

ESTABLISHED IN 1982

ELECTRIC POWER SYSTEMS Engineering COMPANY (EPS)



EPS TRAINING CENTRE



EPS TRAINING CATALOG



facebook

2022

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Company Summary



كشركة رائدة في مجال الإستشارات والدراسات الهندسية بخبرة تزيد عن ٣٠ عام في مشاريع محطات التوليد والنقل ونظم التوزيع للطاقة الكهربائية نقدم لكم دورات احترافية ومتكاملة في مجالات تصميم محطات المحولات والوقاية في منظومة القوي الكهربائية وشبكات الجهد المتوسط بالتعاون مع محاضرين في كبري الشركات العالمية

We developed and added new contents to our diplomas and started new diplomas for the first time.

You can get the details of each diploma by following the page and visiting our site.

Join the schedule and register your seat right now

Introduction

EPS (Electric Power Systems Engineering Company) is a consultant company specialized in carrying out consulting and engineering services in the field of Electric Power Systems.

EPS, a joint-stock Egyptian Company, established in October 1982 according to the laws of the General Authority for Investment and Free Zones.

EPS is offering services in the fields of electric power generation, transmission, distribution, control & communication, and information systems.

The services covered include power system planning, techno-economic feasibility studies, power system design, and preparation of tender documents, bid evaluation, contracting support, and project management.

EPS is ISO 9001 /2015 certified since February 1.2001 Until June 2023.

EPS has developed extensive packages of software applications oriented to automate managerial and financial processes, as well as, to support management decision-making.

Furthermore, EPS participated in international consultancy and contracting services for various Arab & African countries. During the last 30 years, EPS has succeeded to increase its scope of services extensively, and successfully, undertaken to cover a wide range of activities for more than 5000 projects. The company has also been engaged in several consulting and engineering services for generation, transmission and distribution projects in Arab and African Countries. EPS is a recognized leader in power systems analysis and network expansion planning, sub-stations, transmission lines, distribution networks, and SCADA projects. One of the main focuses of the Company is to deliver quality and cost-effective services that satisfy the customers to achieve customer satisfaction.



EPS is committed to provide quality and cost-effective engineering services in the field of electric power systems Services that fully meet the needs and expectations of every customer through expertise and standard of excellence. The company is also dedicated to use information technology to develop systems driven by customer need.

EPS also envisages expanding the services into business architecture and strategic Planning. Information technology is linked to business architectural and surveying issues to form an integral part of the business delivered to public sector, private sector and inter professional activities covering National and Regional markets.



Recognized by Major Organizations

EPS Company is recognized as a Consulting Firm by the agencies given below:



- The World Bank.
- The African Development Bank.
- The Arab Fund for Economic and Social Development.
- The Islamic Bank
- Kreditanstalt für Wiederaufbau (KfW).
- The United Nations Development Program.
- The Commission of the European Communities.
- European Investment Bank (EIB).

EPS is also a member of the Egyptian Syndicate of Engineers and the Federation of African Consultants.



About EPS Training Center

EPS training center Is Committed to Provide the trainees with the specific knowledge and skills necessary to effectively perform their work and developing their skills and improving their innovations and creativity to meet individuals, teams and organizations needs in the fields of Power Stations, substations, Transmission, Distribution, Communication, project management and Information Technology.



Rooms:EPS Equipped training facilities for formal class rooms, and all Facilities which are available in our company.

Practical Training: EPS organize a practical visit to under construction and commission sites to connect the theoretical illustration with the practical reality.

Registration and Payment Options: EPS provide a lot of options for registration and payment options.

Communication: EPS are interested to keep connection with our clients during and after courses.

Training Centre currently Services



We are Providing Professional and Complete Diplomas in the fields of Power Stations, substations, Transmission, Distribution, Communication, project management and Information Technology.

Current Diplomas Details

1. [Substation Primary Design \(Basic Level\)](#)
2. [Electrical Substation Design- Primary Workshop / Sample Project \(Advanced Level\)](#)
3. [Substation Secondary Design, Testing and Commissioning and SAS \(Basic Level\)](#)
4. [Substation Secondary Design, Testing and Commissioning and SAS \(Advanced Level\)](#)
5. [The Electrical design of overhead Transmission lines using PLS-CADD software for the \(EHV/HV\) systems](#)
6. [Complete Medium Voltage Networks Diploma](#)
7. [Electrical Distribution Diploma](#)
8. [ETAP course](#)
9. [Solar Energy](#)
10. [Introduction to Instrumentation, Control System \(Classic Control, PLC, DCS, PID\) & Control Valves](#)
11. [Mobile Training 2G and 3G Mobile communications Level 1](#)
12. [Mobile Training 4G&5G Level 2](#)
13. [MATLAB Programming, SIMULINK and App Designer \(GUI\)](#)
14. [AutoCAD Course](#)
15. [Revit-Electrical Modelling](#)
16. [Basic of Cost Estimation Works for Electrical Works](#)
17. [FIDIC Contracts Management Diploma](#)
18. [Construction Project Management](#)
19. [Inspection of Electrical Construction and Installation Training](#)



Tip: Use links to go to a different page inside the Catalog. Links work best for pages like this one!

Substation Primary Design (Basic Level)



Course Overview

This course is suitable for both new and experienced engineering and electrical staff involved in the substation field. It is very suitable for utility, consultant and contractor staff

This includes the following profile will greatly benefit:

- Design Engineers/ Technicians Consulting Engineers.
- Planners of Power Systems.
- Project Engineers.
- Site Engineer.
- Tendering Engineer.
- Quality Control Engineer.
- Seniors technical Engineers who seek to learn about the high voltage substations.



Substation Primary Design (Basic Level)



The main topics of our diploma

1- Primary Part:

- Configuration of EHV & HV Substation (introduction, used for &types).
- Substation general layout
(preparation steps, input data, design stage, locate substation equipment &building, check Electrical clearance, detailed design stage, sections drawing, 3D model simulation).
- Detailed single line diagram
(basic line diagram and detailed line diagram).
- Gas insulated SWGR
(technical parameter for main high voltage equipment, current carrying parameter making, breaking &isolating parameter).
- Substation electro mechanical system (lighting, sockets, fire alarm, telephone system, mechanical system.... etc.)
- Earthing system
(introduction, soil measurements report, manual design calculation, design input parameters, earthing conductor size, touch &step voltage, main grid drawing preparation& equipment earthing).
- Lighting protection system
(introduction & risk assessment, system component, substation area classification, determine the coverage area for each structural& prepare lighting protection layout).
- Substation cabling
(cable design, cable laying criteria, current carrying capacity, cables list, equipment list, cable raceway, raceway types & relative application, raceway filling calculation report, civil guide drawings/information and prepare drawing).
- AC/DC system
(Auxiliary transformer design and sizing, ACDB, CB and cable sizing and design component and sizing).

