SUMMER TRAINING - 2021

COURSE: **INNOVATIONS IN CIRCUIT ENGINEERING**

OBJECTIVE OF THE COURSE

Innovation in circuit engineering is the course planned to skill students in circuit design. Its focus is also on introducing the concepts of Arduino and Node MCU which will help students in designing various project in the field of Electrical and Electronics. The hand on practice followed by theoretical concepts is the complete package through which one can understand, apply, execute and analyse electrical and electronics circuitary. This training for first year students will strengthen the base for their rest of B.Tech course.

DURATION OF THE COURSE: **60 HOURS (4 WEEKS)**

MINIMUM ELIGIBILITY CRITERIA AND PRE-REQUISITE:
STUDENTS OF B.TECH FIRST YEAR EN/EE/EC ARE ELIGIBLE

- **Module 1 (Week 1 – 14 hours):**
  - Study of electronic components and equipments
  - Study of Rectangular waveform using 555 Timer IC & CRO
  - Measurement of Energy using single phase Energy meter
  - Estimate energy consumption of houses, commercial places, buildings
  - Hands on design and fabrication of half wave rectifier & full wave rectifier
  - Hands on design and fabrication of small power supply
  - Concept of sinusoidal oscillators – explanation and observation on CRO

- **Module 2 (Week 2 - 16 hours):**
  - Verification of logic gates: OR & AND Gates; NAND and XOR Gates
  - Introduction to Electrical Safety Issues and Consumer Awareness
  - Basic knowledge of Electrical components: Identification & connection of Electrical equipment/components
  - Hands on different types of wiring systems : Godown wiring, Hostel wiring, Hospital wiring, Hotel wiring, Electrical house wiring, Staircase wiring
  - Hands on Electric Extension Board
  - IR Sensor based hand sanitizer

- **Module 3 (Week 3 – 14 hours):**
  - Introduction to Arduino Uno and Arduino IDE software
  - Introduction to Node MCU
  - Blinking of an LED & LED sequential control
  - Interfacing of Arduino Uno with LCD Display
  - Fading of an LED
  - To measure Temperature & Humidity using DHT11 sensor
  - Measure distance using Ultrasonic sensor and Arduino Uno

- **Module 4 (Week 4 – 16 hours):**
  - Controlling of DC motor using NodeMCU
  - Water level detection using NodeMCU
  - Voice control using Google Assistant
  - Controlling of light using smart phone using Blynk App and NodeMCU
  - Project exercises