

Scandinavian Academy
Training Center

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Riyadh - Al Khaleej District - Sheikh Abdul Aziz Bin Abdul Rahman Bin Bishr Street - 13223 - Office No. 5 | P.O.BOX : 13224

Course: Load Forecasting and System Upgrade

Code	City	hotel	Start	End	price	Language - Hours
EE-789SA	Abha	Hotel Meeting Room	2027-01-24	2027-01-28	12950 SR	En - 25

Introduction

To upgrade and economically dispatch and operate an electrical power system, a review of the main types of electrical equipment and load profiles (Switchgear, Protection, Transformers, Motors, VSDS, UPS, Batteries, MCCs, Cable Systems), including their specification and nature.

This Load Forecasting and System Upgrade training course will use practical and theoretical exercises concerning installation of load forecasting study analysis and system upgrade of electrical power system. It will also include the practical and theoretical exercises concerning load shedding analysis.

This training course will feature

- Power system component, load types, load estimation and load forecasting
- System analysis and simulation using ETAP
- Powers System Upgrading, Analysis & Load Forecasting
- Load Sampling Rate, Load Forecasting
- Load Forecasting Techniques & Procedures

What are the goals?

- Develop and understand electrical system design/specification by basic principles
- Determine and apply key electrical principles from codes, standards & DEPs
- Apply specification focus of key types of electrical equipment
- Analyze and design MCCs, Cable Systems, including specification & maintenance requirements

- Develop and understand real and reactive power scheduling of each power plant
- Be competent with solving problems of economic operating dispatch
- Develop and apply the operation constrains for load forecasting and upgrade
- Develop short/medium/long term load forecasting

Who is this training course for?

- Planners and Analysts Engineers
- Electrical Engineers
- Electrical Supervisor
- load dispatch center Engineers and supervisors
- Electrical Distribution Engineers
- Operation & maintenance engineers

Course Outline

Day One: Power System Components & Upgrade:

- Generation, Transmission and Distribution of Electrical Power
- Transformer Types, lead and lag power factor
- Motors and Generators Types
- Switchgears and Low Voltage Panels
- Circuit Breaker Types and Function
- Relays Types and Function

Day Two: Types of Loads and Load Estimation:

- Types of loads, Load estimation and calculations
- Diversity factor, demand factor and distribution Factor, voltage sensitivity of loads
- Loads distribution networks using AUTOCAD, REVIT software and ETAP software
- All power networks load calculations
- Low and Medium Voltage networks

- Electrical measurements, smart meter and testing, Characteristics customers and by class, Appliance duty cycles and coincidence of load

Day Three: Powers System Upgrading, Analysis & Load Forecasting:

- Coincident load behaviour, Coincident curve, expectation of non-coincident load
- Coincidence factors and curves, Diversity factor and load management
- Load profile and flat rate structure, Load Shed and Load duration curves analysis
- Load sampling rate and type, signal engineering perspective on load sampling
- Determination of the sampling method and type
- Relationship between losses and demand
- T&D systems are built to satisfy customers, not loads

Day Four: Load Sampling Rate, Load Forecasting:

- Growth of electric load and T&D capacity requirements
- Spatial load growth and the “s” curve characteristic
- Evaluation criterion & forecasting accuracy
- Short term load forecasting
- Very short-term load forecasting
- Medium/long term load forecasting

Day Five: Load Forecasting Techniques & Procedures:

- Load forecasting techniques and combined forecasting
- Hierarchical load forecasting
- Outlier detection and data cleansing
- Load settlement and demand response forecasting
- Retail energy forecasting and frequently made mistakes
- The art of load forecasting

The Scandinavian Academy for Training Center adopts the latest scientific and professional methodologies in training and human resource development, aiming to enhance the efficiency of individuals and organizations. Training programs are delivered through a comprehensive approach that includes:

- Theoretical lectures supported by PowerPoint presentations and visual materials (videos and short films).
- Scientific evaluation of participants before and after the program to measure progress and knowledge acquisition.
- Brainstorming sessions and practical role-playing to simulate real-life scenarios.
- Case studies tailored to align with the training content and participants work nature.
- Assessment tests conducted at the end of the program to evaluate the achievement of training objectives.

Each participant receives the training material (both theoretical and practical) in printed form and saved on a CD or flash drive. Detailed reports, including attendance records, final results, and overall program evaluations, are also provided.

Training materials are prepared professionally by a team of experts and specialists in various fields. At the end of the program, participants are awarded a professional attendance certificate, signed and accredited by the Scandinavian Academy for Training Center.

Program Timings: 9:00 AM to 2:00 PM

The program includes:

- A daily buffet provided during the sessions to ensure participants comfort.
- A closing ceremony on the final day to distribute certificates and celebrate participants achievements.
- **Note: All prices are exclusive of 15% Value Added Tax (VAT).**

Our Success Partners

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