilMechanicsandFoundationEngineering-(2017),16th Edition,LaxmiPublicationsco.,NewDelhi.
2. LambeT.W.,"SoilTestingforEngineers",WileyEasternLtd.,NewDelhi.
3. HeadK.H.,"ManualofSoilLaboratoryTesting"Vol.I,II,III,PrincetonPress
4. BowlesJ.E.,"EngineeringPropertiesofSoilandTheirMeasurements",-McGrawHillBookCo.NewYork.
5. RelevantBISCodesofPractice:IS-2720series

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