



EE061: ELECTRICAL DISTRIBUTION SYSTEM EQUIPMENT: Transformers, Switchgears, Circuit Breakers Relays, Capacitors, Surge Arresters, Cables & Meters: *Installation, Operation, Testing, Optimization, Maintenance & Troubleshooting*



Training Description:

This course is designed to bring participants of different disciplines to a certain level so as to equip them with basic concepts of power systems. Students will learn the methods of power generation, transmission and distribution of electric power and related issues, understanding of electricity markets. To work in a power industry, it is very important to understand the basic concepts of power systems and the related issues (operation, protection, load sharing and shedding).

Training Objective:

By the end of the training, participants will be able to:

- ✓ Gain a broad overview of electric power systems including generation, transmission, and distribution
- ✓ Become familiar with the basic operation, behavior, and modeling of transmission lines
- ✓ Understand the principles of operation and control of power system
- ✓ To know the different type of protection at power plant

Training Designed for:

This course is intended for all Electrical Power Engineers, Supervisors and Qualified Distribution System Technicians can take part in this course

Training Program:

DAY ONE:

PRE-TEST

- ❖ Introduction
- ❖ Electric Power Generation: Conventional Methods
 - Introduction
 - Fossil Power Plants
 - Nuclear Power Plants
 - Geothermal Power Plants
 - Hydroelectric Power Plants
 - Synchronous Machinery
 - Thermal Generating Plants
 - Distributed Utilities
- ❖ Electric Power Generation: Non-Conventional Methods
 - Wind Power
 - Advanced Energy Technologies
 - Photovoltaic



DAY TWO:

- ❖ **Fundamentals of Distribution Systems**
 - Primary Distribution Configurations
 - Urban Networks
 - Primary Voltage Levels
 - Distribution Substations
 - Sub transmission Systems
 - Loads
- ❖ **Transmission System**
 - Concept of Energy Transmission and Distribution
 - Transmission Line Structures
 - Insulators and Accessories
 - Transmission Line Construction and Maintenance
 - Insulated Power Cables for High-Voltage Applications
 - Transmission Line Parameters

DAY THREE:

- ❖ **Protective Equipment of Distribution Systems:**
 - Protective Relays
 - Automatic Circuit Breakers
 - Fuses
 - Load-Break Switches and Ring-main Units
- ❖ **Transformers**
 - Theory and Principles
 - Power Transformers
 - Distribution Transformers
 - Underground Distribution Transformers

DAY FOUR:

- ❖ **Power System Operation and Control**
 - Energy Management
 - Generation Control: Economic Dispatch and Unit Commitment
 - State Estimation
 - Optimal Power Flow
 - Synchronization
 - Load shedding
 - Load sharing
 - Emergency power sources
 - Stand by sources
 - SCADA control systems
- ❖ **Protective Equipment of Distribution Systems:**
 - Protective Relays
 - Automatic Circuit Breakers





- Fuses
- Load-Break Switches and Ring-main Units

DAY FIVE:

❖ Power System Protection

- Power System Faults
- Short Circuit Theory and fault studies
- Components of Power System Protection Schemes
- Current Transformers (CTs) & Voltage Transformers (VTs)
- Co-ordination of Electrical Protection Systems
- Generators protection
- Transformer Protection
- Feeder protection

❖ Course Conclusion

❖ POST-TEST and EVALUATION

Training Requirements:

“Hands-on practical sessions, equipment and software will be applied during the course if required and as per the client’s request”.

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:

- 30% Lectures, Concepts, Role Play
- 30% Workshops & Work Presentations, Techniques
- 20% Based on Case Studies & Practical Exercises
- 20% Videos, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

As per the course location - This rate includes participant’s manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.





Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:30	Recess (Prayer Break & Lunch)
13:30 - 15:00	Last Session

For training registrations or in-house enquiries, please contact:

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Training & Career Development Department