2. GIS Part:

- GIS types according to rated voltage.
- Model of GIS in Egypt.
- GIS models (500KV, 220KV and 66 KV)
- Design procedures.
- SF6 Gas system. and SLD.
- Guarantee schedule.
- Types of GIS drawings.
- Internal construction of GIS along with photos and 3D model
- Installation steps and testing.

Electrical Substation Design- Primary Workshop / Sample Project (Advanced Level)



Preferred pre workshop Requirements

- Good Aware of Substation Equipment in Substation or Attend Electrical substation design Primary course.
- Good level of Auto-CAD or Micro-station
- Good Level of Excel

Expected Hours

15 Lectures in 3 Hours in addition to Home works
for trainers



Electrical Substation Design- Primary Workshop / Sample Project (Advanced Level)



The main topics of our diploma

1. PTS (Scope of Work)
2. Design Input Request.
3. MDL/DCS (Master Document List/Drawings Control Sheet)
4. Operational Single Line Diagram - OSLD
5. Overall Layout & Equipment arrangement
6. Earthing / Grounding
 - a. Grounding Calculation
 - b. Earthing Grid Layout & Details
 - c. Reinforcement Earthing Layout & Details
 - d. Equipment Earthing Layout
7. Lightning Protection / Shielding Layout & Calculation
8. Cable Raceway
 - a. H.V Cable Duct & Routing
 - b. M.V Cable Ducts & Routing
 - c. L.V & Control Cable Raceway
9. DC Auxiliary System
 - a. DC SLD
 - b. DC battery & Charge Sizing
 - c. DC C.B. & Cable Sizing
10. AC Auxiliary System
 - a. AC SLD
 - b. AC Auxiliary Transf. Sizing
 - c. AC C.B. & Cable Sizing
11. Indoor Lighting System
 - a. Indoor Lighting Calculation
 - b. Indoor Lighting Layout
 - c. Indoor Lighting SLD
12. Outdoor Lighting System
 - a. Outdoor Lighting Calculation
 - b. Outdoor Lighting Layout
 - c. Outdoor Lighting SLD
13. Auxiliary Small Power Layout
14. Overhead Cable trays & Routing
15. Purchase Specification & RFQ Sample.

Secondary Design, Protection, Testing and Commissioning and Substation Automation System (SAS) of High Voltage Substations (Basic Level)



Course Overview

Power System Protection & SAS are considered as one of the most promising future careers in and outside Egypt, for this purpose we prepare a complete diploma for all electrical engineering students, fresh graduates, juniors engineers.

Our instructor has +10 years of professional experience in the control and Protection field.
Pre-& Post course assessments will be used to measure the effectiveness of this training



Secondary Design, Protection, Testing and Commissioning and Substation Automation System (SAS) of High Voltage Substations (Basic Level)



The main topics of our diploma

1- Testing and commissioning

- S/S Control and protection Introduction
- Substation Components
- Current Transformer
- Potential Transformer
- Circuit Breakers
- Disconnect and Earth Switch
- Protection relay
- Types of faults in power system network
- protection theories (over current, differential, distance, bus bar protection ... etc.).
- Bus Bar protection (Low impedance, High Impedance) Concept.
- Simulation training (by Omicron Test Universe) on Basic Protection relay Case Study with the following function:
 - i. Over Current protection
 - ii. Earth Fault protection
 - iii. Circuit breaker failure protection

2- Base Design

- Operational Single Line Diagram (OSLD) & Protection Single Line Diagram (PLD).
- CT&VT Sizing Calculations for Metering and Protection Cores
- Interlocking Logic Diagram,
- Point List (SAS, TFR, SOE, SCADA)

3- Detail Design for schematics

- Local control Cabinet Panels (+LCC) function scheme
- Line feeder Protection Panels function scheme
- Transformer Protection Panels function scheme

4- Substation Automation System

- Introduction to Substation Automation System.
- SAS According to IEC 61850.
- Network Topology.
- Levels of Control.
 - a. Process Level.
 - b. Bay Level.
 - c. Station Level.
- IEC 61850 standard.

Secondary Design, Protection, Testing and Commissioning and Substation Automation System (SAS) of High Voltage Substations (Advanced Level)



Course Overview

Power System Protection & SAS are considered as one of the most promising future careers in and outside Egypt, for this purpose we prepare a complete diploma, Our instructor has +10 years of professional experience in the control and Protection field.

Our instructor has +10 years of professional experience in the control and Protection field.

Pre-& Post course assessments will be used to measure the effectiveness of this training on Students who seek to learn about high voltage substations.



Secondary Design, Protection, Testing and Commissioning and Substation Automation System (SAS) of High Voltage Substations (Advanced Level)



The main topics of our diploma



- Testing and commissioning

Protection relay

- Types of faults in power system network
- Protection theories (over current, differential, distance, bus bar protection ... etc.).
- Bus Bar protection (Low impedance, High Impedance) Concept.
- Simulation training on OHTL Protection relay Case Study (MICOM P546) with the following function:
- Line Differential
- Distance Fun. with Distance Communication Scheme (POTT, PUTT....)
- Directional Concept & Directional Earth Fault
- Over Current curves
- Circuit breaker failure protect

2- Detail Design for schematics

- Bus Bar Low Impedance Protection Panels function scheme
- Bus Bar High Impedance Protection Panels function scheme

3-Substation Automation System

- Introduction to Substation Automation System.
- SAS According to IEC 61850.
- Network Topology.
- Levels of Control.
 - a. Process Level.
 - b. Bay Level.
 - c. Station Level. - IEC 61850 standard.
- ICD, CID and SCD files
- CID file creation

The Electrical design of overhead Transmission lines using PLS-CADD software for the (EHV/HV) systems



Course Overview

The Electrical design of overhead Transmission lines using PLS-CADD is the most powerful overhead power line design program on the market and considered as one of the most promising future careers in and outside Egypt, for this purpose we prepare a complete diploma, It is very suitable for utility, consultant and contractor staff.

The Electrical design of overhead Transmission lines using PLS-CADD software for the (EHV/HV) systems



The main topics of our diploma



Electrical subjects (based on international standards IEC, IEEE.... etc.)

a. Course Contents:

1. Detailed concepts of EHV/HV OHTL system Design.
2. OHTL Design using PLS-CADD software
4. Tower types and tower families.
5. Conductors.
6. Shielding wires / OPGW.
7. Insulators and fittings.
8. Other line hardware.
9. Installation issues to be taken in care while designing lines.
10. Design drawings presentation.

b. Expected number of training hours.

Course full duration is 32 hours.

Complete Diploma in Medium Voltage Network



Course Overview

This course is specially related to electrical distribution system and structured to provide the participants with a strong background towards practical industry applications and updating them with the last standards of critical network components such as (Switchgear, transformers, cables, Ring main units...etc).

