

INSTRUMENTATION AND CONTROL SYSTEMS LABORATORY

VII Semester: ME								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
AME116	Core	L	T	P	C	CIA	SEE	Total
		3	-	-	2	30	70	100
Contact Classes: Nil		Tutorial Classes: Nil		Practical Classes: 36			Total Classes: 36	
<p>COURSE OBJECTIVES:</p> <p>The course should enable the students to:</p> <ol style="list-style-type: none"> Understand basic principles of instrumentation and control systems Apply calibration of measuring instruments for linear and angular displacement. Understand calibration of measuring instruments for temperature Apply calibration of measuring instruments of flow and speed measurement Understand the functioning of strain gauges for measuring pressure and vibration <p>COURSE LEARNING OUTCOMES (CLOs):</p> <ol style="list-style-type: none"> Calibration of angular displacement. Calibration of linear displacement. Analyze and calibration curve of RTD for Temperature measurement. Calibration of thermister for temperature measurement. Evaluate calibration process of thermister for temperature measurement. Analyze the calibration of pressure gauge for pressure. Computation and study of strain gauge. Evaluation of speed pickup. Calibration of flow meter. Characteristic study of vibration. Analyze the calibration curve of low pressure measurement using McLeod Gauge. 								
Week-1	CALIBRATION OF CAPACTIVE TRANSDUCER							
Calibration of capacitive transducer for angular measurement.								
Week-2	CALIBRATION OF LVDT							
Study and calibration of LVDT transducer for displacement measurement.								
Week-3	STUDY OF RESISTANCE TEMPERATURE DETECTOR							
Study of resistance temperature detector for temperature measurement.								
Week-4	CALIBRATION OF THERMISTOR							
Calibration of thermister for temperature measurement.								
Week-5	CALIBRATION OF THERMOCOUPLE							
Calibration of thermocouple for temperature measurement.								
Week-6	CALIBRATION OF PRESSURE GUAGE							
Calibration of Pressure gauges.								

Week-7	CALIBRATION OF STRAIN GAUGE
Calibration of strain gauge for temperature measurement.	
Week-8	CALIBRATION OF PHOTO SPEED PICKUP
Study and calibration of photo speed pickups for the measurement of speed.	
Week-9	CALIBRATION OF ROTAMETER
Study and calibration of rotameter for flow measurement.	
Week-10	CALIBRATION OF VIBROMETER
Study and use of a Seismic pickup for the measurement of vibration amplitude of an engine bed at various Loads.	
Week-11	MEASUREMENT OF VACUUM
Calibration of Mcleod gauge for low pressure.	
Week-12	CALIBRATION OF MAGNETIC SPEED PICKUP
Study and calibration of magnetic speed pickups for the measurement of speed.	
Reference Books:	
<ol style="list-style-type: none"> 1. D.S.Kumar,—Measurement Systems: Applications & Design, Anuradha Agencies, 1st Edition, 2013 2. C.Nakra, K.K.Choudhary,—Instrumentation, Measurement & Analysis, Tata McGraw Hill, 1st Edition, 2013. 	
Web References:	
<ol style="list-style-type: none"> 1. https://nptel.ac.in/courses/112107240/ 	