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DEPARTMENT OF ELECTRICAL ENGINEERING

Govt. Polytechnic, Balasore

LESSON PLAN FOR ACADEMIC SESSION - 2026-27 **ELECTRICAL AND ELECTRONICS MEASUREMENT**

Course Code : Th-3	Semester : 3rd
Total Periods : 45 Hrs	Examination : 3 Hours
Theory Periods : 3P/Week	Progressive Assessment : 30 Marks
End Semester Examination : 70 Marks	
Maximum Marks : 100	
Semester From Date : 01/07/2026	To Date. : 05/11/2026
Name of Teaching Faculty: Er. Biswajit Mallik, Sr Lect. (Elect.)	

WEEK	PERIOD	TOPIC
1st	1 st	Measurement: Significance, units, fundamental quantities and standards
	2 nd	Classification of Instrument Systems
	3 rd	Null and deflection type instruments
2 nd	1 st	Absolute and secondary instruments
	2 nd	Analog and digital instruments
	3 rd	Static and dynamic characteristics, types of errors
3 rd	1 st	Types of errors.
	2 nd	Calibration: need and procedure
	3 rd	Classification of measuring instruments: indicating, recording and integrating instruments
4 th	1 st	Essential requirements of an indicating instruments
	2 nd	Measurement of voltage and current DC Ammeter: Basic, Multi range
	3 rd	Multi range
5 th	1 st	Universal shunt
	2 nd	DC Voltmeter: Basic, Multi-range
	3 rd	concept of loading effect and sensitivity
6 th	1 st	AC voltmeter: Rectifier type. (half wave)

7 th	2 nd	AC voltmeter: Rectifier type (full wave)
	3 rd	CT :construction, working and applications,
	1 st	PT: construction, working and applications
	2 nd	Measurement of Electric Power Analog meters: Permanent magnet moving coil (PMMC) construction, working, salient features, merits and demerits
	3 rd	Permanent magnet moving iron (PMMI) meter, their construction, working, salient features, merits and demerits
8 th	1 st	Dynamometer type wattmeter: Construction and working
	2 nd	Errors and compensations of PMMI,PMMC
	3 rd	Errors and compensations of Dynamometer type wattmeter
9 th	1 st	Active and reactive power measurement: One, two wattmeter method
	2 nd	Active and reactive power measurement three wattmeter method
	3 rd	Effect of Power factor on wattmeter reading in two wattmeter method
10 th	1 st	Maximum Demand indicator(Definition only)
	2 nd	Measurement of Electric Energy Single phase electronic energy meter: Constructional feature
	3 rd	Single phase electronic energy meter working principle
11 th	1 st	three phase electronic energy meter: Constructional features
	2 nd	three phase electronic energy meter working principle
	3 rd	Errors
12 th	1 st	compensations
	2 nd	Calibration of single-phase electronic energy meter using direct loading.
	3 rd	Circuit Parameter Measurement, CRO and Other Meters Measurement of resistance : Low resistance: Kelvin's double bridge
13 th	1 st	Medium Resistance: Voltmeter and ammeter method
	2 nd	High resistance: Megger and Ohm meter: Series and shunt
	3 rd	Measurement of inductance using Anderson bridge (no derivation and phasor diagram)
14 th	1 st	Measurement of capacitance using Schering bridge (no derivation and phasor diagram)
	2 nd	Single beam/single trace CRO (Working principle and block diagram only) Digital storage Oscilloscope: Basic block diagram, working, Cathode ray tube, electrostatic deflection,

15 th	3 rd	vertical amplifier, time base generator, horizontal amplifier, Measurement of voltage/ amplitude/ time period/ frequency/ phase angle delay line, specifications.
	1 st	Earth tester, Digital Multimeter; L-C-R meter
	2 nd	Frequency meter (ferromagnetic and Weston type), Phase sequence indicator
	3 rd	power factor meter (Single phase and three phase dynamometer type), Synchro scope, Tri-vector meter Signal generator: need, working and basic block diagram.

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