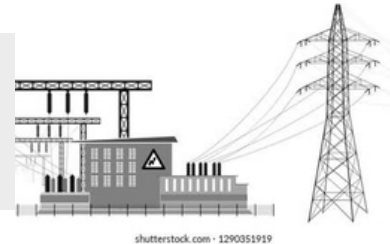
Our instructor is a qualified electrical engineer with 35 years of experience in Egypt , united Arab Emirates with many years of experience in managing, supervision, installation and commissioning of mega projects in distribution field.



Complete Diploma in Medium Voltage Network



The main topics of our diploma

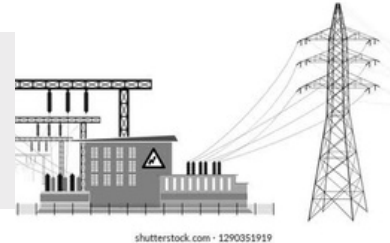


- **Distribution Switchgear**
- (Switchgear, theory and applications, Switchboards and switchgears, Single line diagrams & Protection Scheme, Substations – name plate data, Substation layouts.
- **Circuit Breakers**
- (Circuit breaker utilization, operation and earthing switches, Busbar configurations – single, double, sectionalized, Interrupter classification - mechanisms, motor - spring, hydraulic and solenoid, Fault Levels & MVA rating of equipment, Air insulated Switchgear, Gas insulated switchgear)
- **System Grounding & Equipment's Grounding**
- (Importance of Grounding Systems, System Grounding Methods, Equipment's Grounding, Main substation earthing and bonding, Quality of Good Earthing, Touch and Step Potentials)
- **Substation Operation, Maintenance & Inspection**
- (Isolation of Substation, Definition of Maintenance, Type of Maintenance, Preventive Maintenance of Transformers, Condition Maintenance of Transformers, Preventive Maintenance of Circuit Breaker, Condition Maintenance of Circuit Breaker)
- **Substation Testing & Commissioning**
- (Testing Procedures of MV Switchgear, Testing Procedures of LV Panel)
- **Cable Construction**
- (Basic Construction of electrical power cables, Conductor materials and configurations, Insulation materials for different applications and voltages, Stress distribution in single core and multi-core power cables, Importance of stress control, Use of armor for ground continuity and mechanical protection)
- **Cable Installation & Ampacity**
- (Voltage rating of cables and impact of system grounding method on voltage rating, Electrical breakdown of insulating materials, De-Rating Factors of Power Cable, Cable Laying, Cable pending & Pulling, Cable Bonding)

Complete Diploma in Medium Voltage Network



The main topics of our diploma



- **Joints and Terminations Theory**
- (Basic types of terminations and joints, Cable Types of connectors for cable terminations and joints, Requirements of terminations, Requirements of terminations, Prefabricated joints & Terminations, Contact of dissimilar materials and galvanic effects; use of bi-metal accessories)
- **Cable testing & Diagnosis**
- (Destructive, Non-Destructive & VLF test, Type test, Routine test, Factory Acceptance Test & Site Acceptance Test, Failures Analysis and Diagnostics, Reasons for failures, Partial Discharge (PD) Measurement, Tan Delta (TD) Measurement).
- **Cable Fault Location**
- (Type of cable faults, Test Van instruments, Pre-location of cable fault, Pinpoint location of cable fault, Cable Tracing, Cable Identification)
- **Transformer Principle & Construction**
- (What is Transformer? Structure of Transformer, Working Principle, Power Transformer Core, Transformer Windings, Transformer Insulation)
- **Transformer Principle & Construction Cont.**
- (Tap Changer, Transformer Tank, Conservator, Buchholz Relay, Transformer Oil, Transformer Accessories, Method of Cooling)
- **Transformers Types and Theory**
- (Types of Transformers, How A Transformer Works, Exciting Current & Coefficient of coupling, Effect of Load, Primary and secondary phase & Windings relationship, Transformer Losses & Efficiency)
- **Transformers testing**
- (Low Voltage Test, Measurement of voltage/Turns ratio, Measurement of winding resistance, Vector Group, Measurement of insulation resistance test and Polarization Index (PI), All Accessories Functional Test)
- **Transformer Installation, Operation, Maintenance & Overhauling**
- (Earthing of Neutral Point, Parallel operation of transformers, Transformer Installation, Transformer Maintenance, Transformer Overhauling)

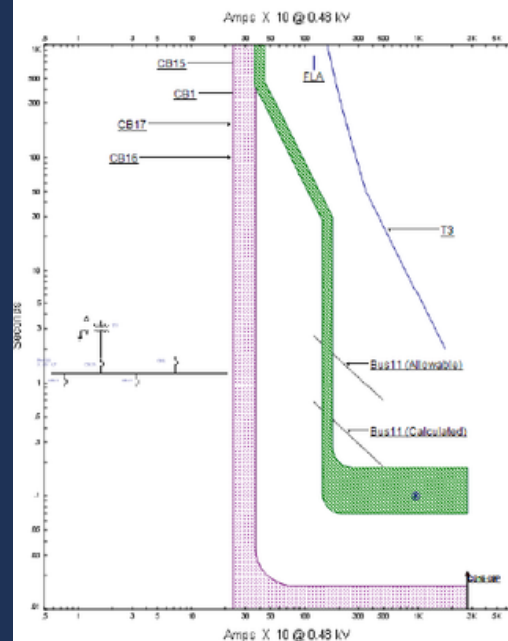
Pre- & Post course assessments will be used to measure the effectiveness of this training.

Electrical Distribution Diploma

Course Overview

Electrical Distribution diploma is considered one of the most promising future careers in and outside Egypt, for this purpose we prepare a complete diploma for all electrical engineering students, fresh graduates, juniors engineers.

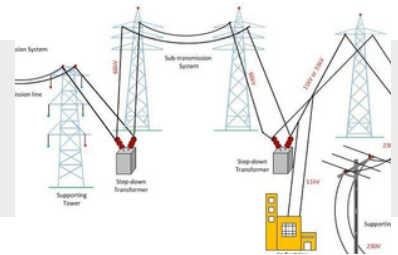
In this course, we will learn how to design Primary & Secondary Distribution Boards, the design of Earthing System for Electrical Substations using ETAP & Dailux for interior lighting System Design.



Electrical Distribution Diploma



The main topics of our diploma



1- INTRODUCTION

How electricity producing and transmission then distributed.

Electrical distribution components.

2- Ring main unit panels.

3- Medium voltage panels.

4- Distribution transformers .

