

## SKU- Basic Electrical

The goal of Basic Electrical is to provide some basic information about electrical circuits. It develops the basic concept for a full understanding of Electricity, Machine and Power. This courseware introduces the concepts of electrical by use of analogies, animations, simulation and examples.



### Topics covered in SKU-Basic Electrical:

#### Introduction to Basic Electrical

**Topics Covered:** The objective of this introduction is to learn about origin of Electricity, Basic terms of electrical, Milestone of Electrical Engineering.

#### Electrical Circuit Analysis

**Topics Covered:** The objective of this Unit is to learn about Voltage and Current sources, LC R component, Dependent and independent Sources, Sources conversion, Analysis of D.C. circuits, KCL and KVL, Mesh And loop analysis Concept of dummy node and dummy mesh

with simulation, Thevenin's, Norton's, Maximum Power and Superposition theorem, Star Delta circuits.

### AC Circuits

**Topics Covered:** The objective of this Unit is to learn about Review of single- phase AC circuits under sinusoidal steady state, Active, Reactive and Apparent power, Power factor, three phase AC circuits , Star and Delta connections, Three phase source and load, Analysis of balanced and unbalanced systems, Power in three phase circuits and their measurements.

### Magnetic Circuits

**Topics Covered:** The objective of this Unit is to learn about Review of laws of electromagnetism, Flux, mmf and their relation, Analysis of magnetic and electric circuits, Saturation, B -H curves, fringing and leakage, AC excitation in magnetic circuits induced voltage, Hysteresis effect and eddy currents.

### Transformers

**Topics Covered:** Single – phase transformer, Basic concepts and construction features, Type of transformers, Voltage, current and impedance transformation, Equivalent circuits, Per unit system, Voltage regulation, losses and efficiency, Testing of transformers, Auto transformers.

### Rotating Electric Machines

**Topics Covered:** The objective of this Unit is to learn about Basic concepts, Working principle and general construction of DC machines (motor and generator), three phase and single phase induction motors and synchronous machines.

### Print Shots of SKU-Basic Electronics:

### Production of Alternating Voltage

When a conductor moves in a magnetic field an emf induced in a conductor. This effect is called electromagnetic induction. A loop of wire rotating in a magnetic field produces a voltage which constantly changes in amplitude and direction.

### Lightning is the natural Electricity

Comb attracts hair due to opposite charges

### Ohm's Law

| No. | R(Ω) | I(A) |
|-----|------|------|
| 1   | 10   | 1    |
| 2   | 20   | 0.5  |

### AC Circuits Containing Inductance Only

$v = V_{max} \sin \omega t$

The alternating current flowing in the inductive circuit will set up a magnetic field that is alternating in nature that is its magnitude will change at every instant .

### Active Power

# A C CIRCUITS