



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 Section 2(f) & 12(B) of the UGC act, 1956

DEPARTMENT OF CIVIL ENGINEERING

2050175 – CONCRETE TECHNOLOGY 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.



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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 - I Sem

L/T/P/C

0/0/3/1.5

COURSE OUTCOMES

1. Evaluate the strength of cement
2. Analyze the characteristics of aggregates
3. Perform the tests on fresh concrete
4. Evaluate the strength of the hardened concrete
5. Evaluate the strength of structure

LIST OF EXPERIMENTS

I. TEST ON CEMENT

1. Normal Consistency and fineness of cement.
2. Initial setting time and final setting time of cement.
3. Specific gravity of cement
4. Soundness of cement.
5. Compressive strength of cement.

II. TEST ON AGGREGATE

1. Sieve Analysis and gradation zone.
2. Bulking of sand.
3. Bulk and compact densities of fine and coarse aggregates

III. TEST ON FRESH CONCRETE

1. Slump test
2. Compaction factor test.
3. Vee-bee Test.
4. Flow table Test.
5. Self-Compacting Concrete
Slump cone.
V funnel.
L Box

IV. TEST ON HARDENED CONCRETE

1. Compression test on cubes & cylinders.
2. Flexure test.
3. Splitting Tensile Test.
4. Modulus of Elasticity

V. NON DESTRUCTIVE TEST OF CONCRETE

1. Rebound hammer.
2. Ultrasound pulse Velocity (UPV).



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LIST OF EQUIPMENTS

- Vicat apparatus
- Le-chatlier apparatus/ Auto claw apparatus
- Cube mould for Cement
- Set of sieves both for fine and coarse aggregates
- Cylindrical jar for Bulking and compactness
- Slump cone apparatus
- Compaction factor apparatus
- Vee-see Consistometer
- Flow Table
- V-Funnel
- L- Box
- Compressive testing machine
- Flexure testing machine
- Compressometer
- Cube & Cylindrical moulds
- Rebound hammer Apparatus
- Ultrasonic pulse velocity



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DO's

1. Be familiar with your lab assignment before you come to lab. Follow all written and verbal instructions carefully. Observe the safety alerts in the laboratory directions. If you do not understand a direction or part of a procedure, ask the teacher before proceeding.
2. Don't forget to bring calculator, graph sheet and other accessories when you come to lab.
3. Before performing practical read instrument manual carefully.
4. After casting Concrete specimens, make sure that concrete mixer is cleaned properly
5. The performance of unauthorized experiments is strictly forbidden.
6. Do not play with valves, screws and nuts of any apparatus.
7. In the absence of instructor no student shall be allowed to work in the laboratory.
8. Shoes must cover the entire foot. Open toed shoes and sandals are inappropriate footwear in laboratories.
9. Make sure that all equipment is clean and returned to its original place after performing experiments.

DONT'S

1. Report all accidents to your teacher.
2. The use of personal audio or video equipment is prohibited in the laboratory
3. Don't use mobile phones during lab hours.
4. Don't try to repair any faulty instrument.