



**SCANDINAVIAN ACADEMY**  
Training and Development

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# Course: Protection Coordination and Electrical Network Protection Devices

Code	City	Hotel	Start	End	Price	Language - Hours
EE-882	Washington (US)	Hotel Meeting Room	2027-02-08	2027-02-12	7450 €	En - 25

## Course Description:

This comprehensive training program provides participants with in-depth knowledge of protection coordination and the essential devices used to safeguard electrical power systems. The course covers the fundamental principles of overcurrent, differential, and distance protection, as well as the configuration and application of relays, circuit breakers, and fuses. Emphasis is placed on understanding coordination curves, time-current characteristics, and selective tripping strategies. In addition, attendees will gain practical experience using industry-standard software tools such as ETAP, DIGSILENT, and SKM PowerTools. Troubleshooting techniques and maintenance of protection systems will also be explored to ensure long-term reliability and performance.

## Course Objective:

- Understand the concepts of protection coordination in electrical networks.
- Identify various protection devices and explain their operation.
- Interpret coordination curves and set devices for selective tripping.
- Configure protection settings using software tools (ETAP, DIGSILENT, SKM).
- Troubleshoot and maintain protection devices to ensure operational integrity.



## Who Should Attend?

- Electrical Engineers
- Protection and Control Engineers
- Power System Planners
- Maintenance Engineers
- Technicians involved in substation or industrial power protection
- Engineers working in utilities, oil & gas, or industrial facilities

## Course Outline:

### Day 1:

- Welcome & Introduction
- Overview of Electrical Protection Systems
- Fundamentals of Protection Coordination
- Principles of Overcurrent, Differential, and Distance Protection
- Case Examples: Real-world Fault Incidents
- Group Discussion & Q&A

### Day 2:

- Introduction to Protection Devices
- Relays: Types and Applications
- Circuit Breakers, Fuses, and Isolators
- Understanding Trip Hierarchies and Backup Protection
- Device Selection Based on System Requirements
- Practical Workshop: Protection Device Matching

### Day 3:

- Time-Current Characteristics (TCC)
- Coordination Curves and Graph Analysis



- Selective Tripping Techniques
- CT/VT Selection and Impact on Coordination
- Protection Setting Calculations
- Hands-on Exercise: Medium-Voltage Protection Planning

#### **Day 4:**

- Software Tools Overview: ETAP, DIGSILENT, SKM PowerTools
- System Modeling for Protection Coordination
- Performing Fault Studies
- Interpreting Study Results and Adjusting Settings
- Lab Session: Simulate and Analyze a Coordination Study

#### **Day 5:**

- Troubleshooting Protection Systems
- Common Faults and Diagnostic Approaches
- Maintenance of Protection Devices
- Testing and Calibration Procedures
- Best Practices for Reliable Operation
- Final Assessment & Review



The Scandinavian Academy for Training and Development 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 and Development.

### **Program Timings:**

- 9:00 AM to 2:00 PM in Arab cities.
- 10:00 AM to 3:00 PM in European and Asian cities.

### **The program includes:**

- A daily Coffee Break provided during the sessions to ensure participants comfort.