

Course Name: Power, Utilities and Energy .

Reference Code: ELEC 101

About the course:

This training course will feature:

Reduce carbon emissions and emissions of other air pollutants through increased use of renewable energy and other clean distributed generation

Increase asset use through integration of distributed systems and customer loads to reduce peak load and thus lower the costs of electricity

Support achievement of renewable portfolio standards for renewable energy and energy efficiency

Enhance reliability, security, and resiliency from microgrid applications in critical infrastructure protection and highly constrained areas of the electric grid

Support reductions in oil use by enabling plug-in electric vehicle (PHEV) operations with the grid

Emphasis on wind power, solar power and energy storage systems

Course Objective:

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

- Understand the grid flexibility to renewable energy integration
- Determine the various types of renewable energy
- Explain the different types of solar panels
- Analyse the common types of wind farms
- Understand the various type of energy storage systems.

Kingdom of Saudi Arabia

101 Business Tower, 8th Floor
Al Jubail 35513, Bldg# 9278 ,KSA
Tel.: +966 13 361 5552

Kingdom of Saudi Arabia

Khobar Gate Tower
King Fahad Street , Khobar 31952
Tel.: 00966133308334

Who Should attend?.

This training course is suitable to a wide range of professionals but will greatly benefit:

- Electrical engineers
- Electrical supervisors
- Power engineers
- Managers in-charge of electrical installations
- Project engineers

Course Methodology:

This training course is designed to be a hands-on, stimulating experience. The training course is highly interactive with many discussion and practice sessions.

- ☑ Relevant computer simulations and videos .
- ☑ Copies of all presentation material.
- ☑ Variety of Learning Methods.
- ☑ Pre-test and final test.
- ☑ Case Study
- ☑ Training Groups.
- ☑ Presentation.
- ☑ Lectures

Kingdom of Saudi Arabia

101 Business Tower, 8th Floor
Al Jubail 35513, Bldg# 9278 ,KSA
Tel.: +966 13 361 5552

Kingdom of Saudi Arabia

Khobar Gate Tower
King Fahad Street , Khobar 31952
Tel.: 00966133308334

Course Outline:

Day One: Renewable Energy Generation: The Present, The Future and The Integration Challenges

- Drivers of renewable energy development
- State of the art integrating large capacities renewable energy
- Transmission and operation technologies and practices
- Wind power generation
- Photo voltaic power generation
- Concentrated solar power generation

Day Two: Technical Solutions for Integrating Large Capacity Renewable Energy

- Wind turbines
- Grid friendly renewable energy generation
- Improved flexibility in conventional generation
- Transmission expansion developments
- Promising large capacity electrical energy storage technologies
- Roles of electrical energy storage in renewable energy integration
- Standards for large capacity electrical energy storage renewable energy integration

Day Three: Grid Flexibility: The Key to Renewable Energy Integration

- Effects of wind and solar power on energy demand
- Power plant flexibility
- Forecasting and demand response
- Wind and solar power variabilities
- Challenges variable renewable energy poses to the grid
- Impact of fossil fueled generators

Kingdom of Saudi Arabia

101 Business Tower, 8th Floor
Al Jubail 35513, Bldg# 9278 ,KSA
Tel.: +966 13 361 5552

Kingdom of Saudi Arabia

Khobar Gate Tower
King Fahad Street , Khobar 31952
Tel.: 00966133308334

Day Four: Integrating Renewable Energy into the Transmission and Distribution Systems

- Approach to analysis of integrating renewable energy
- Integration of distributed and renewal energy generation
- Power quality impacts
- Electrical transmission and distribution systems
- Photo voltaic optimization and sensitivity analysis
- Wind optimization and sensitivity analysis

Day Five: Renewable Energy Integration in Smart Grids and Micro Grids

- Smart grid attributes
- Merits of smart grids
- Operation of micro grids
- Merits of micro grids
- Future of smart micro grids
- Wrap up session and Q&A session

Time: 08:00 AM -03:00 PM **Numbers of hours:** 35 Hours

Kingdom of Saudi Arabia

101 Business Tower, 8th Floor
Al Jubail 35513, Bldg# 9278 ,KSA
Tel.: +966 13 361 5552

Kingdom of Saudi Arabia

Khobar Gate Tower
King Fahad Street , Khobar 31952
Tel.: 00966133308334