



# **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**

### **2030171 – SURVEYING 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. II Year - I Sem**

**L/T/P/C**

**0/0/3/1.5**

**COURSE OUTCOMES**

1. Measure the distance, area of the field using the instruments chain, compass, plane table and plot the same.
2. Concepts of leveling, and perform & plot the cross & longitudinal sectioning.
3. Measurement of angles using theodolite, and calculate the distance and elevation of the given point using trigonometric leveling and tacheometric leveling.
4. Understand the concepts of EDM, and calculate the distance, area of the field
5. Perform the traverse and plot the contour map for the obtained data.
6. Locate the position of points using stake out method, perform the curve using modern equipment.

**LIST OF EXPERIMENTS**

1. Surveying of an area by chain and compass survey (closed traverse) & plotting
2. Determine of distance between two inaccessible points with compass
3. Radiation method, intersection methods by plane table survey.
4. Leveling – Longitudinal and cross-section and plotting
5. Measurement of Horizontal and vertical angle by Theodolite
6. Trigonometric leveling using Theodolite
7. Height and distances using principles of tachometric surveying
8. Determination of height, remote elevation, distance between inaccessible points using total station
9. Determination of Area using total station and drawing map
10. Traversing using total station for drawing contour map
11. Stake out using total station
12. Setting out Curve using total station.



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**LIST OF EQUIPMENTS**

- Chains, Tapes
- Ranging Rods
- Cross Staffs
- Arrows and Pegs
- Compass and Tripods
- Optical Square
- Plane tables, Alidade, Plumbing fork, Trough compasses
- Box sextants, Planimeter
- Dumpy Level, Levelling Stave
- Theodolite
- Total station



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**DO's**

1. Students should wear ID cards and in the prescribed (White color shirt or top) uniform.
2. Handle every instruments with high care
3. Students should wear shoes and cap
4. Set the instrument in the appropriate location.
5. Students should come with drawing sheets, pencil, eraser, clips, graphs etc
6. Take support from teaching or non teaching faculty, in case of any need while handling the instruments.
7. Students should come with umbrella and water bottle when coming to the field.
- 8.

**DONT'S**

1. Don't leave the instrument simply. Always one person has to stay nearby the instrument.
2. Don't place the instrument under direct sun for a long time.
3. Don't do any unnecessary adjustments of equipments; it may leads for instrumental error.
4. Don't throw any accessories/instruments