



## PHY 345 – Electronics Laboratory

Course Code	Course Num.	Course Name	Credit Hours	Lec	Lab	Tut	Prerequisites
PHY	382	Electronic Laboratory	2	0	3	0	PHY 340

### Learning Objectives

By the end of the course, students should possess the skills to

- Mathematically analyze problems by applying reasoning skills developed over the theoretical course.
- Design and conduct experiments for testing electronic components
- Demonstrate a practical understanding of the basic physical concepts of electronic components to qualitatively and quantitatively interpretate ,evaluate and analyze their physical phenomena .

### Syllabus

#### Experiments:

1. Measurement of peak , average and RMS values, frequency and phase using Function generator and Oscilloscope
2. CR and LR circuits- Frequency response- (Low pass and High pass). Differentiation and Integration - tracing of waveforms.
3. RLC–Series resonance circuit–Frequency response
4. Volt-Ampere characteristics of Junction diode , Cut-in voltage, forward and reverse resistances and Signal rectification: Half-wave rectification, Full-wave rectification, the bridge rectifier (positive half-cycle and negative half-cycle)
5. Zener diode V-I Characteristics– Determination of Zener breakdown voltage.
6. Voltage regulator using Zener diode
7. BJT input and output characteristics (CE configuration) and determination of ‘h’ parameters.
8. Three types of BJT amplifiers : Common Emitter (CE), Common Collector (CC) and Common Base (CB)
9. FET –Characteristics and determination of FET parameters.



10. SCR Volt-ampere characteristics.

11. Basic Digital Logic Circuits : Verification of truth tables of OR, AND, NOT, NAND, NOR, EX-OR and Construction of gates using NAND, NOR , EX-OR gates.

### Text Book:

A Student Reference Manual is provided by the Laboratory Instructor or the Department Coordinator , this booklet (guide) provides a set of experiments which are designed to help students be thoroughly familiar with the Lab exercise before coming to the Lab (or it will take you much longer to complete the Lab) and understand the steps needed to be followed to work effectively in the Lab

### Reference Books:

- 1- L. K. Maheshwari and M.M. S. Anand “Laboratory Manual for Introductory Electronics Experiments” New Age International
- 2- Sharon Ferrett, Bernard Grob Basic Electronics, Experiments Manual Book Description, McGraw-Hill Science/Engineering/Math , 8<sup>TH</sup> Edition .

