Course Code: EITS - 101
Course Title: Basic Electrical and Electronics

Number of Credits: 03 **Total Hours: 42** **Total Marks: 75**

Prerequisites for the course

Should have basic knowledge of current, voltage concept, AC and DC voltage.

Objectives of Course

This course is intended to introduce to students into the basics of electrical circuits, concepts, theory The electrical experiments give a student hands-on experience to design the basic.

Course Content

Unit I	**Basic Electrical concepts**	**5 Hours**
Concept of electric charge, potential difference, current and voltage, AC source and DC source, measuring circuit voltage and current using voltmeters and ammeters positive cycle, negative cycle, Frequency, Single phase and Three phase supply, grounding.		
Unit II	**Introduction to Resistors**	**8 Hours**
Resistor, different types of resistors, colour coding of resistors, tolerance value, Wattage of resistors, series and parallel concept, Ohms law.		
Unit III	**Introduction- Capacitor- Capacitance and Resonance circuits**	**8 Hours**
Working principle of capacitors, dielectric constant, capacitive reactance, types of Capacitors, measuring capacitance and capacitive reactance, series and parallel, resonance		
Unit IV	**Introduction to Inductor and Inductance**	**8 Hours**
Definition of inductance, types, Inductive reactance, measuring inductance, series and parallel, self and mutual inductance, coefficient of coupling, transformers, turns ratio, transformer winding.		
Unit V	**Circuit Breaker and Its Importance**	**5 Hours**
Circuit breaker working and construction, types of circuit breakers, air Circuit Breaker, plain air circuit breaker, air blast circuit breaker, axial blast breaker.		
Unit VI	**Switches and Relays**	**8 Hours**
Types of Switches: one-way (single-pole) electrical switch, two-way (double-pole) do not disturb switch, light dimmer, SPST, SPDT, DPST, DPDT, pushbutton switches, selector switches, limit switches. Design of a Relay, working and construction of relay, relay in normally closed and normally opened condition.		

Pedagogy

Lectures/Tutorial/Assignments/

Course Outcome

On completion of the course, students will be able to understand the basic electrical components such as resistor, capacitor, inductor etc. Apply knowledge to solve basic electrical circuits.

References/Readings

1. Basic Electrical engineering by V. K Mehta
2. Principle of electronics by V. K. Mehta
3. Electrical circuit action by Henry C Veatch
4. Textbook of electrical technology, B. L. Theraja, Volume 1 and 2
5. Electrical relays: Principle and application by Vladimir Gurevech
6. Basic electronics components, Instruction manual, by Arthur Seymour