MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

DEPARTMENT OF CIVIL ENGINEERING

2060178 – GEOTECHNICAL ENGINEERING LABORATORY

VISION

- The Civil Engineering department strives to impart quality education by extracting the innovative skills of students and to face the challenges in latest technological advancements and to serve the society.

MISSION

- To fulfill the promised vision through the following strategic characteristics and aspirations: Provide quality education and to motivate students towards professionalism.
- Address the advanced technologies in research and industrial issues

PROGRAM EDUCATIONAL OBJECTIVES

PEO – I: Solving civil engineering problems in different circumstances.

PEO – II: Pursue higher education and research for professional development.

PEO – III: Inculcate qualities of leadership for technology innovation and entrepreneurship.

PROGRAM SPECIFIC OUTCOMES

PSO 1 – UNDERSTANDING: Graduates will have ability to describe, analyse and solve problems using mathematical, scientific, and engineering knowledge.

PSO 2 - ANALYTICAL SKILLS: Graduates will have an ability to plan, execute, maintain, manage, and rehabilitate civil engineering systems and processes.

PSO 3 - EXECUTIVE SKILLS: Graduates will have an ability to interact and work effectively in multi disciplinary teams.

PROGRAMME OUTCOMES

PO 1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO 6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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B.Tech. III Year - II Sem **L/T/P/C**

0/0/3/1.5

COURCE OUTCOMES

1. Valuate the behavior of the soils subjected to various loads
2. Analyse the atterberg limits
3. Analyse specific gravity of soil
4. Evaluate permeability of soil
5. Analyse coefficient of consolidation
6. Apply direct and vane shear test

LIST OF EXPERIMENTS

1. Atterberg Limits (Liquid Limit, Plastic Limit, and Shrinkage limit)
2. a) Field density by core cutter method and
   b) Field density by sand replacement method
3. Determination of Specific gravity of soil Grain size distribution by sieve analysis
4. Permeability of soil by constant and variable head test methods
5. Standard Proctor's Compaction Test
6. Determination of Coefficient of consolidation (square root time fitting method)
7. Unconfined compression test
8. Direct shear test
9. Vane shear test
10. Differential free swell index (DFSI) test

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LIST OF EQUIPMENTS

- Casagrandes Liquid Limit apparatus
- Plastic Limit apparatus & Shrinkage Limit apparatus
- Compaction mould with rammer for IS light compaction
- Compaction mould with rammer for IS heavy compaction
- Core cutter with rammer
- Sand pouring Cylinder
- Oven and Moisture cans
- Sieves set with sieve shaker
- Soil Permeability
- Sample extractor
- CBR mould & testing machine
- Consolidation Apparatus
- Unconfined Compressive Strengh testing equipment
- Direct shear test mould & testing machine
- Tri axial testing equipment with accessories
- Hydro meter set up

DEPARTMENT OF CIVIL ENGINEERING

2060178 – GEOTECHNICAL ENGINEERING LABORATORY

DO's

1. Students are instructed to come to Geotechnical engineering laboratory on time. Late comers are not entertained
2. Students are instructed to display their identity cards and apron before entering into the lab.
3. Students are instructed not to bring mobile phones to the lab.
4. The computers and other accessories used in Soil Mechanics lab should be handled with care and responsibility.
5. Students should update the records and lab observation books session wise. Before leaving the lab the student should get his lab observation book signed by the faculty.

DONT'S

1. While working in the laboratory, students should not wear loose clothes
2. Never work in the laboratory unless a demonstrator or teaching assistant in present.
3. Don't roam the lab simply and do not touch the equipments unnecessarily