GRAPHIC ERA HILL UNIVERSITY, DEHRADUN

SEMESTER I and II

Name of Department:- Electrical Engineering

1. Subject Code: **TEE101/201** Course Title: **Basic Electrical Engineering**

2. Contact Hours: L: **2** T: **0** P: **0**

3. Relative Weight: **CA** **25** **MSE** **25** **ESE** **50**

4. Semester: **I/II**

4. Credits: **2**

5. Pre-requisite: Basic Knowledge of Physics and Mathematics

6. **Course Outcome:** After successful completion of this course, students will be able to:	CO1	Recall the concept of voltage, current, resistance and laws related to electricity with reference to the electrical circuits/systems.
	CO2	Demonstrate the basic fundamentals of AC electrical circuits/systems/components.
	CO3	Apply the of knowledge of fundamental concept of wiring and switches in AC systems.
	CO4	Demonstrate the use of various electrical safety components such as circuit breakers (MCBs and MCCBs)
	CO5	Explain the concept of earthing and its significance in electrical systems
	CO6	Comprehend the working of electrical energy sources including AC/DC machine and cells.

7. **Detailed Syllabus**

UNIT	CONTENTS	Contact Hrs
Unit – I	**DC Circuit:** Concepts of current, resistance, E.M.F., potential difference, Ohm's law, Simplifications of networks using series and parallel combinations and star-delta conversions, Kirchhoff's law, Superposition, Thevenin, Norton, Maximum Power Transfer theorem and their applications for network solutions.	**10**

Unit - II	**Single Phase AC:** Introduction of Single-Phase AC, peak and rms values, phasor representation, real power, reactive power, apparent power, power factor. Single phase AC through R, L, C, and series combination of RLC.	**6**
Unit – III	**Electrical Installations and Illumination:** Wire and cables for internal wiring, switches and circuits (Two-way switch, staircase wiring, go down wiring, double pole double throw switch, verandah wiring), electrical wiring systems, type of wiring, Switch Fuse Unit (SFU), MCB, MCCB, Earthing concept and methods of earthing.	**6**
Unit – IV	**Electrical Energy Sources:** Principle of working of DC/AC machine. Classification of cells – Construction of Lead Acid Cell	**4**
	Total	**26**

Text Books:

1. D.P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 2010.
2. D.C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill, 2009. 2009
3. V. N Mittle and Arvind Mittle, "Basic Electrical Engineering" Tata McGraw-Hill Education Pvt. Ltd. (2005)

Reference Books:

1. L.S. Bobrow, "Fundamentals of Electrical Engineering", Oxford University Press,2011
2. V.D. Toro, "Electrical Engineering Fundamentals", Prentice Hall India, 1989.
3. E. Hughes, "Electrical and Electronics Technology", Pearson, 2010.
4 L.S. Bobrow, "Fundamentals of Electrical Engineering", Oxford University Press, 2011

GRAPHIC ERA HILL UNIVERSITY, DEHRADUN

SEMESTER I and II

Name of Department: Electrical Engineering

1. Subject Code: **PEE151/251** Course Title: **Electrical Engineering Lab**

2. Contact Hours: L: **0** T: **0** P: **2**

3. Relative Weight: **CA** **25** **MSE** **25** **ESE** **50**

4. Semester: **I/II**

4. Credits: **1**

5. Pre-requisite: Basic Knowledge of Experiments in Physics

6. Course Outcome: After successful completion of this course, students will be able to:	CO1 Apply the knowledge of circuit laws and theorems and verify the knowledge through practical experimentation. CO2 Correlate the knowledge of theoretical concepts or phenomenon in context to the real time applications of AC systems (wiring/switches/lamps etc.) and make suitable assumptions to study it through lab experiment. CO3 Coordinate with team members to carry out the procedure with precision. CO4 Report the experimental results in a professional way with practical comments on the application to field/ industry requirements.

6. **Detailed Syllabus**

1. To verify the Kirchhoff's Voltage Law (KVL) in DC Circuit.
2. To verify the Kirchhoff's Current Law (KCL) in DC Circuit
3. To Verify Superposition Theorem in DC Circuit.
4. To Verify Thevenin Theorem in DC Circuit.
5. To Verify Norton Theorem in DC Circuit.
6. To Verify Maximum Power Transfer Theorem in DC Circuit.
7. To find out the meter constant of a single-phase energy meter
8. To study one way and two way (Stair case) switching.

9. Control of two lamps from two switches (looping system)
10. To study electrical house wiring
11. To measure power in a single phase ac circuit by using wattmeter.
12. To study various electrical accessories and machines parts (cutest model)