Lesson plan				
Name of Faculty				
Discipline	**Electrical Engineering**			
Semester	**4th**			
Subject	**Electrical measuring instruments and instrumentation**			
Lesson Plan Duration	**15 Week (From March2021 to July2021) Theory : 04, Practical : 02**			
Week	**Theory**		**Practical**	
	Lecture Day	**Topic (including Assignment/ Test)**	**Practical Day**	**Topic**
1st	Day 1	**1: Introduction to Electrical Measuring Instruments**:	Day 1	Use of analog and digital Multi meter for measurement of voltage, current (A.C/D.C) and resistance
	Day 2	Concept of measurement and instruments		
	Day 3	Measurements, sources of error.		
	Day 4	Types of electrical measuring instruments – indicating		
2nd	Day 1	integrating and recording type instruments	Day 1	Measurement of pressure by using LVDT
	Day 2	Essentials of indicating instruments – deflecting, controlling and		
	Day 3	damping torque and its types		
	Day 4	Revision / assignment		
3rd	Day 1	Class test	Day 1	Revision and checking
	Day 2	**2: Ammeters and Voltmeters,** difference		
	Day 3	Construction and working principles of moving Iron-types		
	Day 4	and moving coil instruments-types		
4th	Day 1	Merits and demerits, sources of error	Day 1	To measure the value of earth resistance using earth tester
	Day 2	and application of these instruments		
	Day 3	Revision / assignment		
	Day 4	Class test		
5th	Day 1	**3:Wattmeters (Dynamometer Type)**	Day 1	To measure power, power factor in a single-phase circuit, using wattmeter and power factor meter
	Day 2	Construction, working principle, merits and demerits		
	Day 3	Digital wattmeter		
	Day 4	Revision / assignment		
6th	Day 1	Class test	Day 1	Revision and checking
	Day 2	**4: Energy meter Induction Type**		
	Day 3	Construction, working principle, merits and demerits of single-phase		
	Day 4	three-phase energy meters		
7th	Day 1	Errors and their compensation	Day 1	Measurement of power and power factor of a three-phase balanced load by two wattmeter method
	Day 2	Simple numerical problems		
	Day 3	Construction and working principle of maximum demand indicators		
	Day 4	Digital energy meter (diagram, construction and application)		
8th	Day 1	Revision / assignment	Day 1	Measurement of voltage and frequency of a sinusoidal signal using CRO and draw wave shape of signal
	Day 2	**5: Miscellaneous Measuring Instruments**		
	Day 3	Construction, working principle and application of Meggar, Earth tester(analog and digital)		
	Day 4	Multimeter, Frequency meter (dynamometer type) single phase power factor meter		

		(Electrodynamometer type		
9th	Day 1	Working principle of synchroscope	Day 1	Revision and checking
	Day 2	phase sequence indicator		
	Day 3	tong tester (Clamp-on meter)		
	Day 4	Instrument Transformers: Construction, working and applications CT, PT		
10th	Day 1	Revision / assignment	Day 1	Measurement of power in a 3 phase circuit using CT, PT and 3-phase wattmeter
	Day 2	Class test		
	Day 3	**6: Electronic Instruments introduction**		
	Day 4	Cathode Ray Oscilloscope: Block diagram, working principle of CRO and		
11th	Day 1	Its various controls. Applications of CRO.	Day 1	Use of LCR meter for measuring inductance, capacitance and resistance
	Day 2	Digital multi-meter (only block diagram) and Applications		
	Day 3	Revision / assignment		
	Day 4	**7:Study of LCR meters**		
12th	Day 1	and their applications		
	Day 2	Revision / assignment	Day 1	Revision and checking
	Day 3	**8: Power Measurements in 3-phase circuits by**		
	Day 4	Two wattmeter method in balanced		
13th	Day 1	unbalanced circuits and simple problems	Day 1	To record all electrical quantities from the meters installed in the institution premises.
	Day 2	Three wattmeter method		
	Day 3	Revision / assignment		
	Day 4	**9:Transducers,** Introduction, Types of Transducers (1 phase,3 phase)		
14th	Day 1	Basic concept of pressure measurement	Day 1	Measurement of temperature by using thermistor/Thermal Imager
	Day 2	flow measurement		
	Day 3	level measurement		
	Day 4	displacement measurement using transducers		
15th	Day 1	Revision / assignment	Day 1	Revision and checking
	Day 2	**10: Measurement of Temperature** Different types of thermometers, thermocouple		
	Day 3	resistance temperature detector and their construction, principle and working		
	Day 4	Thermal Imager Camera (Concept)		