



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 MECHANICAL ENGINEERING

2070384 INSTRUMENTATION AND CONTROL SYSTEMS LAB

B.Tech.IV Year-I Sem

L/T/P/C
0/0/2/1

VISION

The Mechanical Engineering Department strives for immense success in the field of education, research and development by nurturing the budding minds of young engineers inventing sets of new designs and new products which may be envisaged as the modalities to bring about a green future for humanity”.

MISSION

Equipping the students with manifold technical knowledge to make them efficient and independent thinkers and designers in national and international arena. Encouraging students and faculties to be creative and to develop analytical abilities and efficiency in applying theories into practice, to develop and to disseminate new knowledge. Pursuing collaborative work in research and development organizations, industrial enterprises, research and academic institutions of national and international standards, to introduce new knowledge and methods in engineering teaching and research in order to orient young minds towards industrial development.

PROGRAM EDUCATIONAL OBJECTIVES

PEO1	Graduates shall emerge as successful Mechanical engineer’s as their career progress
PEO2	Graduates apply fundamentals of engineering, in practical applications and engage in active research.
PEO3	Mechanical Graduates shall have the ability to design products with interdisciplinary skills.
PEO4	Graduates will serve the society with their professional skills

PROGRAM SPECIFIC OUTCOMES

PSO1- Students acquire necessary technical skills in mechanical engineering that make them employable graduate.

PSO2- An ability to impart technological inputs towards development of society by becoming an entrepreneur.

COURSE OUTCOMES

CO	Course outcome
ME 384.1	Analyse errors, integrate and interpret different types of measurements.
ME 384.2	Understand how physical quantities are measured and how they are converted to electrical forms.
ME 384.3	Evaluate the measurement of speed in engineering applications and importance of speed measurement in instrumentation .
ME 384.4	Visualize the areas affected with pressure in equipment and calibrate the pressure measuring devices.
ME 384.5	Comprehend the level of liquid in any container and the various applications of measurement of flow.
ME 384.6	Able to analyse Instrumentation and Control systems and their applications of various industries.



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LIST OF EXPERIMENTS

1. Calibration of transducer for temperature measurements.
2. Study and calibration of LVDT transducer for displacement measurements.
3. Calibration of strain gauge
4. Calibration of thermocouple for temperature measurements.
5. Calibration of capacitive transducer for angular displacement.
6. Study and calibration of photo and magnetic speed pickups for the measurement of speed.
7. Calibration of resistance temperature detector for temperature measurements.
8. Study and calibration of Rota meter for flow measurement.
9. Study and use of a Seismic pick up for the measurement of vibration.
10. Study and calibration of McLeod gauge for low pressure.
11. Measurement And Control Of **Temperature Loop** Of A Process Using Resistance Temperature Detector With SCADA.
12. Measurement And Control Of **Flow Loop** Of A Process Using SCADA Systems.
13. Measurement And Control Of **Level Loop** In a tank Using Capacitive Transducer with SCADA.
14. Measurement And Control Of **Pressure Loop** Using SCADA System.
15. Calibration of pressure gauges.

LIST OF EQUIPMENTS

1. Dead Weight Pressure Tester
1. Measurement Resistance Temperature Detector (RTD)
2. Thermocouple
3. Thermister
4. Thermometer
5. Linear Variable Differential transformer
6. Photo Magnetic Pick Up
7. Digital tachometer
8. Strain Guage
9. Vibration Setup
10. Capacitive transducer
11. Rotometer Set up
12. Temperature process station (scada)
13. Pressure process station (scada)
14. Flow process station (scada)
15. Level process station (scada)



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Do's

- Enter laboratory with appropriate laboratory uniform and shoes.
- Keep all your belongings in the book rack or at the place suggested by lab instructor.
- Bring the laboratory manual, observation and record without fail.
- Collect the instruments and check for damage if any before carrying out the experiment.
- Eliminate potentially dangerous chemical reactions by thoroughly washing beakers, test tubes, flasks
- and other glassware before and after use. Always add concentrated chemical (e.g. acid or base) to water NOT water to concentrated chemical.
- Make sure that all equipment is clean and returned to its original place after performing experiments.
- Turn off all heating apparatus, gas valves, and water faucets when not in use.
- Wear disposable gloves, as provided in the laboratory, when handling hazardous materials.
- Remove the gloves before exiting the laboratory.

Don'ts

- Don't place glassware near edge of laboratory bench.
- Don't let water drip onto power strips.
- Never point the open end of a test tube containing a substance at yourself or others.
- Don't use mobile phones during laboratory hours.
- Don't fool around in the laboratory.
- Don't come with long hair, dangling jewelry and loose or baggy clothing which are a hazard in the laboratory.