SCHEME OF COURSE WORK

Course Title	Electrical Measurements Lab		
Course Code	**13EE1125**	L T P C	0 0 3 2
Program	B.Tech		
Branch	Electrical and Electronics Engineering		
Semester	VI		
Prerequisites	Electrical Measurements, Instrumentation & Illumination Engineering		
Course to which it is prerequisite	Engineering		

Course Outcomes (COs):

At the end of the Course, the Student will be able to:

CO-1	Illustrate the working of different meters and bridges.
CO-2	Determine the breakdown strength of oil used in transformers and in other high voltage testing kits.
CO-3	Calculate the intensity of illumination.
CO-4	Calibrate and also calculate the different errors of the equipment.
CO-5	Calculate the active and reactive power of different loads.

Program Outcomes (POs):

The student of Electrical and Electronics Engineering at the end of the program will be able to:

PO-1	Apply the knowledge of basic sciences and electrical and electronics engineering fundamentals to solve the problems of power systems and drives.
PO-2	Analyze power systems that efficiently generate, transmit and distribute electrical power in the context of present Information and Communications Technology.
PO-3	Design and develop electrical machines and associated controls with due considerations to societal and environmental issues.
PO-4	Design and conduct experiments, analyze and interpret experimental data for performance analysis.
PO-5	Apply appropriate simulation tools for modeling and evaluation of electrical systems.
PO-6	Apply the electrical engineering knowledge to assess the health and safety issues and their consequences.
PO-7	Demonstrate electrical engineering principles for creating solutions for sustainable development.
PO-8	Develop a techno ethical personality that help to serve the people in general and Electrical and Electronics Engineering in particular.
PO-9	Develop leadership skills and work effectively in a team to achieve project objectives.
PO-10	Communicate effectively in both verbal and written form.
PO-11	Understand the principles of management and finance to manage project in multi disciplinary environments.
PO-12	Pursue life-long learning as a means of enhancing the knowledge and skills.

Course Outcome versus Program Outcomes:

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1	S	M		S	S		M					S
CO-2	S	M		S	S		M					S
CO-3	S		M	S	S		M					S
CO-4	S	M		S	S		M					S
CO-5	S	M	M	S	S		M					S

S - Strongly correlated, M - Moderately correlated, Blank - No correlation

Assessment Methods	Assignment / Quiz / Seminar / Case Study / Mid-Test / End Exam

Teaching-Learning and Evaluation

Week	TOPIC / CONTENTS	Course Outcomes	Sample questions	Teaching-learning strategy	Assessment Method & Schedule
1.	Manual Write up & Demonstration	CO-1	Definition of Errors and the types of errors, how to know about various loads and their conditions..	Demo and Experimentation	Day to Day Analysis
2.	Calibration of single phase wattmeter using a. Balanced loads b. Phantom loading.	CO-1	What do you understand by Phantom Loading? Why only a single wattmeter is used for balanced loads?	Demo and Experimentation	Day to Day Analysis
3.	Calibration of dynamometer type power factor meter..	CO-1,4	What do you understand by Calibration? Define the types of errors in measuring system.	Demo and Experimentation	Day to Day Analysis
4.	Crompton D.C Potentiometer – Calibration of PMMC ammeter and PMMC Voltmeter.	CO-1	Define Standardization. What is the procedure for standardizing a given D.C potentiometer?	Demo and Experimentation	Day to Day Analysis
5.	Perform an experiment to find very low resistance, medium resistance and “very high resistance” using suitable test.	CO-1	What are the different equipments used for measurement of high resistance? What is the range of low, medium and high resistance?	Demo and Experimentation	Day to Day Analysis
6.	Measurement of 3-phase active and reactive power in balanced & unbalanced loads..	CO-5	Define active and reactive power. For a three phase system under unbalanced conditions what are the minimum number of wattmeter’s required?	Demo and Experimentation	Day to Day Analysis
7.	Revision and Doubts clarification of Experiments.	CO-1,5			Day to Day Analysis

8.	MID-I				
9.	Manual Write up & Demonstration	CO-2,3,4	Define Lux, Candela, illumination	Demo and Experimentation	Day to Day Analysis
10.	Calibration of UPF Wattmeter- by Phantom loading.	CO-1,4	What do you understand by Calibration? Define the types of errors in measuring system.	Demo and Experimentation	Day to Day Analysis
11.	Measurement of Inductance & Capacitance using Schering Bridge and Anderson Bridge.	CO-1	Draw the phasor diagram for Andreson's Bridge and Schering bridge. What do you understand by the term Quality Factor? What do you understand by the term loss angle?	Demo and Experimentation	Day to Day Analysis
12.	Measurement of Dielectric strength of oil using H.T testing kit.	CO-2	What do you understand by the term breakdown?	Demo and Experimentation	Day to Day Analysis
13.	Measurement of 3 phase power with single watt meter and 2 No's of C.T.	CO-5	Define active and reactive power. For a three phase system under unbalanced conditions what are the minimum number of wattmeter's required?	Demo and Experimentation	Day to Day Analysis
14.	Polar curve using Lux meter, Measurement of intensity of illumination of fluorescent lamp.	CO-3	Define Lux, Candela, illumination	Demo and Experimentation	Day to Day Analysis
15.	Revision and Doubts clarification of Experiments.	CO-2,3,4,5			Day to Day Analysis
16.	**MID - II**				
17. /18.	**SEMESTER END EXAM**				