Transformer rated power

Transformer earthing

Transformer percentage impedance

Transformer winding connection

Transformer K-factor

Transformer cooling

Transformer oil types

Transformer noise levels

Transformer nameplate and serial number

5- Emergency generator

Loads types in building

Generator types

Generator sizing

6-ATS

7-UPS

8-CABLES

Cables components

Cables selection

Cables installation methods

Cables classification

Cables tables

Cables current carrying ampacity

Cables Neutral specification

Cables disadvantages

Cables Voltage drop calculation

4- Bus ducts

Bus ducts uses

Bus ducts types

Bus duct accessories

5-Low voltage circuit breakers

Circuit breakers characterization

Miniature Circuit breakers

Molded case Circuit breakers

Air Circuit breakers

Ground fault Circuit breakers

Circuit breakers nameplate

a-Fuses

- Fuses work principles

- Fuses types

b-Branch circuits design

c-Main circuits design

d-Indoor lighting design manually

e- Indoor lighting design by dialux evo

f-Ground grid study

g-Ground grid calculation methods.

h-How to calculate number of rods?

i-How to calculate touch voltage?

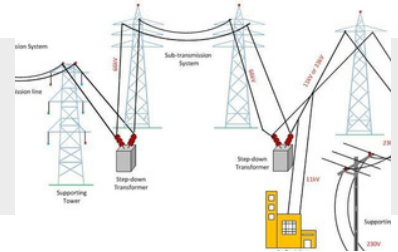
j-How to calculate step voltage?

k-How to calculate (GPR) ground potential rise.

Electrical Distribution Diploma



The main topics of our diploma



Programs that we will used and explain on course ETAP , DIALUX EVO & CYMGRD FOR GROUND GRID DESIGN

ETAP

1- Etap overview

How to draw single through etap ,how to attach any file to etap , how to link etap with any site on internet, how to use colors and layers for showing single line diagram, print setup, project toolbar, system toolbar and mode toolbar.

2- Elements

Bus, two winding transformers, cable, power grid, generator, induction motor, synch motor, static load, dynamic load, capacitor, phase adaptor, composite motor, composite network, fuse, low voltage circuit breaker, medium voltage circuit breaker, contactor and ups.

3-Presentations

How to present single line diagram and how to create difference presentations for same single line diagram

4- Configurations

How to make difference scenarios for same single line diagram (two out of three as example).

5- Revisions

How to revise your single line diagram data and edit without changing in the base data.

6- load flow study.

A-Voltage drop calculation.

B-Power factor calculation.

C-Load and source current calculation.

D-Cable sizing.

E-Transformer sizing.

F-Load flow module (info, loading, adjustment and alert).

G-How to run load flow through etap

7- Short circuit study

A- IEC 60909(What is meaning of short circuit, purpose of short circuit, types of short circuit and short circuit calculations)

B- Short circuit module (info, standard, adjustment, alert).

C- How to run three phase (symmetrical and asymmetrical) and single phase short circuit calculation through etap.

D- Fuse, low and medium voltage circuit breaker sizing.



Electrical Distribution Diploma



The main topics of our diploma



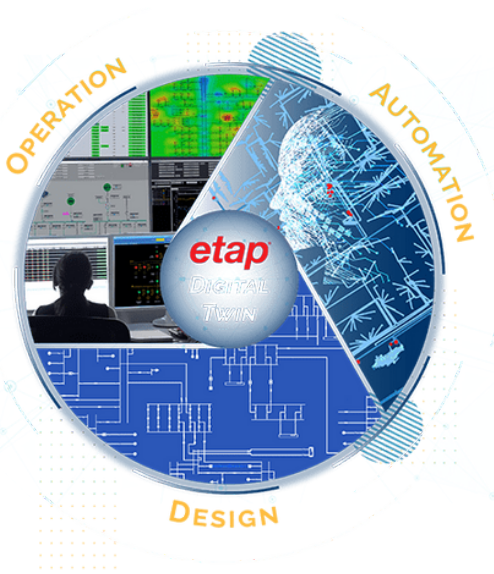
DIALUX EVO

- 1_ Download and Install Dialux evo
- 2_ Dialux Evo User Interface
- 3_ Importing Plans (DWG)
- 4_ Creating Simple Building
- 5_ Integrating Doors and Windows
- 6_ Roof Construction
- 7_ Importing Additional AutoCAD Drawing
- 8_ Adding Floors or Storeys
- 9_ Using Cut-out Tool
- 10_ Designing Floor Elements for Outdoor
- 11_ Integrating Objects
- 12_ Adding Room Elements
- 13_ Using Luminaire Catalogue
- 14_ Inserting and Arranging Luminaires
- 15_ Calculation and Results Overview
- 16_ Saving Image and Raytrace

GROUND GRID DESIGN COURSE

- 1-Effects of an electric current passing through the vital parts of a human body
- 2-TOUCH AND STEP VOLTAGE
- 3- Choice of material for conductors and related corrosion problems
- 4- GROUND CONDUCTOR SIZING
- 5- Soil characteristics
- 6- resistivity measurement
- 7-Soil treatment
- 8- Determination of maximum grid current
- 9- Design of grounding system
- 10-steps of the Design procedure
- 11-Calculation mesh and step voltage
- 12-GROUNDING EXAMPLE DESIGN-1
- 13-GROUNDING EXAMPLE DESIGN-2

ETAP Diploma



Course Overview

ETAP software provides electrical student or electrical engineers, operators, and managers a platform for continuous functionality from modeling to operation.

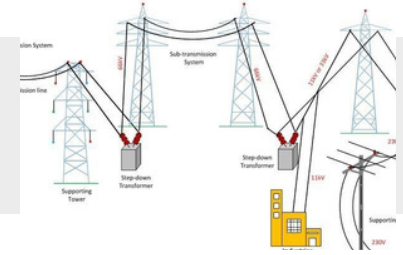
ETAP training is a practical DEMO software session to learn about the latest features and capabilities of ETAP enterprise solution software for electric power systems. Sessions are presented with extensive experience in ETAP and power systems. ETAP provides a solution for power system design, analysis, and operation needs. ETAP offers a comprehensive suite of analysis modules that can be configured to suit specific requirements.



ETAP Diploma



The main topics of our diploma



1- Etap overview

How to draw single line diagram through etap, how to attach any file to etap , how to link etap with any site on internet, how to use colors and layers for showing single line diagram, print setup, project toolbar, system toolbar and mode toolbar.

2- Elements

Bus, two winding transformers, cable, power grid, generator, induction motor, synch motor, static load, dynamic load, capacitor, phase adaptor, composite motor, composite network, fuse, low voltage circuit breaker, medium voltage circuit breaker, contactor and ups.

3- Presentations

How to present single line diagram and how to create difference presentations for same single line diagram.

4- Configurations

How to make difference scenarios for same single line diagram (two out of three as example).

5- Revisions

How to revise your single line diagram data and edit without changing in the base data.

