**GUJARAT TECHNOLOGICAL UNIVERSITY**
**Syllabus for Diploma in Vocation (D.Voc), 3rd Semester**
**Branch: Electrical Wiring, Refrigeration and Air Conditioning**
**Subject Name: Basic Electrical Practices Lab**
**Subject Code: 1230405**

**Teaching and Examination Scheme:**

| Teaching Scheme | | | Credits | Examination Marks | | | | Total Marks |
|---|---|---|---|---|---|---|---|---|
| | | | | Theory | | Tutorial/ Practical | | |
| L | P | OJT | C | University exams (ESE) | Progressive Assessment (PA) | External Practical /viva Exam(ESE) | Internal evaluation Practical /viva Exam(PA) | |
| 0 | 2 | 0 | 2 | 0 | 0 | 30 | 20 | 50 |

L- Lectures; P- Practical; OJT- On Job Training; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment

**Program Objectives:**

- To make the students aware about various electrical devices and tools.
- To make the students understand various systems and devices related to electrical connections.

**Course Content: Practical**

| Sr. No. | Experiment /Practical Exercises | Hrs. |
|---|---|---|
| 1 | Perform Wet Etching Process to prepare a basic PCB circuit. | **02** |
| 2 | Create AI-based Automatic Fan Speed Control**.** | **02** |
| 3 | Perform Cleat Wiring Installation on practice board. | **02** |
| 4 | Demonstrate Motor Protection using MCB/Overload Relay**.** | **02** |
| 5 | LDR Based Automatic Day/Night Lighting System. | **02** |
| 6 | Study of Different Types of Smart Lights. | **02** |
| 7 | Demonstrate Casing & Capping Wiring**.** | **02** |
| 8 | Design a Fault Alert System using Buzzer + IoT**.** | **02** |
| 9 | Identify and Test Single Phase Induction Motor**.** | **02** |
| 10 | Identification, Drilling and Component Mounting on PCB. | **02** |

**Note**: Minimum Eight Experiments should be performed by the students from the above given list. Or any other experiments related to above topics.

**List of Laboratory/Learning Resources Required:** • Copper clad PCB board
PCB layout printout (laser print),Ferric Chloride ($FeCl_3$) solution,Plastic etching tray,Temperature sensor (DHT11 / LM35), Triac dimmer module / PWM module, DC Fan / AC Fan (with safety), Single phase motor, MCB (Miniature Circuit Breaker), Thermal Overload Relay, Contactor (if required), Starter panel, LDR (Light Dependent Resistor), Resistors, Transistor / Relay module, LED / Bulb, NodeMCU / ESP8266, Buzzer module

**References/Suggested Learning Resources:**

**(a) Books:**

1. Workshop Technology (Soldering, Brazing & PCB) by **Raghuwanshi & Gupta** – Dhanpat Rai
2. Electrical Technology by **B.L.Therja,** S.Chand Publication

**(b) Open source software and website:**

1. https://nptel.ac.in/