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DEPARTMENT OF ELECTRICAL ENGINEERING

Govt. Polytechnic, Balasore

LESSON PLAN FOR ACADEMIC SESSION - 2025-26

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 : 14/07/2025	**To Date :**
Name of Teaching Faculty: Er. Anita Shial	

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

6th	1st	AC voltmeter: Rectifier type. (half wave)
	2nd	AC voltmeter: Rectifier type (full wave)
	3rd	CT :construction, working and applications,
7th	1st	PT: construction, working and applications
	2nd	**Measurement of Electric Power** Analog meters: Permanent magnet moving coil (PMMC) construction, working, salient features, merits and demerits
	3rd	Permanent magnet moving iron (PMMI) meter, their construction, working, salient features, merits and demerits
8th	1st	Dynamometer type wattmeter: Construction and working
	2nd	Errors and compensations of PMMI,PMMC
	3rd	Errors and compensations of Dynamometer type wattmeter
9th	1st	Active and reactive power measurement: One, two wattmeter method
	2nd	Active and reactive power measurement three wattmeter method
	3rd	Effect of Power factor on wattmeter reading in two wattmeter method
10th	1st	Maximum Demand indicator(Definition only)
	2nd	**Measurement of Electric Energy** Single phase electronic energy meter: Constructional feature
	3rd	Single phase electronic energy meter working principle
11th	1st	three phase electronic energy meter: Constructional features
	2nd	three phase electronic energy meter working principle
	3rd	Errors
12th	1st	compensations
	2nd	Calibration of single-phase electronic energy meter using direct loading.
	3rd	**Circuit Parameter Measurement, CRO and Other Meters** Measurement of resistance : Low resistance: Kelvin's double bridge
13th	1st	Medium Resistance: Voltmeter and ammeter method
	2nd	High resistance: Megger and Ohm meter: Series and shunt

	3rd	Measurement of inductance using Anderson bridge (no derivation and phasor diagram)
14th	1st	Measurement of capacitance using Schering bridge (no derivation and phasor diagram)
	2nd	Single beam/single trace CRO (Working principle and block diagram only) Digital storage Oscilloscope: Basic block diagram, working, Cathode ray tube, electrostatic deflection,
	3rd	vertical amplifier, time base generator, horizontal amplifier, Measurement of voltage/ amplitude/ time period/ frequency/ phase angle delay line, specifications.
15th	1st	Earth tester, Digital Multimeter; L-C-R meter
	2nd	Frequency meter (ferromagnetic and Weston type), Phase sequence indicator
	3rd	power factor meter (single phase and three phase dynamometer type), Synchro scope, Tri-vector meter Signal generator: need, working and basic block diagram.

14/07/25
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Teaching Faculty

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