Program : **Diploma in Computer Engineering & allied programs / Electrical & Electronics Engineering / Electronics Engineering & allied programs / Instrumentation Engineering / Polymer Technology / Printing Technology / Textile Technology**	
Course Code : **2039**	Course Title: **Fundamentals of Electrical and Electronics Engineering Lab**
Semester : **2**	Credits: **No Credit**
Course Category: **Engineering Science**	
Periods per week: **3 (L: 0 T: 0 P: 3)**	Periods per semester: **45**

Course Objectives:

- To acquire skills in measurements and testing of electric circuits using different meters like Multimeter, DC voltmeter, ammeter, wattmeter, energy meter, galvanometer.
- To experiment on active and passive components and logic gates

Course Prerequisites:

Topic	Course Code	Course Name	Semester
Basic electric circuits, passive and active components (concurrent with the semester)		Fundamentals of electrical & electronics engineering	2

Course Outcomes:

On completion of the course student will be able to:

COn	Description	Duration (Hours)	Cognitive Level
CO1	Make use of various meters to measure basic parameters of an electric circuit	9	Applying
CO2	Identify various methods to measure power and energy in electric circuit	9	Applying
CO3	Identify different types of components and electronic equipments used for conducting experiments.	9	Applying
CO4	Experiment with different rectifier circuits, regulated power supply and logic gates	12	Applying

	Lab Test	6	

CO – PO Mapping

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3			3			
CO2	3						
CO3	3						
CO4	3						

3-Strongly mapped, 2-Moderately mapped, 1-Weakly mapped

Course Outline

Module Outcomes	Name of Experiment	Duration (Hours)	Cognitive Level
CO1	**Make use of various meters to measure basic parameters of an Electric Circuit**		
M1.01	Assemble and test a simple electric circuit containing source, switch, fuse and a load.	3	Applying
M1.02	Measure the voltage and current of a DC circuit including following steps. a. Selection of proper instrument and range. b. Reading of meter in correct position and correct way. c. Use of multi range meter. (to clarify the importance of multiplication factor)	3	Applying
M1.03	Assemble following circuits and verify voltage and current divisions. a. Series circuit containing three lamps of different power ratings. b. Parallel circuit containing three lamps of different power ratings.	3	Applying
CO2	**Identify various methods to measure power and energy in electric circuit**		
M2.01	Measure the power in a given circuit using wattmeter.	3	Applying

M2.02	Measure the energy consumed by a circuit using energy meter	3	Applying
M2.03	Familiarize the steps for the maintenance of lead acid battery.	3	Understanding
	Lab Test – I	3	
CO3	**Identify different types of components and electronic equipments used for conducting experiments.**		
M3.01	Identify passive components - resistors, capacitors, inductors, transformers and LED and familiarize breadboards	2	Applying
M3.02	Demonstrate various types of electronic instruments - ammeters, voltmeters, multimeters (analog and digital), function generators, power supply and CRO	2	Understanding
M3.03	Measure the amplitude, time period and frequency values of a sine wave using CRO	2	Applying
M3.04	Test active and passive components	3	Applying
C04	**Experiment with different rectifier circuits, regulated power supply and logic gates**		
M4.01	Develop half wave rectifier with and without filter and plot the input / output waveforms and calculate the ripple factor	2	Applying
M4.02	Develop center tapped rectifier with and without filter and plot the input / output waveforms and calculate the ripple factor	2	Applying
M4.03	Develop a bridge rectifier with and without filter and plot the input / output waveforms	2	Applying
M4.04	Develop a 5v/9v regulated power supply using any regulator IC	3	Applying
M4.05	Demonstrate the truth table verification of various logic gates	3	Applying
	Lab Test – II	3	

Text / Reference

T/R	Book Title/Author
T1	B. L. Thereja and A. K. Thereja, "Textbook of Electrical Technology: Part 1 - Basic Electrical Engineering in S. I. Units", S. Chand Publication, 2012
T2	N.N. Bhargava , D.C. Kulshreshtha S.C. Gupta, "Basic Electronics and Linear Circuits", Tata McGraw Hill Education, 1983
R3	A. Anand Kumar, "Fundamentals of Digital Circuits", Prentice Hall India Pvt. Ltd., 2014

Online Resources

Sl.No	Website Link
1	www.electrical4u.com
2	https://www.digimat.in/nptel/courses/video/108101091/L01.html
3	https://www.digimat.in/nptel/courses/video/108105112/L01.html