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المكتب الهندسي لخدمات التكنولوجيا والبرمجيات

Engineering office for Technology and Software Services

## Course Plan: AutoCAD Electrical



Code: 7015-EL

Title: AutoCAD Electrical for Electrical Drafting and Intelligent Design

Main Branch: United building – E Shams –Front NBE  
, El Siouf \_Alexandria

Tel: 01102060500-01144470856



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## ◆ Introduction

AutoCAD Electrical is a specialized design tool for creating electrical control systems and schematics. It enhances productivity by automating common design tasks and improving accuracy in drafting.

## ◆ Description

This course equips learners with the skills to efficiently use AutoCAD Electrical to design, edit, and manage electrical schematics and intelligent wiring diagrams. The course includes hands-on projects that simulate real-world electrical design tasks for industries and automation systems.

## ◆ Objectives

- Understand the fundamentals of AutoCAD Electrical.
- Create and modify professional electrical schematics.
- Automate reports and design intelligent electrical systems.
- Manage electrical projects and integrate with PLC systems.

## Course Detailed Outline

### Module 1: Introduction to AutoCAD Electrical

**Duration:** 5 Hours

**Objective:** Understand the software environment and basic functionalities.

#### Topics:

- Overview of AutoCAD Electrical and its benefits vs. AutoCAD.
- Software installation and licensing.

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- Navigating the user interface:
  - Tool palettes
  - Project manager
  - Command line
- Project setup and file organization:
  - Creating a new project
  - Configuring drawing properties and templates
- Keyboard shortcuts and productivity tools.

## Module 2: Creating and Editing Electrical Schematics

**Duration:** 10 Hours

**Objective:** Learn to build complete electrical circuits and diagrams.

**Topics:**

- Drawing and editing electrical circuits using schematic tools.
- Inserting electrical components:
  - Wires, connectors, relays, switches, motors
  - Wire types and layers
- Wire numbering and tagging.
- Cross-referencing and linking between drawings.
- Adding and editing terminals and terminal strips.
- Assigning and editing component tags.

## Module 3: Symbols and Libraries

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**Duration:** 4 Hours

**Objective:** Work efficiently with electrical symbols and custom libraries.

**Topics:**

- Introduction to symbol libraries (NFPA, IEC, JIC).
- Inserting standard symbols and custom blocks.
- Creating new custom symbols and adding them to libraries.
- Symbol attribute editing and management.
- Use of manufacturer catalogs and part numbers.

## Module 4: Smart Design Automation Tools

**Duration:** 5 Hours

**Objective:** Automate repetitive design tasks and reporting.

**Topics:**

- Generating automatic reports:
  - Bill of Materials (BOM)
  - Wire list reports
  - From/To wire reports
  - Component and terminal reports
- Managing PLC input/output (I/O) modules:
  - Inserting PLC I/O drawings
  - Address assignment and ladder diagrams
- Re-tagging and component updates across projects.
- Error checking and diagnostics tools.

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## Module 5: Project and File Management

**Duration:** 3 Hours

**Objective:** Organize projects and maintain drawing standards.

### Topics:

- Organizing drawings in a project.
- Setting up project-wide drawing properties.
- Creating drawing templates with title blocks and revision control.
- Backup, archive, and restore project files.
- Multi-user environment: managing collaboration and versioning.

## Module 6: PLC Integration and Advanced Tools

**Duration:** 3 Hours

**Objective:** Apply AutoCAD Electrical to real-world PLC design and controls.

### Topics:

- PLC layout design and schematic integration.
- Interfacing with ladder logic diagrams.
- Exporting and importing data between PLC software (e.g., RSLogix or TIA Portal).
- Using AutoCAD Electrical to simulate control logic.

## Module 7: Final Project and Assessment

**Duration:** Included in lab time (approx. 5 Hours)

**Objective:** Design a full electrical project applying learned skills.

### Tasks:

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- Design and simulate an industrial motor control circuit.
- Generate reports and documentation package.
- Present and review project with instructor.



## Tools and Software

- **Software:** AutoCAD Electrical (latest version)
- **Additional:** Microsoft Excel, PDF for reports
- **Optional:** RSLogix / Siemens TIA Portal (for PLC logic review)



## Final Notes

- **Prerequisites:** Basic electrical knowledge and computer literacy.
- **Certification:** A certificate of completion will be awarded after finishing the course and final project.

## What You Will Learn

- User interface and key tools of AutoCAD Electrical
- Creating and editing electrical drawings
- Working with symbols, wire numbers, and connections
- Using libraries and customizing symbols
- Generating automatic reports (BOM, wire lists, etc.)
- Project management and organization in electrical design

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- Integration with PLC control logic diagrams

### ◆ Target Audience

- Electrical Engineers and Control Engineers
- Electrical Designers and Drafters
- Industrial Automation Technicians
- Engineering Students in Electrical or Mechatronics programs

### ◆ Materials

- Computer with AutoCAD Electrical installed
- Sample electrical design projects
- Symbol libraries and templates
- Course workbook and guided exercises
- PLC logic examples (for integration module)

### ◆ Instruction Methods

- Interactive lectures with software demonstrations
- Step-by-step guided exercises
- Hands-on project design and review
- Group discussions and design critiques
- Practical assignments and real-time feedback

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## ◆ Time Frame

**Total Duration:** 30 training hours

- 15 hours of theoretical instruction
- 15 hours of hands-on labs and real-world projects

### **Flexible Scheduling:**

- 3 weeks (2–3 sessions/week) or intensive 1-week delivery

## ◆ Course Format

- **Delivery Options:** On-site or Online (Live Virtual Sessions)
- **Tools Used:** AutoCAD Electrical
- **Assessment Methods:**
  - Weekly quizzes and progress reviews
  - Final design project evaluation

## ◆ Learning Outcomes

By the end of this course, participants will be able to:

- Confidently navigate AutoCAD Electrical and use essential tools
- Design clear, standardized electrical schematics
- Customize and organize symbol libraries
- Automate wire numbering and report generation
- Manage electrical design projects efficiently
- Integrate AutoCAD Electrical with PLC diagrams

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