Course modules:

Module # 1 LOAD FLOW STUDY

Upon successful completion of this Learning Outcome Guide, you will be able to understand

- Voltage drop calculation.
- Power factor calculation.
- Load and source current calculation.
- Cable sizing.
- Protective earthling cable sizing
- Transformer sizing.
- Load flow module (info, loading, adjustment and alert).
- How to run load flow through etap

Module # 2 SHORT CIRCUIT STUDY

Upon successful completion of this Learning Outcome Guide, you will be able to understand

- IEC 60909 (What is meaning of short circuit, purpose of short circuit, types of short circuit and short circuit calculations)
- Short circuit module (info, standard, adjustment, alert).
- How to run three phase (symmetrical and asymmetrical) and single-phase short circuit calculation through etap.
- Fuse, low and medium voltage circuit breaker sizing.

Module # 3 MOTOR ACCELERATION

Upon successful completion of this Learning Outcome Guide, you will be able to understand

- A- Effect of starting current on system.
- B- Static method.
- C- Dynamic method.
- D- Motor starting plot.
- E- How to modeling motor.



ETAP Diploma

Module # 4 STAR Device Coordination and Selectivity

Upon successful completion of this Learning Outcome Guide, you will be able to understand

- Instrument Transformers: CTs and VTs
- Instrument system types.
- Selection of instrument devices.
- the co-ordination procedures necessary to ensure dependable and secure, selective protection
- Types of fuses
- Using fuse in discrimination
- Difference between fuses and circuit breakers
- Fuses selection guide
- Instrument devices installation.
- Protective Relay Design
- Protection devices Sequence of Operation
- STAR “Device Coordination” • Auto STAR

Module # 5 Arc Flash Studies

Upon successful completion of this Learning Outcome Guide, you will be able to understand

- Electrical arcs and their dangerous effects on people
- What is the Arc?
- How can the arc occur?
- Arc flash standards
- Arc flash hazard analysis
- Arc Exposure Energy Basics
- Industry Standards and Regulations
- Calculation of the flash protection boundary
- Limited approach boundary entrance recommendations
- Modes of operation scenarios
- Personal protective equipment selection
- Daily wear clothes
- Labeling of Electrical Equipment (Dangerous, warning and cautions)
- Labels colour indication
- working distance from arc flash source
- Proper PPE, distance-dependent from possible threat
- Robotic circuit breakers removal
- Electrical Equipment Isolation

Module # 6 System grounding

Upon successful completion of this Learning Outcome Guide, you will be able to understand

- Fast analysis of irregular large-scale renewable ground grid application
- Two-layer soil configuration plus surface material
- Soil measurement
- Table of potentials at the earth's surface
- External boundary extensions
- Variable weight & temperature options
- Compare allowable currents against fault currents
- User-definable conductor library
- Ground grid configurations showing conductor & rod plots
- Compare potentials to tolerable limits

Report step, touch, & absolute potentials inside & outside grid area

Solar Energy

Course Overview

In This Training course the participants will be able to Learn technical concepts and economics of PV systems -Hands-on design and simulation of PV systems using my Excel tools -Hands-on design and simulation of PV systems using the software PV System



Solar Energy



The main topics of our diploma

1. Introduction

- 1.1. Basics of electricity
- 1.2. Renewable energy
- 1.3. Sun and the radiation

2. CSP technology and its type

3. Solar water heating systems

- 3.1. Types of solar heaters
- 3.2. Construction of each of them
- 3.3. Advantages and disadvantage of each them
- 3.4. Site survey and planning for the system

4. Photovoltaic

- 4.1. PV technology
- 4.2. Equivalent circuit analysis & electrical characteristic
- 4.3. PV panel characteristics
- 4.4. How to read the data sheet?

5. Off grid system

- 5.1. Concept of off grid system
- 5.2. Main component of off grid system (inverter, batteries, c.c)
 - 5.2.1. construction of each component and idea of work
 - 5.2.2. types of each component and advantage and disadvantages of each type
 - 5.2.3. reading the data sheet for each component
- 5.3. Manual design of off grid system
- 5.4. Design of off grid system using my special excel sheet
- 5.5. Design of many systems in different scales

6. On grid system

- 6.1. Concept of on grid system
- 6.2. Main component of on grid systems
 - 6.2.1. construction of each component and idea of work
 - 6.2.2. types of each component and advantage and disadvantages of each type
 - 6.2.3. reading the data sheet for each component
- 6.3. Manual design of on grid system
- 6.4. Design of on grid system using my special excel sheet

Solar Energy



The main topics of our diploma

7. Water pumping system

- 7.1. Concept of water pumping system
- 7.2. Main component of water pumping systems
 - 7.2.1. construction of each component and idea of work
 - 7.2.2. types of each component and advantage and disadvantages of each type
 - 7.2.3. reading the data sheet for each component
- 7.3. Manual design of water pumping system
- 7.4. Design of on grid system using my special excel sheet
- 8. Wiring and protection of pv systems (for both dc and ac sides)
 - 8.1. Important of each component and its job in the system
 - 8.2. Manual calculation of them
 - 8.3. Calculation using excel sheet

9. PV System

- 9.1. Introduction to the program
- 9.2. Simulation of on grid system
- 9.3. Simulation of off grid system
- 9.4. Simulation of water pumping system

10. Pricing, Preparing technical and financial offers for pv systems

11. Financial study for pv systems

12. How to make a site survey for a system?

13. How to manage the installation of your system (steps and time planning)

Introduction to Instrumentation, Control System (Classic Control, PLC, DCS, PID) & Control Valves (Selection, Sizing, Calibration, Maintenance)



Course Overview

This course is the complete guide to understanding Instrumentation and the applications of each instrument. Understanding the main terms of automation control system, learn how to select your instrument? How to calibrate, learn how to used Hart communicator, Troubleshooting and How to deal with. And to understanding Control system. Classic Control, PLC, DCS, PID and the applications of each controller, advantages and Limitations

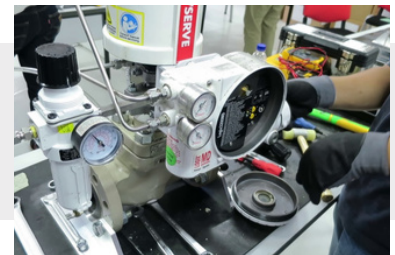
- 1 - Introduction to Instrumentation
- 2- Control System (Classic Control, PLC, DCS, PID)
- 3- Control Valves (Selection, Sizing, Calibration, Maintenance)



Introduction to Instrumentation, Control System (Classic Control, PLC, DCS, PID) & Control Valves (Selection, Sizing, Calibration, Maintenance)



The main topics of our diploma



1- Introduction to Instrumentation

PART 1

Control System Loop

1. Open Loop Control System
2. Closed Loop Control System
3. Cascade Loop Control System

PART 2

Components of a Control loop

1. Sensors
2. Controller
3. Final Control Element

PART 3

Process Measurement Parameters

1. Pressure Measurement
2. Temperature Measurement
3. Level Measurement
4. Flow Measurement
5. PH Measurement
6. Conductivity Measurement
7. Speed Measurement

