



NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY  
SERGARH-756060, BALASORE (ODISHA)  
(Approved by AICTE & affiliated to SCTE&VT, Odisha)



## LESSON PLAN

**SUBJECT: EEPC205 TH-3 (ELECTRICAL AND ELECTRONIC MEASUREMENTS)**

**Name Of The Faculty :-** Er. Anjarus Swalehin

**Branch :-** Electrical Engineering

**Academic Year :** 2025-26

**Semester :-** 3rd

**Examination :-** 2025 (w)

### CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	Fundamentals of Measurements	10	15
2	Measurement of voltage and current	9	10
3	Measurement of Electric Power	9	10
4	Measurement of Electric Energy	7	9
5	Circuit Parameter Measurement, CRO and Other Meters	10	16
Total Period:		45	60

Sign of Faculty

Sign of H.O.D.

Name of the programme: Diploma in Electrical Engineering	Semester: 3rd	Name of the Teaching Faculty: Er. Anjarus Swalehin	
		Academic Year : 2025-26	Examination : 2025 (W)
Course Code: EEPC205 TH-3	Course Year: Second Year	No. of Classes Alloted Per Week :	4
		Planned Classes Required to Complete the Course	60
Week	Class Day	Topics to be Covered	
1 <sup>st</sup>	1 <sup>st</sup>	Fundamentals of Measurements 1.1 Measurement: Significance, units, fundamental quantities and standards	
	2 <sup>nd</sup>	1.2 Classification of Instrument Systems	
	3 <sup>rd</sup>	1.3 Null and deflection type instruments	
	4 <sup>th</sup>	1.3 Null and deflection type instruments	
2 <sup>nd</sup>	1 <sup>st</sup>	1.4 Absolute and secondary instruments	
	2 <sup>nd</sup>	1.4 Absolute and secondary instruments	
	3 <sup>rd</sup>	1.5 Analog and digital instruments	
	4 <sup>th</sup>	1.5 Analog and digital instruments	
3 <sup>rd</sup>	1 <sup>st</sup>	1.6 Static and dynamic characteristics, types of errors	
	2 <sup>nd</sup>	1.6 Static and dynamic characteristics, types of errors	
	3 <sup>rd</sup>	1.7 Calibration: need and procedure	
	4 <sup>th</sup>	1.8 Classification of measuring instruments: indicating, recording and integrating instruments	
4 <sup>th</sup>	1 <sup>st</sup>	1.8 Classification of measuring instruments: indicating, recording and integrating instruments	
	2 <sup>nd</sup>	1.9 Essential requirements of an indicating instruments	
	3 <sup>rd</sup>	1.9 Essential requirements of an indicating instruments	
	4 <sup>th</sup>	Measurement of voltage and current 2.1 DC Ammeter: Basic, Multi range, Universal shunt,	
5 <sup>th</sup>	1 <sup>st</sup>	2.2 DC Voltmeter: Basic, Multi-range, concept of loading effect and sensitivity	
	2 <sup>nd</sup>	2.2 DC Voltmeter: Basic, Multi-range, concept of loading effect and sensitivity	
	3 <sup>rd</sup>	2.3 AC voltmeter: Rectifier type (half wave and full wave)	
	4 <sup>th</sup>	2.3 AC voltmeter: Rectifier type (half wave and full wave)	

