Course Type	Course Code	Name of Course	L	T	P	Credit
DSC	NEEC101	**Basics of Electrical Engineering-I**	3	0	0	3

Course Objective
The principle objective of the course is to impart the basic knowledge and the applications of the Electrical Engineering to the students. The course structure is prepared in keeping view of the applicability of the subject through numerical problems.

Learning Outcomes
Upon successful completion of this course, students will:

- Have basic knowledge of Electrical Engineering.
- Have basic knowledge of network theorems, single and three phase AC system.
- Have an overall understanding of applicability in different fields.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	**Analysis of Electrical Circuits:** Circuit elements, Ohm's Law, Kirchhoff's Law, Mesh and Nodal analysis, Superposition theorem, Thevenin's Theorem, Norton's Theorem, Maximum Power Transfer Theorem, Star-Delta Transformation.	10	Understanding the basics of Electrical Engineering, mesh and nodal analysis for basic network analysis along with different network theorems and their applications to solve numerical problems in electrical circuits.
2	**Magnetic Circuits:** Basics of magnetic circuits, Comparison of Magnetic and Electric Circuits, B-H curve, Faraday's law, Lenz's Law, Self and Mutual Inductances.	7	Understanding the basics of magnetic, circuits, self and mutual inductance and basic principles of EMF generation using electromagnetic induction and their applications to solve different numerical problems.
3	**DC circuits Time Domain Analysis:** Natural and forced response of simple RL, RC and RLC circuit.	7	Understanding the natural and forced transient responses of RL, RC and RLC circuits with their applications in solving numerical problems.
4	**Single Phase AC Circuit:** Alternating quantities, RMS and average value, Phasor representation and analysis of AC circuit, Active and Reactive Power, Power Factor, Series and Parallel AC circuits.	10	Understanding the basics of single phase AC system with the phasor representation and the concepts of active power, reactive power and power factor with the applications in solving various numerical problems.
5	**Three phase AC circuit:** Advantages and usages of three phase systems, voltage and current in Star and delta connections, unbalanced load, three phase power, measurement of three phase power.	8	Understanding operating principles of three phase AC system, measurement of power and solving numerical problems on three phase electrical circuits.

Text Books:
1. Electrical Engineering Fundamentals - V Del Toro, Publisher: Prentice - Hall International, Edition: 2

Reference Books:
1. Basic Electrical Engineering - D P Kothari and I J Nagrath, McGraw-Hill, Edition-3.
2. Fundamentals of Electrical Engineering – Ashfaq Husain and Haroon Ashfaq