

# ECE279:BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY

L:0 T:0 P:2 Credits:1

**Course Outcomes:** Through this course students should be able to

- CO1 :: understand the fundamental behavior and notations of DC and AC circuits and solve circuit problems
- CO2 :: discuss the working principles and applications of transformers and motors
- CO3 :: analyze the working of various semiconductor devices and its applications
- CO4 :: illustrate functionality of the digital trainer kit to verify basic logic truth table.
- CO5 :: evaluate the performance of complex digital circuits on Proteus/DSCH

## List of Practicals / Experiments:

### **Kirchhoff voltage law and Kirchhoff current law**

- verification of Kirchhoff voltage law and Kirchhoff current law using hardware and Proteus software.

### **Turn ratio of a transformer**

- to understand the principle of turn ratio of a transformer using both hardware and proteus software

### **Distribution Board**

- to learn the use of electrical fuse, MCB, energy meter, house wiring, and connections of switches

### **Comparison of different lighting sources**

- to compare incandescent lamps, fluorescent lamps, CFL, and LED-based light sources for its efficiency.
- switching control of a single lamp by using four 2-way switches.

### **Thevenin's and Norton's theorems**

- verification of Thevenin's and Norton's theorems in DC circuits using hardware and Proteus software.

### **Analysis and Synthesis of Boolean Expressions using Basic Logic Gates**

- Understanding the combinational logic by implementing the boolean function using basic logic gates

### **Analysis and Synthesis of Arithmetic Expressions using Adders/Subtractors**

- To design and analyze the circuit for Full adder and Full subtractor using Logic Gates.

### **Analysis and Synthesis of Logic Functions using Multiplexers and decoders**

- Understanding the combinational logic by implementing the boolean function using multiplexer
- Understanding the combinational logic by implementing the boolean function using Decoder

### **Analysis and Synthesis of Sequential Circuits using Flip-Flops**

- Understanding the sequential logic by implementing the flip flop with the help of logic gates
- Understanding the sequential logic by implementing the counter with flip flop.

### **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

## **Text Books:**

1. FUNDAMENTALS OF ELECTRICAL ENGINEERING AND ELECTRONICS by B.L.THERAJA, S Chand Publishing

## **References:**

1. DIGITAL DESIGN PRINCIPLES AND PRACTICES PEARSON by JOHN F. WAKERLY, PEARSON
2. DIGITAL INTEGRATED ELECTRONICS by H. TAUB AND D. SCHILLING, MC GRAW HILL

