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## Industrial Relay Protection - Advanced

Contact us Today for a FREE quotation to deliver this course at your company's location.

<https://www.electricityforum.com/onsite-training-rfq>

### COURSE DATES AND TIMES

**June 1-3 , 2021**

10:00 am - 4:30 pm ET

Advanced Industrial Relay Protection Training - This 18-hour, 3-Day live online instructor-led training course provides students with a practical understanding of protective relay device applications and protective relay schemes for industrial, commercial and institutional electrical power systems.

This in-depth course covers industrial system relay protection techniques, including fault analysis and overvoltage assessment. Students will learn how to develop relay settings and thoroughly understand the philosophy of relay protective systems. Real world examples will be shown, illustrating various techniques in present use, which highlight particular approaches used by experienced relay protection system designers.

Students will enhance their experience with power system protection problems generally faced, and solutions successfully adopted. By the end of the course, students will understand how to apply microprocessor-based multifunction relays for the protection of various power system equipment and apparatus.

## **COURSE BENEFITS**

### **The Advanced Protective Relay Training Course:**

- Will Reduce Unnecessary Downtime!
- Provide Recommended Settings For Adjustable Trip Circuit Breakers And Relays.
- Will Increase Coordination (Selectivity) Between Devices.
- Identify Deficiencies In System Protection.
- Will Provide Recommended Solutions To Help Correct Your Problem Areas.
- Reviews And Discussions On The Use Of Protective Devices With Respect To Electrical Code Requirements, And Appropriate ANSI/IEEE Standards

## **WHO SHOULD ATTEND**

- Industrial, Commercial, Institutional Electrical Engineers, And Electrical Maintenance Personnel
- Consulting Electrical Engineers
- Project Engineers
- Design Engineers
- Field Technicians
- Electrical Technicians
- Plant Operators
- Plant Engineers
- Electrical Supervisors
- Managers In Charge Of Plant Communication Infrastructure

## STUDENTS RECEIVE

- This Course Includes Our Latest Electrical Protection And Control Handbook!! (Value \$20)
- **\$100 Coupon** Toward Any Future Electricity Forum Event (Restrictions Apply)
- 1.2 Continuing Education Unit (CEU) Credits
- **FREE** Magazine Subscription (Value \$25.00)
- Forum Presentation Materials In Paper Format

## COURSE OUTLINE

### Advanced Industrial Relay Protection Course Outline

#### DAY ONE

##### Introduction

- Power System Components
- Why Protect?
- Relaying basics
- Circuit Breakers
- Primary and Backup relaying
- Microprocessor Relays
- 3 phase AC properties
- Symmetrical Components
- Current & Potential Transformer

## **DAY TWO**

### **Transformer Protection**

- Transformer theory
- Transformer protection elements
- Current Transformer Percent
- Differential
- 2nd harmonic inhibit
- 5th harmonic inhibit
- Volts/Hz
- Sudden Pressure change detection

## **DAY THREE**

### **Busbar Protection**

- Bus protection elements
- Bus protection requirements
- Bus protection schemes
- High Impedance
- Linear Couplers
- Interlocking
- Unrestrained Differential
- Percent Differential
- Low Impedance microprocessor-based

### **Feeder Protection**

- Protection elements
- Relay coordination
- Phase TOC (51)
- Phase IOC (50)
- Ground Relaying
- Fault simulation
- Event Log
- Oscillography

### **Motor Protection**

- Induction Motor theory
- Motor Thermal Modeling
- Short Circuit
- Ground Fault
- Stator Differential
- Single phase protection
- Under and Overvoltage
- Locked Rotor protection
- Acceleration timer
- Starts per hour
- Time between starts
- Bearing protection

Optional addition for Ind. Standby and Backup generators:

### **Generator Protection**

- Generator Protection
- Generator Protection elements
- Stator Differential

- Neutral Displacement
- 3rd harmonic
- Loss of excitation
- Accidental Energization
- Low Forward Power
- Reverse Power

### **Parallel generation**

### **AVR and Governor Control**

### **COURSE SCHEDULE:**

#### **Both days:**

Start: 10 a.m. Eastern Time

Finish: 4:30 p.m. Eastern Time

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