

NIRMA UNIVERSITY
Integrated B. Tech. (CSE)-MBA programme
Term - I

L	T	P	C
2	0	2	3

Course Code	CSI0105
Course Title	Elements of Electrical Engineering

Course Outcomes:

At the end of the course, students will be able to –

1. interpret the electrical energy terms and relate its usage in various applications
2. illustrate the role of circuit elements in different system conditions
3. distinguish the operational aspects of ac-dc systems

Syllabus

**Teaching
hours:20**

Unit I

8

Review of DC Circuits: Kirchhoff's laws, solution of star-delta circuits, charging and discharging of capacitor, series-parallel magnetic circuits, fringing effect, comparison between electric and magnetic circuit, concept of induced emfs, series-parallel connection of inductors, rise and decay of current in inductive circuit.

Unit II

7

Single-phase AC Circuits

Generation of alternating emf, instantaneous, rms, peak, average values and related other terms, vector representation of AC quantities, Steady state analysis of R, L, C series circuits, power triangle, resonance in series circuits.

Unit III

5

Three-phase AC Circuits: Generation of three-phase emf, star connection, delta connection, relationship between line and phase quantities, power measurement in three-phase circuit, variation in wattmeter reading with power factor.

Self-Study:

The self-study contents will be decided at the commencement of semester. Around 10% of the questions will be asked from self-study contents.

Laboratory Work:

This shall consist of at least 8 experiments based on the above syllabus.

Suggested Readings[^]:

1. B.L.Theraja, A.K. Theraja, Textbook of Electrical Technology Volume I, S. Chand & Co.
2. U. A. Patel, Textbook of Elements of Electrical Engineering, Mahajan Publishing House, Ahmedabad.
3. J. Nagrath, Basic Electrical Engineering, TMH Publishing Co. Ltd.
4. Vincent Del Toro, Textbook of Principles of Electrical Engg. Prentice Hall of India Pvt. Ltd., New Delhi.

L=Lecture, T=Tutorial, P=Practical, C=Credit

[^]this is not an exhaustive list