

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: Power System Protection

| Code | City | hotel | Start | End | price | Language - Hours |
|---|---|---|---|---|---|---|
| EE-791SA | Dammam | Hotel Meeting Room | 2027-11-07 | 2027-11-11 | 12950 SR | En - 25 |

## Introduction

This Power System Protection training course covers the fundamentals of protecting a power system against hazards posed by abnormal system conditions, such as short-circuit faults. An overview of the protective devices available for application, both industrial and utility, is presented along with typical means of implementing these devices. Both electromechanical and digital relays are discussed. Fuse selection and coordination is explored in depth. Utility-specific protective devices, such as reclosers and sectionalizers, are presented, and utility-specific protection strategies, such as fuse-saving and fuse-blowing are covered. This Power System Protection training course allows the delegates to apply techniques learned in this course to realistic protection scenarios.

### This training course will feature

- Philosophy of protective relaying and protection strategies
- Electromechanical relay operating principles and microprocessor implementations
- Radial system protection – time-coordinated overcurrent protection
- Instrument transformers
- Differential and distance relays, including pilot protection

## What are the goals?

- Comprehend protective relaying philosophies and choose appropriate protection strategies
- Understand how electromechanical relays work and how they are emulated by microprocessors

- Design a properly coordinated overcurrent protection system for a radial distribution system
- Properly specify instrument transformers for protection applications
- Design protection schemes utilizing differential and distance relays, including pilot protection

## Who is this training course for?

- Engineers and technicians new to the power industry
- Intermediate-level engineers and technicians responsible for power system protection
- Professionals involved with developing protection schemes to improve reliability
- Facility engineers and consultants who conduct protection studies
- Engineers tasked with assessing the effectiveness of protection schemes

## Course Outline

### Day One: Introduction, Math Review, Symmetrical Components and Sequence Networks:

- Protection introduction
- Phasor math
- Per-unit calculations
- Symmetrical components
- Sequence networks
- Fault modeling

### Day Two: Electromechanical and Digital Relays, Relay Schemes for Radial Systems, Time-Coordinated Overcurrent Protection:

- Electromechanical relay operating principles

- Microprocessor-based relay implementation
- Instantaneous and time overcurrent relays
- Reclosers and sectionalizes
- Time-current curves
- Device coordination

**Day Three: Relay Schemes for Networked Systems and Device Protection:**

- Distance relays
- Distance relays with pilot protection
- Differential relays
- Differential relays for bus protection
- Differential relays for generator protection
- Differential relays for transformer protection

**Day Four: Effect of Protection on Reliability:**

- Reliability indices
- Fault clearing time and reclosing
- Effects of nearby faults
- Fuse saving strategy
- Fuse blowing strategy
- Intelligent protective devices

**Day Five: Arc Flash Hazard and a Look to the Future:**

- Shock hazard versus burn/blast hazard
- IEEE 1584 and NFPA 70E
- Personal protective equipment
- Hazard labeling
- A look to the future: communication-based overcurrent protection
- A look to the future: intelligent sectionalizing

**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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