

# LESSON PLAN

## ELECTRICAL AND ELECTRONICS MEASUREMENT

3rd Semester Diploma in Electrical Engineering (SCTEVT  
Odisha)



Name of the Faculty-

**SIBANANDAPATHY**

Total Periods Assigned: 45 Periods (Theory)

10<sup>th</sup> Sep 2025 – 23<sup>rd</sup> Dec 2026

(15 weeks)

## DEPARTMENT OF ELECTRICAL ENGINEERING

### VISION:

To produce Electrical Engineer professionals who can contribute for socio-economic and technological development to meet global needs.

### MISSION:

**M1** - To strengthen academic infrastructure leading to quality professional by using modern technical tools and technologies.

**M2** - To impart innovative knowledge among the students and make more industry-institution programs to make them successful professionals for serving the society.

**M3** - To provide a learning environment to improve problem solving abilities, leadership abilities, ethical responsibilities and lifelong learning.

### PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

**PEO1:** Apply electrical engineering knowledge and practical skills to solve well-defined engineering problems using modern tools and techniques.

**PEO2:** Perform effectively in industry and society as competent junior engineer, supervisors, or entrepreneurs with ethical and sustainable engineering practices.

**PEO3:** Demonstrate teamwork, communication, leadership, and project management skills in professional engineering activities.

**PEO4:** Engage in lifelong learning and adapt to emerging technologies for career growth and higher education.

### PROGRAM SPECIFIC OUTCOMES

The electrical diploma engineers will be able to:

**PSO1:-**Apply the fundamentals of mathematics, science and engineering knowledge to identify, formulate, design and investigate engineering problems of electric circuits, analog and digital electronics, control system, electrical machines and power system.

**PSO2:-** Apply the appropriate techniques and modern engineering hardware and software tools in electrical engineering to engage in life-long learning and to successfully adapt in multidisciplinary environments.

**PSO3:-**Work professionally in power systems engineering, Electrical machinery and electrical circuit.

## Period Distribution

| Unit | Topic                                            | Periods |
|------|--------------------------------------------------|---------|
| I    | Fundamentals of Measurement                      | 10      |
| II   | Measurement of Voltage and Current               | 9       |
| III  | Measurement of Electric Power                    | 9       |
| IV   | Measurement of Electric Energy                   | 7       |
| V    | Circuit Parameter Measurement: CRO, other meters | 10      |

## Period wise Topic distribution

| Class No. | Topics to be Covered                              |
|-----------|---------------------------------------------------|
| 1         | Measurement Fundamentals                          |
| 2         | Units and Standards                               |
| 3         | Classification of Instruments                     |
| 4         | Null and Deflection Instruments                   |
| 5         | Analog and Digital Instruments                    |
| 6         | Errors in Measurements                            |
| 7         | Static Characteristics                            |
| 8         | Dynamic Characteristics                           |
| 9         | Calibration Techniques                            |
| 10        | Indicating, Recording and Integrating Instruments |
| 11        | DC Ammeter                                        |
| 12        | DC Voltmeter                                      |
| 13        | Multi-range Instruments                           |
| 14        | Universal Shunt                                   |
| 15        | Instrument Transformers                           |
| 16        | AC Measurements                                   |

| Class No. | Topics to be Covered         |
|-----------|------------------------------|
| 17        | PMMC Instruments             |
| 18        | PMMI Instruments             |
| 19        | Comparison of PMMC and PMMI  |
| 20        | Dynamometer Wattmeter        |
| 21        | Wattmeter Errors             |
| 22        | Active Power Measurement     |
| 23        | Reactive Power Measurement   |
| 24        | One Wattmeter Method         |
| 25        | Two Wattmeter Method         |
| 26        | Three Wattmeter Method       |
| 27        | Power Factor Effect          |
| 28        | Maximum Demand Indicator     |
| 29        | Electronic Energy Meter      |
| 30        | Energy Meter Errors          |
| 31        | Energy Meter Calibration     |
| 32        | Resistance Measurement       |
| 33        | Kelvin Double Bridge         |
| 34        | Megger and Ohmmeter          |
| 35        | Anderson Bridge              |
| 36        | Schering Bridge              |
| 37        | CRO Fundamentals             |
| 38        | Digital Storage Oscilloscope |
| 39        | Earth Tester                 |
| 40        | Digital Multimeter           |
| 41        | LCR Meter                    |
| 42        | Frequency Meter              |

| Class No. | Topics to be Covered |
|-----------|----------------------|
| 43        | Signal Generator     |
| 44        | Revision             |
| 45        | Revision             |

**SIGNATURE BLOCK**

Faculty Signature: \_\_\_\_\_

HOD Signature: \_\_\_\_\_