I Year-II Semester		L	T	P	C
		4	0	0	3
Basic Electrical and Electronics Engineering (R161209)					

Prerequisite Course: Students should have basic knowledge of electrical circuits.

Course Description and Objectives: This course covers the topics related to analysis of various electrical circuits, operation of various electrical machines, various electronic components to perform well in their respective fields.

Course Outcomes:

Upon completion of the course, the student will be able to achieve the following outcomes.

CO	Course Outcomes	POs
1	To learn the basic principles of electrical circuital law's and analysis of networks	3
2	To understand the principle of operation and construction details of DC machines	4
3	To understand the principle of operation and construction details of Transformers	5
4	To understand the principle of operation and construction details of alternator and 3-Phase induction motor	6
5	To study the operation of PN junction diode, half wave, full wave rectifiers and OP-AMPs	3
6	To learn the operation of PNP and NPN transistors and various amplifiers	2

Syllabus:

UNIT - I

Objective: To learn the basic principles of electrical circuital law's and analysis of networks

Electrical Circuits: Basic definitions - Types of network elements - Ohm's Law - Kirchhoff's Laws - Inductive networks - Capacitive networks – Series - Parallel circuits - Star-delta and delta-star transformations.

UNIT - II

Objective: To understand the principle of operation and construction details of DC machines

Dc Machines: Principle of operation of DC generator – EMF equation - Types of DC machine – Torque equation – Applications – Three point starter - Speed control methods of DC motor – Swinburne's Test.

UNIT – III

Objective: To understand the principle of operation and construction details of Transformers

Transformers: Principle of operation and construction of single phase transformers – EMF equation – Losses – OC & SC tests - Efficiency and regulation.

UNIT - IV

Objective: To understand the principle of operation and construction details of alternator and 3-Phase induction motor

AC Rotating Machines: Principle of operation and construction of alternators– Types of alternators – Principle of operation of synchronous motor - Principle of operation of 3-Phase induction motor – Slip-torque characteristics - Efficiency – Applications.

UNIT V

Objective: To study the operation of PN junction diode, half wave, full wave rectifiers and OP-AMPs

Rectifiers & Linear ICs: PN junction diodes - Diode applications(Half wave and bridge rectifiers). Characteristics of operation amplifiers (OP-AMP) - application of OP-AMPs (inverting, non-inverting, integrator and differentiator).

UNIT VI

Objective: To learn the operation of PNP and NPN transistors and various amplifiers

Transistors: PNP and NPN junction transistor, transistor as an amplifier- Transistor amplifier - Frequency response of CE amplifier - Concepts of feedback amplifier.

TEXT BOOKS:

i. Electrical Technology by Surinder Pal Bali, Pearson Publications.
ii. Electronic Devices and Circuits, R.L. Boylestad and Louis Nashelsky, 9th edition, PEI/PHI 2006.

REFERENCE BOOKS:

- Electrical Circuit Theory and Technology by John Bird, Routledge Taylor &Francis Group
- Basic Electrical Engineering by M.S.Naidu and S.Kamakshiah,TMH Publications
- Fundamentals of Electrical Engineering by Rajendra Prasad, PHI Publications,2nd edition
- Basic Electrical Engineering by Nagsarkar,Sukhija, Oxford Publications,2nd edition
- Industrial Electronics by G.K. Mittal, PHI