EPRC will be offering 2 short courses on distribution protection taught by SEL University on ISU’s campus in Coover Hall – *date to be determined*.

**Distribution System Protection PROT 403: 2.1 CEUs**

**SEL-351 Protection System, APP 351: 1.4 CEUs**

**DETAILS:**

SEL University PROT 403: [https://selinc.com/selu/courses/prot/403/](https://selinc.com/selu/courses/prot/403/) is a comprehensive 3 day course on distribution protection. PROT 403 provides an overview of the principles, schemes, and devices for protecting medium-voltage distribution feeders and buses. The course provides basic guidelines for overcurrent device coordination in radial systems. It also covers the application of negative-sequence overcurrent and directional overcurrent protection in distribution systems. The course discusses the effect of load and distributed generation sources on protection. It also provides guidelines for fast service restoration in distribution systems.

**Day 1**
- Introduction to Distribution System Protection
- Distribution Feeder Protective Devices
- Overcurrent Relay Design
- Overcurrent Protection Coordination in Radial Systems: Part 1

**Day 2**
- Overcurrent Protection Coordination in Radial Systems: Part 2
- Negative-Sequence Overcurrent Element Application and Coordination
- Directional Element Application and Evaluation
- Class Exercise: Line Directional Overcurrent Protection
- Load, Sensitivity, and Backup Considerations
- Bus Protection

**Day 3**
- Power Quality and Distribution Protection
- Interconnection of Distributed Generation
- Line Pilot Protection for Distribution Systems
- Class Exercise: Global Distribution Protection

Note: This course teaches fundamental knowledge but does not provide hands-on experience with SEL relays. Hands-on experience using the 351 relay as an example is provided in APP 351 (see next page)
SEL-351 Protection System, APP 351, 1.4 CEU

This course, APP 351, https://selinc.com/selu/courses/app/351/ is designed for utility and industrial protection engineers and power system consultants. APP 351 provides comprehensive application training for the SEL-351 Protection System, an extremely flexible protective relay used by utilities worldwide, in multiple applications. Working in groups of two, students gain hands-on experience in communicating, setting, metering, monitoring, retrieving event reports, and performing control functions by working directly with the SEL-351S Relay.

Day 1
- SEL-351 Relay Family Overview
- SEL-4000 Relay Test System: SEL-AMS and SEL-5401 Software
- Using acSElerator QuickSet SEL-5030 Software With the SEL-351S
- Front-Panel Targets and Display
- SELogic Control Equations (includes a hands-on exercise)
- Relay Settings Overview
- Overcurrent Elements
- Best Choice Ground Directional Element
- Voltage and Frequency Elements
- Relay Logic and Settings

Day 2
- SEL-351S Front-Panel Large Operator Controls (includes a hands-on exercise)
- Hands-On Exercise: Part 1
- Breaker Monitor
- Retrieving, Understanding, and Analyzing Event Report Information
- Optional:
  - Mirrored Bits Communications (includes a hands-on exercise)
  - Data Acquisition and Control Via Distributed Network Protocol (DNP)
  - SEL-351R Recloser Control
  - Hands-On Exercise: Part 2

Course Objectives
At the conclusion of this course, students can:
- Apply the SEL-351S Relay protection, monitoring, and control features
- Communicate with the relay through the front panel and serial port
- Use acSElerator QuickSet SEL-5030 Software to apply relay settings, program SELogic control equations, and analyze fault records and the relay element response
- Analyze Sequential Events Recorder (SER) reports
- Implement relay-to-relay logic communications via the Mirrored Bits communications protocol
- Identify multiple applications for the SEL-351 Relay family
- Differentiate between SEL-351, SEL-351A, and SEL-351S Relay features