2-Control System

PART 1

1. Overview
2. Basic of Classic Control
3. Classic control components (Operation, Selection)
4. Control Circuit and Power Circuit design
5. Control Circuit and Power Circuit Simulation

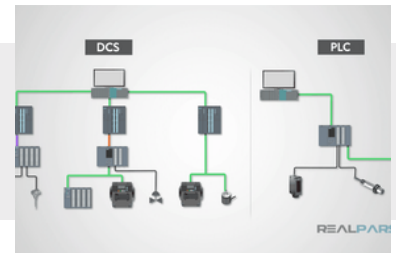
PART 2

1. PLC component
2. PLC SIEMENS Hardware models
3. Communication protocols
4. PROFI-BUS and PROFI-NET
5. How to Select PLC Hardware?
6. TIA selection tool
7. Number system
8. PLC LANGUAGES
9. Simatic manager Hardware Configuration
10. Ladder programming
11. Timers, Counters, Markers, MCR
12. Simulation

Introduction to Instrumentation, Control System (Classic Control, PLC, DCS, PID) & Control Valves (Selection, Sizing, Calibration, Maintenance)



The main topics of our diploma



3- Control Valves Operation & Maintenance

- 1.Introduction
- 2.Control valve Classification
- 3.Control valve sizing
- 4.Actuator sizing
- 5.Strock adjust for DVC electropneumatic positioner using HART communicator
- 6.Configuration for DVC with HART communicator
- 7.Stock adjust for AUMA actuator
- 8.End position adjustment for SIPOS actuator
- 9.OMC electropneumatic positioner
10. Solenoid Valves Types
11. Solenoid Valves operation
12. P&ID Piping and Instrumentation Diagram Introduction
13. P&ID symbols and Codes
14. P&ID How to read
P&ID How to Design

Mobile Training 2G and 3G

Mobile communications (Level 1)

2G Mobile

3G Mobile



Main Topics

- Part 1 2 G
- Practical Part: 2G RF Engineering
- Part II 3G
- Practical Part: 3G RF Engineering

Mobile Training 2G and 3G

Mobile communications (Level 1)



The main topics of our diploma



Part I: 2G

CH1: Fundamentals of Cellular System

- Types of Telephones
- Modes of Communications
- History of Mobile Communication
- The cellular System
- Frequency Reuse
- Adaptive Power Control
- Cell Splitting
- Types of Cells
- Channel Allocation Techniques
- Mobile Radio Channel Characteristics
 - Multi-path fading and diversity techniques
 - Shadow Fading
 - Doppler Shift
 - Co-Channel Interface
 - Adjacent Channel Interface
 - Delay Spread and Time Dispersion

CH2: GSM Network Architecture

- The Mobile Station (MS)
- The Base Station System (BSS)
- The mobile switching center (MSC)
- The home location register (HLR)
- The visitor location register (VLR)
- The authentication center (AUC)
- The equipment identity register (EIR)
- The operation and maintenance center (OMC)
- The GSM geographical network structure

CH3: GSM Air Interface

- The GSM Frequency Bands.
- The TDMA scheme in GSM.

- Features of TDMA in GSM.
- The physical channels.
- The logical channels.
- Traffic channels (FR, EFR, HR).
- Signaling channels.

CH4: Digital Mobile Elements

- Basic Elements of GSM transmission chain
- Source Coding and speech processing
- Channel Coding in GSM
- Interleaving in GSM
- Security Features in GSM
- GMSK Modulation in GSM

CH5: GSM Network Protocols

- Transmission Functions
- Radio Resource management
- Mobility Management Functions
- Connection Functions

CH6: Introduction to GPRS&EDGE

- Mobile Radio Evolution
- Use of GPRS
- GPRS Services
- Network Structure
- Functions in GPRS
- Signaling
- Air Interface
- EDGE Evolution

Mobile Training 2G and 3G

Mobile communications (Level 1)



The main topics of our diploma



Practical Part: 2G RF Engineering

- What is the Drive Test and why we need it
- Types of the different sites
- Mechanical and electrical tilt and its effects
- Types of the tests (2G & 3G)
- Cell file
- Tools used in the DT
- Field problem that should be detected by the DT
- 2G (Case analysis)
 - Overshooting cells
 - Cross sectors
 - Cross feeders and its types
 - Missing neighbor
 - Dropped call.
 - Blocked call.
 - HO failure.

Part II: 3G

CH1: Fundamentals of CDMA

- Access Techniques
- SDMA VS CDMA
- Spreading and de-spreading
- CDMA Key features
- PN codes
- Multi users' systems
- CDMA system performance
- Rake receiver

CH2: UMTS Evolution & Air interface

- UMTS Appearance
- UMTS proposals
- UMTS Codes
- UMTS bands
- UMTS Channels

CH3: The UMTS Network

- Appearance of UTRAN
- Circuit switching domain
- Packet switching domain
- Radio access network
- Site upgrading
- Sites types
- Coverage comparison

CH4: UMTS Transmission Chain

Source coding

- Channel coding
- Interleaving
- Ciphering
- Bit mapping
- Channelization
- Complex scrambling
- Modulation

CH5: UMTS Protocols

- Power control
- Multi-users detection
- Admission control
- Handover
- Location based services
- Introduction to HSPA

Practical Part: 3G RF Engineering

- What is the Drive Test and why we need it
- Types of the different sites
- Mechanical and electrical tilt and its effects
- Types of the tests (2G & 3G)
- Tools used in the DT
- Field problem that should be detected by the DT

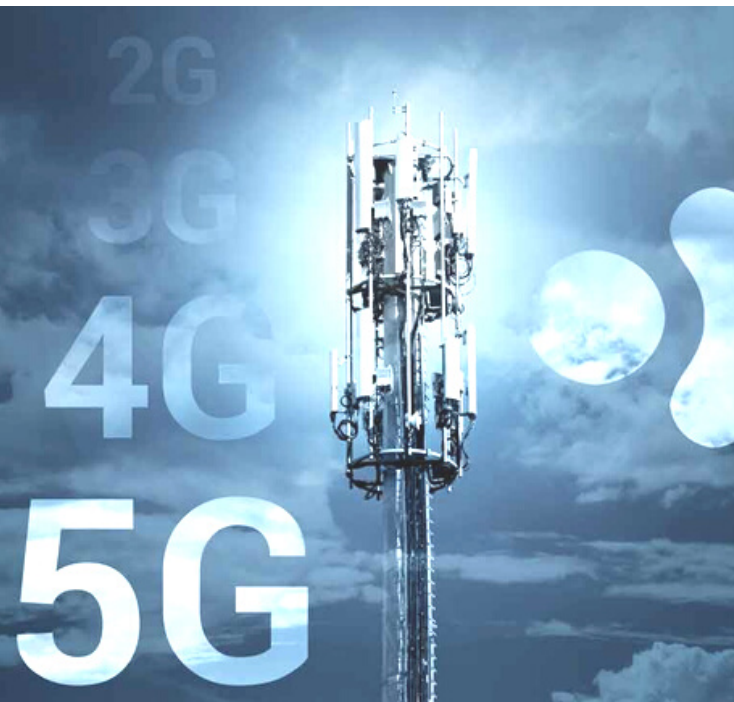


Mobile Training 4G and 5G

Mobile communications (Level 2)

