

Name-Anand Kumar  
 Designation-Lecturer  
 Subject Name-Electrical Measurement  
 Subject code-1620303  
 Semester-3rd

S.No.	Unit	Lecture No.
1	Fundamentals of Measurement	1
		2
		3
		4
		5
2	Measurement of Current and Voltage	1
		2
		3
		4
		5
		6
		7
		8
		9
		10
3	Measurement of Power	1
		2
		3
		4
		5
		6
		7
		8
		9
		10
		1
		2

4	Measurement of Electrical Energy	3
		4
		5
		6
		7
5	Constructional features and working principles of other Meters	1
		2
		3
		4
		5
		6
		7
		8
6	Measurement of Circuit Parameters	1
		2
		3
		4
		5
		6
		7

Note- Class duration may be increases.

**Government Polytechnic Nawada**  
**Department of Electrical Engineering**  
**Lesson Plan**

Topic
Purpose of measurement and significance of measurement, Various effects of electricity employed in measuring instruments.
Desirable qualities of measuring instruments.
Classification of Instruments.
Types of errors.
Different types of torque in Analog Instruments.
Construction and principle of PMMC, MI instrument.
Dynamometer type instrument.
Production of torque :methods.
Principles of Voltage and Current measurement.
Range Extension of Ammeter and Voltmeter.
Different Methods of range extension of Ammeter.
Different Methods of range extension of Voltmeter.
Calibration of Ammeter.
Calibration of Voltmeter.
Instrument transformers (CT & PT).
Concept of power in A.C. Circuit.
Principle and Construction of dynamometer type wattmeter.
Errors and their compensation.
Polyphase wattmeter.
Multiplying factor of wattmeter.
Measurements of power in 3 phase circuit for balanced load by one wattmeter method, two wattmeter method.
Measurements of power in 3 phase circuit for unbalanced load by one wattmeter method, two wattmeter method.
Effect of power factor variation on wattmeter readings in two wattmeter method.
Measurement of reactive power in three phase balance load by one wattmeter method and two wattmeter method
Digital Wattmeter.
Concept of electrical energy.
Constructional feature & principle of working of single phase induction type energy meter.

Constructional feature & principle of working of threephase induction type energy meter.
Principle of working of single phase and threephase induction type energy meter.
Different types of errors and their compensation.
Calibration of energy meter.
Electronic energy meter.
Single phase Power Factor Meter( only dynamometer type).
Three phase Power Factor Meter( only dynamometer type).
Frequency meter (Weston type).
Frequency meter (Ferro dynamic type).
Sychronoscope.
Phase sequence Indicator.( Rotating type only)
Clip-on-mmeter.
Q-meter.
Classification of Resistance, Low, Medium and High.
Methods of Measurements of Low, Medium resistance.
Methods of Measurements of High. Resistance (Kelvin Double bridge, wheatstone bridge and Megger)
Measurement of Earth resistance- Earth tester (Analog & Digital)
Digital Multimeter.
Introduction to A.C. Bridges
L.C.R. Meter.