

Syllabus

Electrical Design Master Course ⚡

Electrical Design Course

ELECTRICAL DESIGN

LIGHTING DESIGN

- Lighting Layout
- Illumination Calculations
- Fixture Selection



SYSTEMS DESIGN

- Earthing System
- Lightning Protection
- Power Factor Correction



POWER DISTRIBUTION

- Load Calculations
- Cable Sizing
- Single Line Diagram



ELECTRICAL SERVICES

- Switchgear & Panel Boards
- Cable Trays & Conduits
- Backup Power (DG/UPS)



SAFETY & CONTROL

- Fire Alarm System
- Emergency Lighting
- Exit Signage



Kochi | Kozhikode | Coimbatore | Thrissur | Thiruvananthapuram

WHY CHOOSE THE ELECTRICAL DESIGN COURSE?

Build a successful career as an Electrical Design Engineer by mastering building electrical systems, design calculations, lighting, power distribution, and electrical documentation through practical training and real commercial building projects.

WHAT YOU WILL MASTER

- Electrical Building Services
- Electrical Load Calculations
- Lighting System Design
- Cable & Raceway Design
- Power Distribution System Design
- Earthing & Lightning Protection
- ELV & Building Services Integration
- Electrical Drawings, SLD & Documentation

WHO'S IT FOR?

- Electrical Engineering Students & Graduates
- Diploma Holders in Electrical Engineering
- Freshers aspiring to become Electrical Design Engineers
- Working Professionals looking to build or advance their career in Electrical Design Engineering

WHY BIM CAFE LEARNING HUB?

- Autodesk Authorized Academic Partner
- Industry Experienced Trainers
- Practical Project-Based Learning
- Real Commercial Building Projects
- Industry Standard Curriculum (NEC / IEC Standards)
- Job Placement Assistance
- Small Batch Size for Personalized Learning

PLACEMENT SUPPORT

- Live interview preparation
- Portfolio development
- Industry-standard projects
- Placement assistance

PREREQUISITES

- No prior Electrical Design experience required.
- Basic knowledge of Electrical Engineering or Diploma-level technical concepts is beneficial.
- Passion to build a career in Building Electrical Design.

COURSE OVERVIEW

Duration: 2 Months (80–100 Hours Including Project Practice)

5 Days / Week | 2 Hours / Day

Key Highlights

- Complete Electrical Design Training
- Learn Electrical Design Concepts & Engineering Calculations
- Hands-on Software Training
- Real Commercial Building Project
- Industry-Oriented Curriculum
- Placement-Oriented Training

SOFTWARE COVERED

Software Covered	
AutoCAD	 AutoCAD
Microsoft Excel	
DIALux evo	DIALux evo

Codes & Standards Covered
NEC (National Electrical Code)
IEC Standards
Local Authority Requirements
Electrical Symbols & Abbreviations

CORE SYLLABUS

AutoCAD

1. Introduction & Interface

- AutoCAD basic concept
- AutoCAD interface & navigation
- Units, limits, snap, and grid setup

2. Basic Drawing Tools

- Line, Circle, Arc, Rectangle, Polygon, Ellipse
- Coordinate input (Absolute, Relative, Polar)
- Object selection methods

3. Modify Tools

- Move, Copy, Rotate, Mirror, Scale
- Trim, Extend, Offset, Fillet, Chamfer

4. Layers & Properties

- Layer creation and management
- Line types, colors, thickness
- Object properties control

5. Annotations & Dimensions

- Text (Single-line and Multi-line)
- Dimensions and styles
- Leaders, multileaders, hatching

6. Blocks & Layouts

- Creating/inserting blocks
- Viewports, Model space vs Paper space
- Introduction to dynamic blocks
- Title Block
- Shop Drawing

ELECTRICAL

Module 1 –

Introduction to Electrical Building Services

Fundamentals of Building Services

- Introduction to Building Services (MEP)
- Role of an Electrical Design Engineer
- Electrical Systems in Buildings
- Electrical Design Workflow
- Reading Architectural & Structural Drawings

Electrical Fundamentals

- Basics of Electricity
- Electrical Units & Symbols
- Voltage, Current, Power & Energy
- Single Phase & Three Phase Systems
- AC & DC Systems
- Generation, Transmission & Distribution System

Codes & Standards

- Introduction to NEC / IEC Standards
- Local Authority Requirements
- Electrical Symbols & Abbreviations

Module 2 – **Electrical Load Calculations & Design**

Load Estimation

- Connected Load Calculation
- Demand Load Calculation
- Demand Factor
- Diversity Factor
- Load Classification
- Panel Load Estimation

Electrical Design Calculations

- Load Schedule Preparation
- Panel Schedule
- Load Balancing
- Voltage Drop Calculation
- Cable Sizing
- Cable Tray & Trunking Sizing
- Fault Level Calculation
- Capacitor Bank (Power Factor Correction)