4G Mobile

5G Mobile



Main Topics

- Part I 4 G
- Practical Part: LTE-A Planning
- Part II 5G

Mobile Training 4G and 5G

Mobile communications (Level 2)



The main topics of our diploma



Part I: 4G

CH1: Introduction

- 3GPP releases
- Generations Survey

CH2: LTE-A Enabling Technologies

- OFDMA
- SC-FDMA
- Channel dependence scheduling
- Frequency domain Equalization
- MIMO Antenna Systems

CH3: LTE-A Network Architecture

- System Architecture Evolution
- E-node-B
- S-GW and MME
- P-GW
- HSS

CH4: LTE-A Air interface

- LTE-A Key Features
- Fractional frequency reuse
- Frequency domain resources
- Time domain resources o Frame structure 1
o Frame structure 2
- Resource Grid
- LTE-A Channels

CH5: LTE-A Protocols and LTE-A pro intro.

- Access protocols
- Mobility management protocols
- Power Control
- Security protocols
- LTE – Advanced pro Introduction

Practical Part: LTE-A Planning

- What is planning?
- Planning steps
- Dimensioning

- Site positioning
- Case study

Part II: 5G

CH1: Introduction to 5G

- why 5G?
- 5G requirements

CH2: 5G Air interface

- NR main features
- Small cells
- Massive MIMO with Beamforming
- NR frequency bands
- NR Frequency domain resources
- NR Time domain resources
- Mini slots
- Reference signals
- NR channels

CH3: 5G Network Architecture

- NR options
- Network slicing
- Service based Architecture
- User Plane elements
- Control Plane element

CH4: NR Protocol stack

- Layer 1
- Layer 2
- Layer 3
- Detailed Physical layer

CH5: 5G Protocols

- Access protocols
- Mobility management protocols
- Power Control
- Security protocols



MATLAB Programming, SIMULINK and App Designer (GUI)



Course Overview

Matlab Programming is one of the most important technical programming languages and skills today. In this course, we will start learning Matlab from a beginner level and slowly ease our way into more advanced topics and programs. This course is a general Matlab Programming training, and it means that regardless of your major and field of study; you can benefit from this course, so much so that Google's former svp/product management Jonathan Rosenberg recognized it as the only skill you need on your resume to be able to work at Google.

Matlab Programming is an easy and understandable programming language and is an excellent choice for those who want to learn to program for the first time. Engineering companies often use Matlab to prototype and validate their ideas before committing to building it with other programs like Java, Python, C, and C++. Knowing Matlab will give you a competitive advantage in your career.



MATLAB Programming, SIMULINK and App Designer (GUI)



The main topics of our diploma



- The MATLAB Environment
- Matrices and Operators
- M-Files and Scripts
- User-Defined Functions
- Decision making
- Loops
- Data types
- 2D and 3D plots
- SIMULINK introduction
- Simulink Libraries
- Power Systems Libraries
- App Designer introduction
- Simple GUI programs
- Compiling/Packaging Apps
- App designer basic components
- Startup and Helper functions
- Axes and Tables handling

AutoCAD Course



Course Overview

This diploma is for all electrical engineering students, fresh graduates, junior engineers, Design. Planning of power system, Site & Testing Engineers

Our instructor has +10 years of professional experience in the control and Protection field.

Pre- & Post course assessments will be used to measure the effectiveness of this training



AutoCAD Course



The main topics of our diploma



- Introduction To CAD World
- CAD Opening & Interface.
- CAD Options.
- Lines, Object Snap, Erase , Circle.
- Move, Copy, Trim, Divide, Point Style.
- Arc, Scale, Hatch, Rotate, Mirror.
- Offset, Layers, Layers Tool, Normal Block.
- Explode, Fillet
- Attribute Block, Burst, Text.
- Dimensions, Dimensions Style.
- View Ports.
- CAD Plotting Skills.

Revit-Electrical Modelling

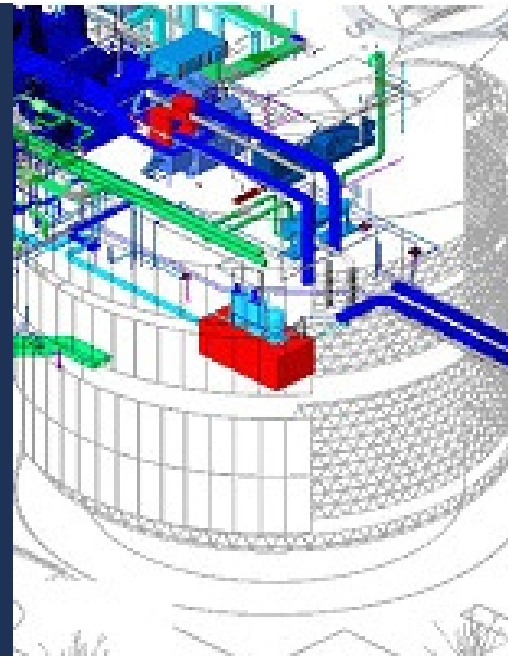


Course Overview

This course helps us Understand the basics of Electrical System like; Lighting Circuit, Electrical Devices, Switch Systems, Power System, cable tray, conduit System and annotating construction documents like sheets, 2D CAD, 3D CAD, etc.

It also provides information on understanding Work-sharing, creating and modifying panel schedules as per design or requirement.

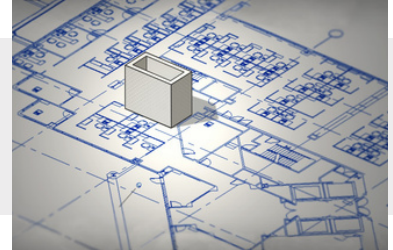
Electrical information plays a vital role in Lighting, Wiring and Circuiting. Using BIM, we can easily understand, what is Electrical and the Electrical System.