Week	Class Day	Topics to be Covered
6 <sup>th</sup>	1 <sup>st</sup>	2.3 AC voltmeter: Rectifier type (half wave and full wave)
	2 <sup>nd</sup>	2.3 AC voltmeter: Rectifier type (half wave and full wave)
	3 <sup>rd</sup>	2.4 CT and PT: construction, working and applications
	4 <sup>th</sup>	2.4 CT and PT: construction, working and applications
7 <sup>th</sup>	1 <sup>st</sup>	2.4 CT and PT: construction, working and applications
	2 <sup>nd</sup>	Measurement of Electric Power 3.1 Analog meters: Permanent magnet moving coil (PMMC) and Permanent magnet moving iron (PMMI) meter, their construction, working, salient features, merits and demerits
	3 <sup>rd</sup>	3.2 Dynamometer type wattmeter: Construction and working
	4 <sup>th</sup>	3.2 Dynamometer type wattmeter: Construction and working
8 <sup>th</sup>	1 <sup>st</sup>	3.3 Errors and compensations of PMMI, PMMC and Dynamometer type wattmeter
	2 <sup>nd</sup>	3.4 Active and reactive power measurement: One, two and three wattmeter method
	3 <sup>rd</sup>	3.4 Active and reactive power measurement: One, two and three wattmeter method
	4 <sup>th</sup>	3.4 Active and reactive power measurement: One, two and three wattmeter method
9 <sup>th</sup>	1 <sup>st</sup>	3.5 Effect of Power factor on wattmeter reading in two wattmeter method
	2 <sup>nd</sup>	3.5 Effect of Power factor on wattmeter reading in two wattmeter method
	3 <sup>rd</sup>	3.6 Maximum Demand indicator(Definition only)
	4 <sup>th</sup>	Measurement of Electric Energy 4.1 Single and three phase electronic energy meter: Constructional features and working principle
10 <sup>th</sup>	1 <sup>st</sup>	4.1 Single and three phase electronic energy meter: Constructional features and working principle
	2 <sup>nd</sup>	4.1 Single and three phase electronic energy meter: Constructional features and working principle
	3 <sup>rd</sup>	4.1 Single and three phase electronic energy meter: Constructional features and working principle
	4 <sup>th</sup>	4.2 Errors and their compensations
11 <sup>th</sup>	1 <sup>st</sup>	4.2 Errors and their compensations
	2 <sup>nd</sup>	4.3 Calibration of single-phase electronic energy meter using direct loading.
	3 <sup>rd</sup>	4.3 Calibration of single-phase electronic energy meter using direct loading.

Week	Class Day	Topics to be Covered
11 <sup>th</sup>	4 <sup>th</sup>	4.3 Calibration of single-phase electronic energy meter using direct loading.
12 <sup>th</sup>	1 <sup>st</sup>	Circuit Parameter Measurement, CRO and Other Meters 5.1 Measurement of resistance
	2 <sup>nd</sup>	5.1.1 Low resistance: Kelvin's double bridge
	3 <sup>rd</sup>	5.1.1 Low resistance: Kelvin's double bridge
	4 <sup>th</sup>	5.1.2 Medium Resistance: Voltmeter and ammeter method
13 <sup>th</sup>	1 <sup>st</sup>	5.1.2 Medium Resistance: Voltmeter and ammeter method
	2 <sup>nd</sup>	5.1.3 High resistance: Megger and Ohm meter: Series and shunt
	3 <sup>rd</sup>	5.2 Measurement of inductance using Anderson bridge (no derivation and phasor diagram)
	4 <sup>th</sup>	5.2 Measurement of inductance using Anderson bridge (no derivation and phasor diagram)
14 <sup>th</sup>	1 <sup>st</sup>	5.3 Measurement of capacitance using Schering bridge (no derivation and phasor diagram)
	2 <sup>nd</sup>	5.4 Single beam/single trace CRO (Working principle and block diagram only)
	3 <sup>rd</sup>	5.4 Single beam/single trace CRO (Working principle and block diagram only)
	4 <sup>th</sup>	5.4 Single beam/single trace CRO (Working principle and block diagram only)
15 <sup>th</sup>	1 <sup>st</sup>	5.5 Digital storage Oscilloscope: Basic block diagram, working, Cathode ray tube, electrostatic deflection, vertical amplifier, time base generator, horizontal amplifier, measurement of voltage/ amplitude/ time period/ frequency/ phase angle delay line, specifications
	2 <sup>nd</sup>	5.6 Other meters: Earth tester, Digital Multimeter; L-C-R meter, Frequency meter (ferromagnetic and Weston type), Phase sequence indicator, power factor meter (single phase and three phase dynamometer type), Synchro scope, Tri-vector meter
	3 <sup>rd</sup>	5.7 Signal generator: need, working and basic block diagram.
	4 <sup>th</sup>	5.7 Signal generator: need, working and basic block diagram.



Sign of Faculty



Sign of H.O.D.