Module 3 – **Lighting System Design**

Lighting Fundamentals

- Lighting Terminology
- Lighting Design Standards
- Types of Lighting Schemes

Lighting Design

- Lighting Load Estimation
- Lighting Fixture Selection
- Types of Luminaires
- Indoor Lighting Design
- Landscape Lighting
- Emergency Lighting
- Exit Signage

Lighting Calculations

- Lux Level Requirements
- Lighting Panel Design
- Introduction to DIALux Software

Module 4 –

Wiring, Cable & Raceway Design

Wiring Systems

- Electrical Wiring Methods
- Wiring Regulations
- Wiring Accessories
- Switches & Socket Selection

Cable Design

- Types of Wires & Cables
- Cable Selection Criteria
- Cable Routing
- Conduit Layout Design
- Cable Tray Layout
- Trunking Layout
- Cable Supports (Introduction)

Electrical Drawings

- Lighting Circuit Diagrams
- Power Circuit Diagrams
- Single Line Diagram (SLD)
- Typical Wiring Details

Module 5 – Power Distribution System Design

Distribution System

- Electrical Distribution System
- Distribution Boards
- LT Panel Design
- Panel Components

Protective Devices

- MCB
- MCCB
- ACB
- VCB
- RCCB
- RCBO
- Isolators
- Switch Disconnect Fuse (SDF)

Backup Power System

- Automatic Transfer Switch (ATS)
- Automatic Mains Failure (AMF)
- UPS (Introduction)

Module 6 –

Transformers, Generators, Earthing & Lightning Protection

Transformers & Generators

- Transformer Types
- Transformer Selection Basics
- Generator Types
- Generator Selection Basics
- Installation Guidelines

Earthing System

- Purpose of Earthing
- Types of Earthing Systems
- Earthing Components
- Earthing Design Basics

Lightning Protection

- Lightning Protection Principles
- Air Terminals
- Down Conductors
- Earthing for Lightning Protection

Module 7 –

ELV & Building Services Integration

Fire Alarm System

- Fire Alarm System Components
- Detector Types
- Manual Call Points
- Notification Appliances
- Basic Fire Alarm Layout

Structured Cabling

- Telephone System
- Data Network
- Structured Cabling

Security Systems

- CCTV
- Access Control
- Video Intercom

Building Automation

- Building Management System (BMS)
- Basic HVAC Integration
- Energy Monitoring

Other ELV Systems

- Public Address System (Introduction)
- Nurse Call System (Introduction)
- SMATV/CATV (Introduction)

Module 8 – Electrical Drawings, Coordination & Documentation

Electrical Drawings

- Power Layout
- Lighting Layout
- Small Power Layout
- Conduit Layout
- Cable Tray Layout
- Panel Schedule
- Single Line Diagram (SLD)
- Electrical Details

Multidisciplinary Coordination

- Coordination with Architecture
- Coordination with HVAC
- Coordination with Plumbing
- Ceiling Coordination
- Shaft Coordination
- Equipment Clearance

Documentation

- Equipment Schedule
- Cable Schedule
- Quantity Take-Off (Introduction)
- Shop Drawing Basics