Revit-Electrical Modelling



The main topics of our diploma



- Introduction To BIM World
- BIM Vs CAD Technology
- BIM Engineer & BIM Manager Roles.
- BIM Software & Hardware Requirements
- Revit Opening & Interface.
- Revit Options.
- Revit Families Types & Properties
- Revit Families Loading.
- View & Projects Templates.
- Revit Links
- Electrical Settings & Spaces.
- Lighting & Electrical Fixtures.
- Electrical Circuits Creation.
- Revit Filters.
- Panel Boards Schedules & Templates.
- Cable Trays & Ladders.
- Dimensions, Tags & Sections.

Basic of Cost Estimation works for Electrical works



Course Overview

In the world of electrical contracting, you have to estimate and submit bids in order to win projects and stay in business.

This means bidding low enough to win against many competing electrical contractors, while high enough to cover all the project costs like labor, material, equipment rentals, subcontractors, and indirect cost or otherwise known as overhead required to run your business.



Basic of Cost Estimation works for Electrical works



The main topics of our diploma



- Importance of Cost Estimations
- Cost Estimates & Feasibility Studies
- Cost Estimation Phases & Classes
- Electrical Works Budgeting Methods
- Electrical Works Break Down Sheets Preparation
- Incoterms
- Labor Analysis
- Cost Estimation Review Techniques.

FIDIC Contracts Management Diploma

CLAIMS



Course Overview

The contracts management and claim diploma will be Introduction to the FIDIC suites of contracts and focusing mainly on FIDIC Contracts Management for the FIDIC 1999 Red Book and will refer to standard form contracts and deal with some common problems that occur during construction projects whilst revealing how best to deal with them.

Professional and experienced instructors with more than +16 years of experience in the field of Contracts Management and Claims



FIDIC Contracts Management Diploma



The main topics of our diploma



- Contract Life cycle
- Standard form contracts (FIDIC)
- General Provisions.
- The Employer, Engineer and the contractor.
- Nominated Subcontractors.
- Staff and Labour.
- Plant, Materials and Workmanship.
- Commencement, Delays and Suspension.
- Tests On Completion.
- Employer's Taking Over.
- Defects Liability.
- Measurement and Evaluation.
- Variations and Adjustments.
- Contract Price and Payment.
- Termination by Employer.
- Suspension and Termination by Contractor.
- Risk and Responsibility.
- Insurance.
- Force Majeure.
- Claims, Disputes And Arbitration
- Types of Claims
- Objectives of Claims
- Types of Damages.
- Sources of Damages.
- Directed vs. Constructive Acceleration.
- Acceleration Damages.
- Notices.
- Job correspondences/documents.
- Sample of Claim Letters.
- Case Study for actual claims.
- Directed vs. Constructive Changes.
- Excusable and Non-Excusable Delays.
- Delay Vs Disruption.
- Owner's Delay Damages.
- Limitation of Liability.
- Termination by Employer.
- Records.
- What is HOOH?
- How to calculate HOOH?

Construction Project Management



Course Overview

دبلومة إدارة المشروعات الهندسية والمؤهلة لسوق العمل
بجميع أقسام إدارة المشروعات المختلفة كالتخطيط
والمتابعة والتسعير وكذلك العقود والمطالبات إضافة
لإستخدام برامج البعد الرابع والخامس المختلفة

برنامج البريمافيرا علي إصداره الأخير P6 V.19 Primavera
برنامج ميكروسوفت بروجيكت MS Project
برنامج ال Excel



Construction Project Management



The main topics of our diploma



- شرح الجزء العملي والنظري الخاص بأعمال التخطيط بالمشروعات .
- شرح الجزء العملي والنظري الخاص بأعمال المتابعة والتحكم .
- شرح الجزء العملي والنظري الخاص بأعمال التسعير للبنود الإنشائية والمعمارية المختلفة وبعض بنود الإليكتروميكانيكال .
- شرح الجزء العملي والنظري لأعمال المطالبات في عقود التشييد Claims .
- شرح الجزء العملي والنظري لطريقة تكوين التقارير المختلفة والخاصة بأعمال المتابعة والتحكم بالمشروعات .
- شرح الجزء العملي والنظري لديناميكية عمل برامج البعد الرابع والخامس .

بإنهاء الكورس تصبح أن تكون مؤهلاً للعمل في :

- أقسام التخطيط والجدولة بالشركات Planning & Scheduling .
- أقسام المتابعة والتحكم في الوقت والتكلفة Project Controlling .
- أقسام التسعير وحساب التكاليف Cost Estimation .
- أقسام التحكم بالتكاليف بالشركات Cost Controlling Department .

Inspection of Electrical Construction and Installation Training



Course Overview

The goal of this training is to teach and demonstrate how to inspect electrical equipment and installation during the preconstruction and construction phase as per project related standards, specifications and procedures.

Upon successful completion of this training, you shall be able to:

1. Understanding and deal with the project's documentation "specification, manuals, procedures, purchasing orders, drawing, etc."
2. Design the project inspection and test plans ITPs
3. Receive and inspect the projects materials and equipment
4. Perform the inspection activities of field electrical installations such as motors, transformers, MCC, switchgears, UPS, battery chargers, earthing systems, cathodic protection, lighting & sockets, etc.
5. Perform the related tests for these installations and equipment
6. Complete the inspection report, checklists, etc.



Inspection of Electrical Construction and Installation Training



The main topics of our diploma



1. Inspection Overview and Introduction
 - Why we need Inspection?
 - Inspection Programs
 - Inspector Duties
- 2- Electrical Safety
 - NFPA 70E
 - Electrical Shock
 - Arc Flash
- 3- Inspection Documentation
 - Inspection and Test Plan
 - Inspection Report and Checklists
 - Non-Conformance Report
 - Specification • Procedures
 - Drawings Different Types
 - List of Standards
4. Pre-Installation Activities
 - Test Equipment
 - Materials and Equipment Inspection
5. Electrical Installations Inspection procedures
 - Power and Control Cables installation Inspection
 - Earthing System Inspection
 - Low & Medium Voltage Switchgears Inspection
 - Motor Control Center MCC Inspection
 - Power Panels and Distribution Boards Inspection
 - Oil Filled and Dry Transformers Inspection
 - Lighting and Power Socket Inspection
 - Cathodic Protection Inspection
 - UPS, Battery Chargers and Batteries Banks Inspection

Inspection of Electrical Construction and Installation Training



The main topics of our diploma



This course designed to be delivered in both online and offline format in 24 hrs. as per the client needs, in case of Online training, the course will be delivered through our ZOOM account.

After finishing the trainees shall attend an MCQ final exam, the trainees whom will pass the exam will get an achievement certificate while the failed trainees will get an attendance one, both type of certification will be accredited by our EAL Accreditation number.

Training Materials: All participants will get a link for the soft copy training materials which will include and not limited to:

1. Copy of related standards
2. Electrical construction manual
3. Electrical inspection manual
4. Different copies of ITPs, checklists, NCR, etc.
5. The presentation in PDF format

For inquiries, contact us.

Join us and improve your career path



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EPS TRAINING CENTER