Lovely Professional University, Punjab

Course Code	Course Title	Lectures	Tutorials	Practicals	Credits	
ECE279	BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY	0	0	2	1	
Course Weightage	ATT: 5 CAP: 45 ETP: 50					

Course Outcomes :Through this course students should be able to

CO1 :: Understand the fundamental behaviour and notations of DC and AC circuits.

CO2 :: Discuss the working principles and applications of transformer.

CO3 :: Illustrate functionality of the digital trainer kit to verify basic logic truth table.

CO4 :: Explore the performance of combinational circuits on digital trainer kit.

CO5 :: Evaluate the application of sequential circuit on digital trainer kit.

CO6 :: Analyze the digital circuits and compare its theoretical and actual performance.

	TextBooks (T)		
Sr No	**Title**	**Author**	**Publisher Name**
T-1	FUNDAMENTALS OF ELECTRICAL ENGINEERING AND ELECTRONICS	B.L.THERAJA	S Chand Publishing

	Reference Books (R)		
Sr No	**Title**	**Author**	**Publisher Name**
R-1	DIGITAL DESIGN PRINCIPLES AND PRACTICES PEARSON	JOHN F. WAKERLY	PEARSON
R-2	DIGITAL INTEGRATED ELECTRONICS	H. TAUB AND D. SCHILLING	MC GRAW HILL

Details of Academic Task(s)

MOOCs/ Certification etc. mapped with the Academic Task(s)

Academic Task	Name Of Certification/Online Course/Test/Competition mapped	Type	Offered By Organisation
Practical Work 1	GATE/IES/IAS	Test/Examination	IIT/UPSC
Practical Work 2	GATE/IES/IAS	Test/Examination	IIT/UPSC
Practical Work 3	GATE/IES/IAS	Test/Examination	IIT/UPSC
Practical Work 4	GATE/IES/IAS	Test/Examination	IIT/UPSC
Practical Work 5	GATE/IES/IAS	Test/Examination	IIT/UPSC
Practical Work 6	GATE/IES/IAS	Test/Examination	IIT/UPSC
Practical Work 7	GATE/IES/IAS	Test/Examination	IIT/UPSC
Practical Work 9	GATE/IES/IAS	Test/Examination	IIT/UPSC
Written Test Practical (WTP) 1	GATE/IES/IAS	Test/Examination	IIT/UPSC
Written Test Practical (WTP) 2	GATE/IES/IAS	Test/Examination	IIT/UPSC

Where MOOCs/ Certification etc. are mapped with Academic Tasks:
1. Students have choice to appear for Academic Task or MOOCs etc.
2. The student may appear for both, In this case best obtained marks will be considered.

Detailed Plan For Practicals

Practical No	Broad topic	Subtopic	Other Readings	Learning Outcomes
Practical 1	Kirchhoff voltage law and Kirchhoff current law	Verification of Kirchhoff voltage law and Kirchhoff current law using hardware.		understand the fundamental behavior and notations of DC and AC circuits and solve circuit problems
Practical 2	Kirchhoff voltage law and Kirchhoff current law	Verification of Kirchhoff voltage law and Kirchhoff current law using hardware.		understand the fundamental behavior and notations of DC and AC circuits and solve circuit problems
Practical 3	Turn ratio of a transformer	To understand the principle of turn ratio of a transformer using hardware.		Understand the working principles and applications of transformer
Practical 4	Distribution Board	To learn the use of kit-kat fuse, MCB, energy meter, house wiring, and connections of switches.		Learn and understand the basics of distribution board
Practical 5	Comparison of different lighting sources	To compare the efficiency of incandescent lamps, fluorescent lamps, CFL, and LED-based light sources.		To learn the light sources by identifying different types of light sources and switching control. To learn the light sources by identifying different types of light sources and switching control.

Practical 5	Comparison of different lighting sources	Switching control of a single lamp by using 2-way switches.		To learn the light sources by identifying different types of light sources and switching control. To learn the light sources by identifying different types of light sources and switching control.
Practical 6	Thevenin's and Norton's theorems	Verification of Thevenin's and Norton's theorems in DC circuits using hardware.		Learn and understand the importance of simplification technique in terms of Thevenin's and Norton's theorems for linear circuit
Practical 7	Written Test Practical(WTP) 1			
Practical 8	Analysis and Synthesis of Boolean Expressions using Basic Logic Gates	Understanding the combinational logic by implementing the boolean function using basic logic gates		Learn and understand the basic logic gates, universal gates, and boolean expressions in terms of analysis and Synthesis
Practical 9	Analysis and Synthesis of Boolean Expressions using Basic Logic Gates	Understanding the combinational logic by implementing the boolean function using basic logic gates		Learn and understand the basic logic gates, universal gates, and boolean expressions in terms of analysis and Synthesis
Practical 10	Analysis and Synthesis of Arithmetic Expressions using Adders/Subtractors	To design and analyze the circuit for Full adder and Full subtractor using Logic Gates.		Understand the arithmetic expressions in terms of addition and subtraction and synthesizes the designed circuit
Practical 11	Analysis and Synthesis of Logic Functions using Multiplexer.	Understanding the combinational logic by implementing the boolean function using multiplexer		Learn the design and analysis of combinational circuit using multiplexer
Practical 12	Analysis and Synthesis of Sequential Circuits using Flip-Flops	Understanding the sequential logic by implementing the flip flop with the help of logic gates		Understand the concept of the flip flop and analyze the sequential circuits
Practical 13	Analysis of Functions of BCD-TO-7-segment Decoder / Driver and Operation of 7-segment LED Display	To visualize the output of decade counter on seven segment display		Understand the counters and analyze the boolean function through seven segment display
Practical 14	Written Test Practical(WTP) 2			
	SPILL OVER			
Practical 15	Spill Over			

An instruction plan is only a tentative plan. The teacher may make some changes in his/her teaching plan. The students are advised to use syllabus for preparation of all examinations. The students are expected to keep themselves updated on the contemporary issues related to the course. Upto 20% of the questions in any examination/Academic tasks can be asked from such issues even if not explicitly mentioned in the instruction plan.