informatech



MAINTENANCE AND ENGINEERING | ME-010

Load Forecasting and System Upgrade

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Course content

Why Attend

Accurate load forecasting and effective system planning are essential for maintaining reliable, efficient, and sustainable electrical power systems. This course provides participants with the knowledge and practical skills required to analyze electrical loads, forecast future demand, evaluate network performance, and develop cost-effective upgrade strategies for transmission and distribution systems. Participants will also explore modern software tools and analytical techniques used in power system planning.

Course Methodology

The course combines instructor-led presentations, engineering calculations, software demonstrations, practical workshops, case studies, group discussions, and real-world power system planning exercises.

Course Objectives

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

- Understand the structure and operation of electrical power systems
- Perform electrical load estimation and demand analysis
- Apply load forecasting methodologies for short-, medium-, and long-term planning
- Evaluate system performance and identify upgrade requirements
- Utilize engineering software to support distribution network planning
- Improve system reliability through effective forecasting and capacity planning
- Develop strategic plans for future electrical infrastructure expansion

Target Audience

- Electrical engineers
- Power system planners
- Distribution and transmission engineers



Course content

Target Audience

- Utility engineers
- Electrical design engineers
- Maintenance and operations engineers
- Energy management professionals

Target Competencies

- Load forecasting
- Power system planning
- Electrical distribution systems
- Demand analysis
- Network upgrade planning
- Electrical system modeling
- Power system analysis
- Infrastructure planning

Course outline

Day 1: Fundamentals of Power Systems and Network Components

- Understanding the structure of electrical generation, transmission, and distribution systems
- Reviewing transformer types and power factor characteristics in electrical networks
- Understanding the operating principles of motors and generators
- Evaluating switchgear systems and low-voltage distribution panels
- Understanding circuit breaker technologies and protection applications
- Reviewing protection relay types and their role in system reliability



Course content

Course outline

• Identifying critical considerations for power system modernization and upgrades

Day 2: Load Analysis and Electrical Network Modeling

• Understanding different categories of electrical loads and consumption characteristics

• Performing electrical load estimation and demand calculations

• Applying diversity, demand, and utilization factors to system design

• Evaluating voltage sensitivity and load behavior within electrical networks

• Utilizing engineering software tools for network modeling and load analysis

• Performing load calculations for low- and medium-voltage systems

• Understanding smart metering technologies, electrical measurements, customer load profiles, and equipment operating cycles

Day 3: System Upgrade Planning and Load Behavior Analysis

• Understanding coincident and non-coincident load characteristics

• Evaluating diversity factors and demand management strategies

• Analyzing load profiles, duration curves, and load shedding strategies

• Applying load sampling techniques for power system analysis

• Selecting appropriate sampling methods for different forecasting applications

• Understanding the relationship between system losses, network demand, and operational efficiency

• Developing system upgrade strategies that support customer growth and service reliability

Day 4: Load Forecasting Models and Capacity Planning

• Understanding electrical load growth patterns and future capacity requirements

• Evaluating spatial load growth and demand distribution trends

• Applying forecasting performance measures and accuracy evaluation techniques

• Developing short-term forecasting models for operational planning



Course content

Course outline

• Applying very short-term forecasting techniques for real-time system management

• Developing medium- and long-term forecasting models to support infrastructure expansion

• Practical workshop: Forecasting future demand for electrical distribution systems

Day 5: Advanced Load Forecasting Techniques and Strategic Planning

• Applying statistical, analytical, and hybrid load forecasting techniques

• Understanding hierarchical forecasting methods for large utility systems

• Identifying and correcting data anomalies through cleansing and validation techniques

• Forecasting demand response participation and retail energy consumption

• Reviewing common forecasting errors and strategies for improving prediction accuracy

• Developing integrated load forecasting and network upgrade plans for future-ready electrical systems

• Course review, practical case study, lessons learned, and final Q&A



Seminar dates

Available seminar dates

Live dates and pricing for Load Forecasting and System Upgrade generated from the course details page.

Date	Location	Format	Fee
11 - 15 January 2027	Kuala lumpur - Malaysia	Classroom	**€1,800.-**
8 - 12 February 2027	Munich - Germany	Classroom	**€3,400.-**
8 - 12 March 2027	Amsterdam - Netherlands	Classroom	**€3,040.-**
12 - 16 April 2027	Cape Town - South Africa	Classroom	**€2,272.-**
10 - 14 May 2027	Istanbul - Turkey	Classroom	**€2,280.-**
14 - 18 June 2027	Vienna - Austria	Classroom	**€3,840.-**
12 - 16 July 2027	Barcelona - Spain	Classroom	**€3,080.-**
9 - 13 August 2027	Kuala lumpur - Malaysia	Classroom	**€1,800.-**
13 - 17 September 2027	Munich - Germany	Classroom	**€3,400.-**
11 - 15 October 2027	Amsterdam - Netherlands	Classroom	**€3,400.-**
8 - 12 November 2027	Geneva - Switzerland	Classroom	**€4,200.-**
13 - 17 December 2027	Istanbul - Turkey	Classroom	**€2,280.-**

Live online option	Online delivery is available at €1,850.-.