

VEER SURNDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA, ODISHA

LESSON PLAN

Semester: 4th B.Tech. (Electrical & Electronics Engineering), Session: 2020-21

Subject: Measurement and Instrumentation, (Theory)

Branch: Electrical & Electronics Engineering

Name of Faculty: Dr. Gyan Ranjan Biswal

Period No.	Module No.	Topics to be Covered	Signature of Faculty
1	I	Measuring Instruments: <i>Defining important term, namely, Measurement, Instruments and Instrumentation</i>	
2	I	Classifications of instruments	
3	I	Types of damping and errors in measurement due to damping only	
4	I	PMMC method of V/I - AC/DC measurement; why suitable for DC?	
5	I	MI type instrument of V/I - AC/DC measurement; why suitable for AC/ DC both. Errors in measurement of AC variables	
6	I	use of above methods as an ammeter, as a voltmeter	
7	I	Electrostatic Voltmeters: electrometer type and attracted disc type	
8	I	Extension of range of E.S. Voltmeters.	
9	II	Electrodynamometer: transfer type instrument of V/I - AC/DC measurement; why suitable for AC/ DC both.	
10	II	LPF wattmeter & phenomenon of Phantom loading	
11	II	Errors in measurement; Introduction to Energy meter	
12	II	Energy meter: single and three phase types based on induction method	
13	II	Calibration of wattmeter, energy meter	
14	II	Measurement of active and reactive powers in balanced and unbalanced systems.	
15	II	Galvanometers: General principle	
16	II	D'Arsonval, Vibration and Ballistic types Galvanometers	
17	III	DC/AC Bridges: general equations of bridge balancing	
18	III	Measurement of self inductance by Maxwell Bridge (with variable inductance and variable capacitance)	
19	III	Hay's Bridge & Owen's bridge	
20	III	Measurement of capacitance by Schering Bridge	

21	III	Wagner's earth device
22	III	Kelvin's double bridge for measurement of low resistances
23	III	Wheat-stone's bridge for measurement of medium resistances
24	III	Loss of charge method for measurement of high resistances
25	IV	Instrument Transformers: classifications in terms of CT and PT types
26	IV	Current Transformers
27	IV	Potential Transformers
28	IV	Ratio and Phase angle errors
29	IV	Methods of minimizing errors; testing and applications
30	IV	<i>Potentiometers</i> : DC type and Crompton types
31	IV	AC potentiometers: Drysdale polar type.
32	IV	Standardization and applications
33	V	Digital Multimeters: why digital multimeter? & Block diagrams and principle of operation
34	V	Electronic voltmeter: Principle of operation and applications
35	V	Digital frequency meter: introduction, Block diagrams and principle of operation
36	V	Transducers: defining and classifying terms transducer, sensor and actuator
37	V	LVDT and Strain gauges
38	V	Capacitive transducers; Piezoelectric transducer
39	V	Optical transducers, Torque meters and Photoelectric Tachometers

Signature of dealing Faculty

Signature of HOD (EEE)