



SECOUND-YEAR DIPLOMA ENGINEERING SYLLABUS

Semester: 3rd

Course Code (Lab): 002203306

Type of Course: PCC-LC-5

Course Name: ELECTRICAL INSTRUMENTATION

Course Prerequisites: Basic Knowledge of Electrical Instrumentation.

COURSE OBJECTIVE(S):

The practical exercises, the underpinning knowledge and the relevant soft skills associated with the identified competency are to be developed in the student for the achievement of the following COs:

- A) Interpret different terms related to measurement and instrumentation
- B) Measure circuit parameters using potentiometers and DC and AC bridges.
- C) Use electromechanical instruments for measurement of electrical quantities.
- D) Calibrate ammeter, voltmeter, wattmeter and energy meter as per IS.
- E) Use transducers to measure various non-electrical quantities.

TEACHING & EXAMINATION SCHEME:

Teaching Scheme (Hrs/Week)				Examination Scheme					
Theory	Tutorial	Practical	Credit	SEE		CA			Total
				Th	Pr	MSE	PLE	LA	
0	0	2	1	0	25	0	0	25	50

SEE: Semester End Examination; CA: Continuous Assessment; Th: Theory; Pr: Practical; MSE: Mid Semester Examination; PLE: Participatory Learning Experience; LA: Laboratory Assessment

*TOTAL Practical Hours: No. of Pr. and Prt.Hrs/Week*15 = 30*

LIST OF PRACTICALS: (sample for 2 hrs/week)*15 weeks

Sr. No.	Content	Unit No.	Time Duration
1	Identify measuring instruments on the basis of symbols on dial, type, accuracy, class, position and scale.	1	2
2	Measure medium resistance using Wheatstone bridge.	2	2
3	Measure low resistance using Kelvin's double bridge.	2	2
4	Measure inductance and capacitance by using Universal Impedance bridge.	2	2
5	Measure insulation resistance of winding insulation by using Megger.	2	2
6	Measure earth resistance by using earth tester.	2	2
7	Measure power drawn by three phase load using two wattmeter method.	3	2
8	Measure different electrical parameters using clip on meter.	3	2
9	Measure maximum demand using Maximum demand meter.	3	2
10	Calibrate Ammeter and Voltmeter (MI/MC) as per IS.	4	2
11	Calibrate Single phase energy meter as per IS.	4	2



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12	Calibrate single phase wattmeter using standard voltmeter and ammeter.	4	2
13	Calibrate power factor meter as per IS.	4	2
14	Measure Linear displacement using LVDT.	5	2
14	Use Thermocouple to control the temperature of a furnace/machine.	5	2
15	Use Strain gauge to measure strain.	5	2
		Total	30

Text Book(s):

Title of the Book	Author(s)	Publication
Electrical Instrumentation	D.R.Mehta	Mehta Prakashan
Electrical Instrumentation	R.P Ajwalia	Atul Prakashan

Reference Book(s):

Title of the Book	Author(s)	Publication
A text book of Electrical Technology Volume-I (Basic Electrical Engineering)	B. L. Theraja & A.K. Theraja	S. Chand and Co., New Delhi, 23 edition or Latest edition.
Principles of electrical engineering	B. R. Gupta	S. K. Kataria & Sons, New Delhi, Latest edition
Energy management and conservation	K. Uma Rao & A. Jayalakshmi	Pearson Education, New Delhi Latest Edition.

Web Material Link(s):

- a) <https://nptel.ac.in/courses/108105153>
- b) <https://nptel.ac.in/courses/108105064>
- c) <https://circuitglobe.com/category/electrical-terms/electrical-instrumentation>
- d) <https://www.electrical4u.com/electrical-engineering-articles/measurement/>
- e) <https://www.electrical4u.com/>

Equivalent/Corresponding Course on NPTEL (SWAYAM):

NPTEL course on

- f) www.nptel.iitm.ac.in

PRACTICAL EVALUATION:

Sr. No.	Activity	Marks	Weightage
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SECOND-YEAR DIPLOMA ENGINEERING SYLLABUS

1	Semester End Examination (External Practical)	30	60%
2	Continuous Assessment Practical (CAP)	20	40%
	Semester End Examination (External Practical)		
1(a)	Lab Experiment/Exercise		30%
1(b)	Viva-voce		20%
1(c)	Certified Record		10%
	Continuous Assessment Practical (CAP)		
2(a)	Day to day Laboratory Work & Attendance		15%
2(b)	Submission of Laboratory Work/Journal		10%
2(c)	Exam		15%

* For 4 Credit Subjects

1 Credit = 25 Marks

Theory: 3 Credits = 75 Marks

Practicals: 1 Credit = 25 Marks

SEE Evaluation will be of 100 marks and converted to 50 Marks (75 Th + 25 Pr)

CA Evaluation will be of 100 Marks and converted to 50 Marks. (75 Th + 25 Pr)

Distribution of Marks for Theory Evaluation as per Bloom's Taxonomy Level:

Level	Remember	Understand	Apply	Analyze	Evaluate	Create
% Weightage	34%	22%	28%	8%	6%	2%

COURSE OUTCOMES:

CO1	Basic knowledge of electrical measurement and its instrument.
CO2	Determine different measuring potentiometers.
CO3	Determine Electrometrical instrument.
CO4	Understand the calibration of electrical instrument.
CO5	Basic concept of the transducers.