Practical Assignments

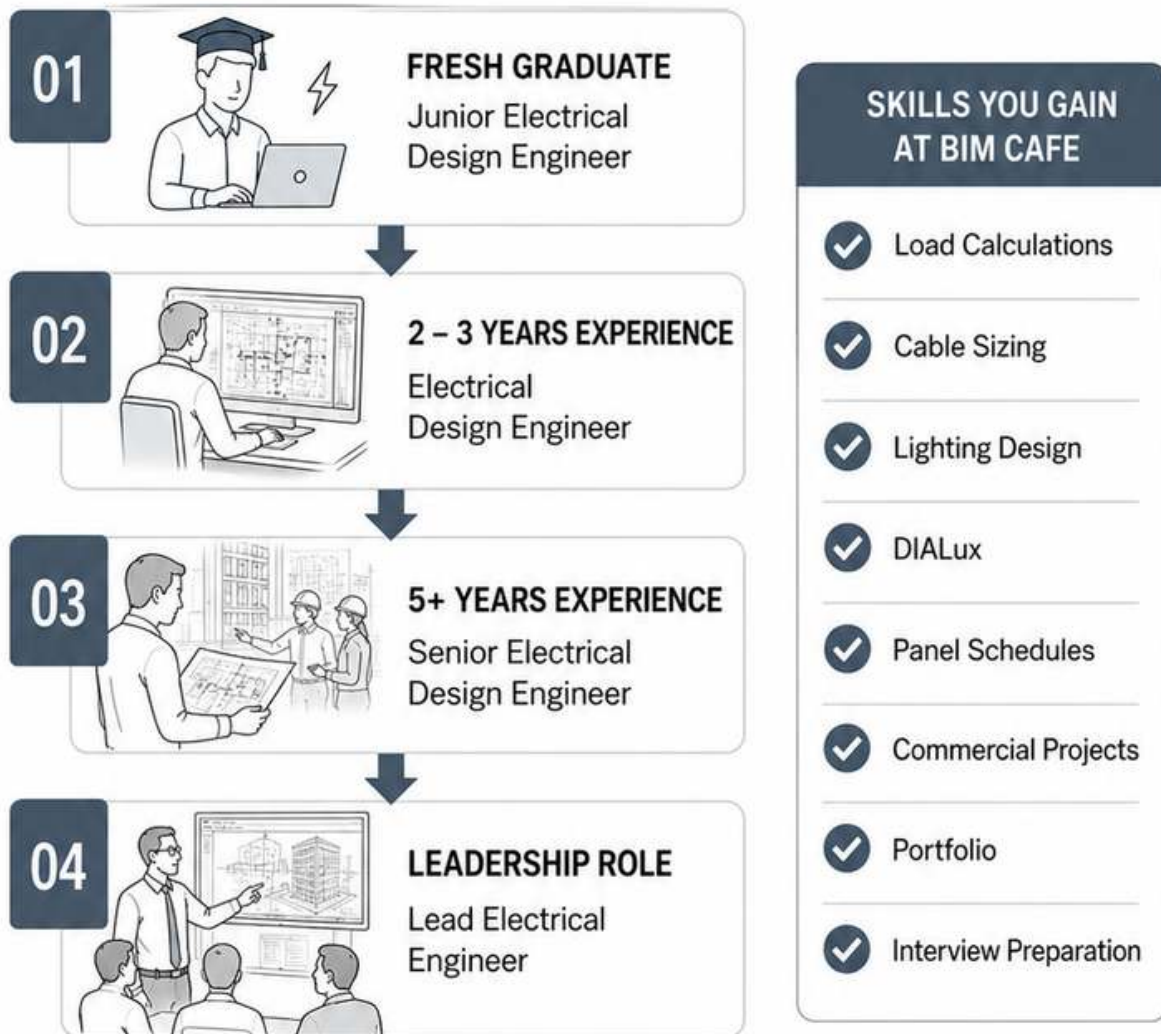
- Load Calculation
- Lux Level Calculation

COURSE OUTCOME

Upon successful completion, students will be able to:

- ✓ Understand Electrical Building Services Fundamentals
- ✓ Perform Electrical Load Calculations
- ✓ Design Indoor & Outdoor Lighting Systems
- ✓ Prepare Cable Sizing & Voltage Drop Calculations
- ✓ Create Panel Schedules & Single Line Diagrams (SLD)
- ✓ Design Power Distribution Systems
- ✓ Prepare Electrical Layouts & Shop Drawings
- ✓ Understand Earthing, Lightning Protection & ELV Systems
- ✓ Develop Electrical Drawings using AutoCAD
- ✓ Apply Industry Standards (NEC / IEC) in Electrical Design

SEE YOUR CAREER GROWTH BEFORE YOU EVEN START



**YOUR CAREER DOESN'T START AFTER GRADUATION.
IT STARTS WITH THE RIGHT SKILLS.**



Become Industry Ready with Expert Training & Real Projects

WHY DESIGN INSTEAD OF SITE?

Choose a career that offers stability, growth and global opportunities.
Here's how Electrical Design Engineering stands apart.

SITE ENGINEER	VS	ELECTRICAL DESIGN ENGINEER
		
 Outdoor work Exposed to weather and site conditions		 Office-based role Comfortable, professional and stable environment
 Long hours Extended working hours & physical stress		 Design calculations Work on load, cable, lighting & power system design
 Frequent travel Site-to-site travel away from home		 Software-focused work Use industry-leading tools like AutoCAD, Dialux, etc.
 Limited growth Growth may be slow and role-specific		 High growth potential Clear career path with more responsibility & leadership
 Physical effort Requires physical presence & supervision	 Global opportunities Work on consultancy projects & international assignments	



DESIGN YOUR FUTURE.
WORK SMART. GROW FAST. GO GLOBAL.



Become Industry Ready with Expert Training & Real Projects

CAREER OPPORTUNITIES

After completing this course, students can pursue careers in the following industries and apply for positions such as:

Industries

- MEP Consultancy Firms
- Electrical Design Consultancies
- Construction Companies
- EPC Companies
- BIM Companies
- Facility Management Companies
- Infrastructure Projects
- Commercial Buildings
- Hospitals
- Hotels
- Airports
- Industrial Projects
- Oil & Gas Projects
- Data Centers

Job Roles

- Electrical Design Engineer
- Junior Electrical Design Engineer
- Electrical Draftsman
- Building Services Engineer (Electrical)
- Electrical CAD Engineer
- Lighting Design Engineer
- Electrical Project Engineer
- Electrical BIM Engineer (after learning Revit MEP/BIM)

**Start Your Journey Toward Becoming an Electrical
Design Engineer**