



**Environment, Health, & Safety
Training Program**

**EHS 0542 QEW1 Electrical Safe Work Controls and Integrated Electrical Safety
Course Syllabus**

Subject Category: Electrical Safety
Course Length: 6 hours
Delivery Mode: Classroom

Course Prerequisite: EHS: 0539, 0370, 0540, 0541,
Medical Approval: None
Frequency: minimum every 3 years

Course Purpose: This is the third course in a series required for QEW1. The course builds upon the work in EHS 0540 and 0541 applying ISM to the switching of electrical equipment and integration of all of the previous concepts discussed in the series for the QEW1 performing electrical work given a variety of scenarios and job tasks. The course takes a closer look at the Hazard Classification Tables, paying particular attention to Modes of Work and how to integrate electrical safety principles and necessary controls to perform the work safely. This course is the last classroom course required to be completed before the preparation course for QEW1 certification.

Course Objectives: Upon completion of the course the student should be able to:

- Select laboratory/other electrical setups per Hazard Classification Tables.
- Compare switching limitations for QEW1, non QEW and QEW2.
- Differentiate between Modes of Work and how to safely transition between them.
- Select PPE based on job requirement.
- Explain techniques of Body Positioning.
- Differentiate situations where skill of the craft is needed.
- Apply ISM, Hierarchy of Controls.
- Explain the nature of electrical switching and describe some common switching devices.
- Develop necessary skills to anticipate failure in switching devices.
- Recognize shock and arc flash hazards as applied to switching activities.
- Demonstrate proper body positioning and PPE requirements for electrical switching.
- Interpret contributing factors and conditions when determining whether to reclose a tripped breaker.
- Role of the QEW1 in providing assistance to non-QEW personnel regarding electrical switching.
- Tie together all of the ISM steps to creating an Electrically Safe work environment:
 - Planning electrical work using ISM
 - Analyzing the hazards associated with electrical work activities
 - Developing and Implementing the appropriate controls to minimize risk associated with electrical work
 - Safely performing electrical work and requirements/responsibilities of a Person-in-Charge for electrical work, including the performance of electrical job briefings and determining skill of the craft requirements for the job
 - Feedback and how continually improving how the job is performed the next time (improving controls, procedures, training, etc.)

Subject Matter Expert: Mark Scott, Stephanie Collins

Training Compliance Requirements: LBNL Electrical Safety Manual, EHS Safety Manual (formerly PUB-3000)-Chapter 8, Electrical Safety Program, 29CFR 1910.147, 29CFR 1910.333, NFPA 70E

Course Instructional Materials: PowerPoint presentation and video

Performance Criteria: Student must pass a written test to demonstrate their ability to use the classroom resources and prove understanding regarding when and how to anticipate failure in electrical devices; determine whether it is safe to perform electrical switching or reclose a tripped breaker; proper switching techniques to minimize injuries during catastrophic failure of the device. During the class students will get together in teams to perform a complete electrical job briefing for a variety of scenarios and provide their reasoning behind electrical work controls and PPE selection; identification of modes of work/transitioning between modes and the associated required controls in accordance with the Lab's Electrical Safety Program to receive course credit.

Web Resource: <http://electricalsafety.lbl.gov/>; all available Field Guides.