

POWER SYSTEM PROTECTION FOR UTILITIES

TRNG-PUTL

WHAT WILL I LEARN FROM THIS COURSE?

This course provides a comprehensive understanding of the principles of digital Power System relaying, specifically tailored to Utilities. The class will cover the major components of a Power System, basic Power System theory, Feeder, Busbar, Transformer and Transmission Line protection principles.

PREREQUISITES

- Basic understanding of electrical circuits

WHO SHOULD ATTEND?

Those involved in protecting Utility Power Systems who require an understanding of the principles of protective relaying will benefit from this course. Students range from recent graduates entering the field of protective relaying to seasoned professionals who require an update on the latest relaying technology.

TUITION

\$ 1,800 US*

COURSE DURATION

3 Days

CEU CREDITS OFFERED

2.1 Credits

AGENDA

Day 1

Introduction

- Power System components
- Why protect?
- Relaying basics
- Circuit Breakers
- Primary and Backup relaying
- Types of Electromechanical Relays
- Microprocessor Relays
- Properties of Alternating Current
- Introduction to Symmetrical Component
- Current Transformers
- Potential Transformers

Feeder Protection

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

Day 2

Busbar Protection

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

Transformer Protection

- Transformer theory
- Transformer Protection elements
 - Transformer Percent Differential
 - 2nd harmonic inhibit
 - 5th harmonic inhibit
 - Volts/Hz
 - Sudden pressure change detection
- Instructor led Lab exercises

Day 3

Line Protection

- Introduction to Transmission Lines
- Distance protection theory
- Stepped Distance
- Zone 1 extended
- Pilot aided schemes: DUTT, PUTT, POTT, HYBRID POTT, Directional blocking
- Power Swings
- Line Current Differential protection
- Instructor led Lab exercises

