Academic Council Meeting No. and Date: 11/ June 27, 2025

Agenda Number: 3 Resolution Number: 52/ 3.4

Vidya Prasarak Mandal's

B. N. Bandodkar College of Science (Autonomous), Thane

Syllabus for Certificate Course on "Design and troubleshooting of Electric Switchboards"

With Effect From

Academic Year 2025-2026

Certificate Course on
“Design and troubleshooting of Electric Switchboards”
(2-Credits: 1T+1P)

This certificate course syllabus on electric switchboard making would cover fundamental electrical wiring principles, safety standards, and practical skills in assembling and installing components for various electrical distribution boards. The syllabus would likely include topics such as basic electricity, circuit types, wire selection, fuse and circuit breaker installation, and specific board configurations for residential, commercial, or industrial applications.

Here's a more detailed of what a syllabus includes:

Fees-1000/- + GST
Mode-Offline
Duration-1 Month

Course Code Theory BCCES041	**Certificate Course on "Design and troubleshooting of Electric Switchboards"**	**Credit 1T**	**No. of Lecture45 (15+30)**
Course Outcomes: CO1: Explain the fundamentals of electricity. CO2: Understand the electrical components and accessories.			
UNIT I	**1.** Fundamentals of electricity: Voltage, current, resistance, and power, Ohm's Law, Types of circuits: Series, parallel, and combination circuits.AC and DC, Electrical symbols and abbreviations, Conductors and Insulators, Wire selection and gauge, Earthing and grounding, Surface and concealed wiring, Testing and measuring: Using instruments like multimeters and megger. **2.** Electrical Components and Accessories: Fuses and circuit breakers, Switches: Types, wiring, and functions, Plugs and sockets, Distribution boards, Panel boards. Safety and Health Practices: Safety regulations and standards, Personal Protective Equipment (PPE), First aid and emergency procedures, Hazard recognition and mitigation		**15**

References:

1. Electrical Installations in the Building – Designing, Helena Rusak
2. Handbook of Electrical Design Details, 2nd Edition, Neil Sclater, The McGraw-Hill Companies, Inc.
3. Electrical Wiring Components and Accessories, (https://ncert.nic.in/vocational/pdf/kvdl103.pdf)

Course Code Practical BCCES041	Certificate Course on "Design and troubleshooting of Electric Switchboards"	Credit 1	No. of Lecture(30)

Course Outcomes:

CO1: Test for electrical components and perform basic wiring, soldering, and crimping using standard tools."

CO2: Design, install, test, troubleshoot, and maintain electrical components and switchboards for various applications."

Sr. No.	Experiment Title (1P= 30Hrs)	
1.	Use of multimeter.	
2.	Testing of Resistors, capacitor, diode, fuse etc.	
3.	Study of different types of switches, sockets and plugs.	
4.	Study and selection of wiring for different switchboards.	
5.	Study of components soldering and crimping.	
6.	Wiring diagrams and plans: Reading and interpreting electrical diagrams.	
7.	Installation of electrical components: Hands-on practice in wiring and assembling components.	
8.	Testing and troubleshooting common electrical problems: Identifying and fixing faults in circuits boards.	
9.	Maintenance and repair: Maintaining and repairing electrical equipment and installations.	
10.	Specific Switchboard configurations: Learning how to assemble boards for different applications (e.g., domestic, commercial, industrial).	
	References: 1. Electrical Installations in the Building – Designing, Helena Rusak 2. Handbook of Electrical Design Details, 2nd Edition, Neil Sclater, The McGraw-Hill Companies, Inc. 3. Electrical Wiring Components and Accessories, (https://ncert.nic.in/vocational/pdf/kvdl103.pdf)	