



# ELECTRICAL DESIGN AND DRAUGHTING

**AS PER BS & NEC STANDARD**

## **INTRODUCTION - ELECTRICAL DESIGN AND DRAUGHTING**

Electrical Engineering is the branch of engineering science that specializes in the Electrical design, construction, and practical use of electrical systems. Electrical system design deals with analysis and application of Power transmission and Distribution, Lighting systems, telecommunication, fire alarm systems, Closed Circuit Television and Public addressable systems.

## **DESCRIPTION**

This Diploma Certificate program covers the full design and analysis of Electrical Building Services from the fundamentals to Power System design, Wiring and Cable Management Systems, Lighting systems, Earthing Design and Calculations, Fire Alarm Systems, HVAC and STP Controlling Systems, Communication systems like Networking, Security Surveillance Systems like CCTV, Access control System etc.

## **TRAINING FACILITIES**

- Experienced Engineers as Faculties.
- Excellent Materials Provided. (Manuals, Demo softwares, Design Chart, Drawings of sample Projects etc.
- Excellent and Efficient Placement Cell

# **ELECTRICAL DESIGNING AND DRAUGHTING - COURSE CONTENT**

## **FUNDAMENTALS**

- Electricity - Definition, Units, & Symbols
- Basics & Importance of Electricity
- Electrical codes & standards.
- Generation, Transmission & distribution system
- Introduction to electric motor, drives, starters etc.

## **WIRING AND CABLE MANAGEMENT SYSTEMS**

- Rules & regulations.
- Types & selection Of wiring systems
- Applications and Selection of switches & sockets.
- Applications and Selection of wires and cables.
- Lighting, power circuit wiring diagrams.
- Conduit Layout Design.
- Load schedule & Load balancing.
- Selection of MCB Distribution Boards.
- Standard heights of mounting accessories.

## **LIGHTING MANAGEMENT SYSTEM**

- Lighting Schemes.
- Lighting load estimation and designing of lighting panel.
- Types and application of luminaries.
- Lighting designing of Auditoriums and Theaters
- Lighting designing for interior decoration and landscape.
- Emergency lighting system.

## **POWER DISTRIBUTION SYSTEM**

- Types & selection of Circuit Breakers.
- Importance & application of VCB, ACB, MCCB & MCB
- Residual Current Devices
- Isolators and SDF (Switch Disconnecting Fuse)
- Capacitors, Resistor and Reactors.

- Selection of AMF (Automatic Main Failure) & APFC (Automatic Power factor Correction) Panel
- Under Ground cable type & selection.
- LT Panel Board Design.
- Coordination with HVAC, Plumbing, Firefighting, Mechanical systems like Chillers, AHU, FCU, water and Drainage pumps, Firefighting Pumps etc.
- Switchgears-types and selection.
- UPS & Inverters.

### **EARTHING & LIGHTNING PROTECTION SYSTEM**

- Earthing Systems (Types Method and Installation).
- Lightning Protection Systems.

### **TRANSFORMERS & GENERATORS (HT)**

- Types and Selections.
- Installation - Rules and Regulations.
- Parallel operation of transformers and generators.
- Internal Connections & Testing.

### **ELECTRICAL DESIGN CALCULATIONS**

- Calculating the Total power requirements
- Circuit Breaker selection & Design calculations..
- RCBO/ELCB selection & Design calculations..
- Branch & Main feeder cable sizing, selection & calculation.
- Determining cable trays and trenches.
- Busbar selection and Design.
- Earthing cable selection and Design.
- Total connected load & Maximum demand calculation based on Diversity factor.
- Load distribution schedule & load balancing calculations.
- Transformer selection & Design calculations.
- Generator selection & Design calculations.
- Capacitor bank selection.

- UPS selection & Design calculations.
- Battery selection & Design calculation.
- Voltage Drop calculations.
- Fault level calculations.
- Preparation of Schematic diagram (One Line Diagram) - Residential, High rise, Commercial and Industrial buildings.
- Introduction to structural
- Introduction to HVAC & sewage treatment plant

#### **ELECTRICAL SOFTWARES**

- RELux
- CGLux
- ANIXTER
- BUSBAR

#### **ELECTRICAL SYSTEM DRAUGHTING (CAD)**

- Basics of Electrical CAD.
- Preparation of Lighting, Power, Communication and Earthing layout.
- Preparation of Schematic Diagrams.
- Physical layout of transformers, Generators & Panel Boards.
- Preparation of general installations and sections
- Schematic Drawings

#### **REVIT MEP (OPTIONAL)**

#### **PROJECT MANAGEMENT**

- Project Planning and Estimation.
- Preparation of BOQ.
- Tendering.