

# Electrical Safety Plan

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Eastern Illinois University – Safety Manual Chapter 8

## Summary

The electrical safety plan applies to employees working with 600 volts or less in an unprotected environment. The employee may become exposed to live energized part (s) or those parts that have been deenergized.

## Description

The purpose of this plan is to prevent injuries and accidents and to protect university employees from electrical hazards. This plan applies to employees who work on or near electrical equipment that has energized or deenergized parts.

## Scope

The Electrical Safety Plan applies to all employee work or otherwise involving electrical systems of 600 volts or less where the employee is exposed to parts or equipment which is energized or deenergized. There are some university employees who work with voltage over 120 volts, however, most employees work with 120 volts or less.

## Definitions

**Administrative Controls** - Efforts to limit workers' exposure to electricity by modifying work schedules or location, or by modifying the operating schedule of electrical machinery.

**Arch Flash Protection**- A complete FR clothing and equipment system that covers the entire body, except for the hands and feet. This includes pants, jacket, and bee-keeper-type hood fitted with a face shield.

**Arch Flash Hazard**-- A dangerous condition associated with the release of energy caused by an electric arc.

**Competent Person**- An OSHA "competent person" is defined as "one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them". [[29 CFR 1926.32\(f\)](#)]. By way of training and/or experience, a competent person is knowledgeable of applicable standards, is capable of identifying workplace hazards relating to the specific operation, and has the authority to correct them. The employee's supervisor is a competent Person.

**Current**- Term used to describe electric flow.

**Deenergized** – Electrical devices that are disconnected from all energy sources including direct electric connections, stored electric energy such as capacitors, and stored non-electrical energy in devices that could reenergize electric circuit parts.

**Energized Electrical Work**- Employee conducting a work activity near an exposed energized circuit greater than 50 volts and less than or equal to 600 volts.

**Environmental Health and Safety (EHS)** -- Department who support the University's commitment to providing a safe and healthful workplace.

**FM – Factory Mutual** – A product safety testing and certification procedure.

**Flame-Resistant (FR)**-- The property of a material whereby combustion is prevented, terminated, or inhibited following the application of a flaming or non-flaming source of ignition, with or without subsequent removal of the ignition source.

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FPN: Flame resistance can be an inherent property of a material, or it can be imparted by a specific treatment applied to the material.

**GFCI**—Ground Fault Circuit Interrupter, provides additional protection from shocks by shutting off current to the equipment when a change in electricity is sensed.

**Grounding** – A safe path between electricity and the earth, preventing leakage of current.

**High Voltage**- is a electrical system or equipment operating with a voltage over 600 volts.

**Low Voltage**—is a electrical system or equipment operating with a voltage under 600 volts.

**Qualified Person**- A person, designated by Eastern Illinois University such as the employees of the Electrical Shop, who by reason of experience or instruction have demonstrated familiarity with the operation to be performed and the hazard involved with working on electrical equipment.

**UL**- Underwriter Laboratories is an independent product safety testing and certification organization.

**Voltage**—Electric potential or potential difference assigned to a circuit or system expressed in volts.

## Responsibilities

The goal of the electrical safety program is to ensure that all employees understand the hazards associated with electric energy and are capable of performing the necessary steps to protect themselves and their coworkers.

Primary responsibilities include:

- Hazard identification
- Training
- Reporting/correcting safety hazards

Employees

- Work safe at all time
- Are aware of electrical safety issues
- Comply with safe operating procedures when working with electrical equipment
- Attend appropriate safety training.
- Report safety concerns

Supervisors, Managers, Deans and Directors

- Provide a safe working environment, provide Personal Protective Equipment if required
- Ensure staff are trained, qualified, and authorized to work on electrical equipment
- Serve as a Competent Person in the work place
- Conduct periodic hazard analysis of work areas
- Correct identified safety hazards
- Notify EHS representatives of new hires, retirements, transfers, terminations, etc. that may affect the list of employees covered under Electrical Safety Plan

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### EH&S

- Provide assistance in identifying electrical safety issues
- Provide electrical safety training for campus staff
- Review electrical equipment safe operating procedures as necessary

### Facilities Management

- Ensure that all authorized or qualified persons have received appropriate levels of training
- Ensure appropriate Personal Protective Equipment is provided to authorized or qualified staff who work with electrical equipment

## Plan Components

Any voltage may be dangerous if you become inadvertently become part of the electrical circuit. Working on electrical circuit should be performed by trained experienced employees.

### *Precaution for all staff:*

- Unplug or deenergized all electrical equipment before working on the electrical parts or circuit.
- Extension cords are used for a temporary power source. Do not plug power strips into extension cords.
- Inspect all cords and electrical equipment on a regular frequency for damages and sign of overheating.
- Never pull the cord from the socket, grasp the plug to unplug from the wall outlet.
- All electrical devices must be properly grounded with a three wire plug unless the equipment is double insulated.
- Never use cord in wet area unless you are protected by a GFIC device.

### *Lab, Stage, Art Studio and Facilities Management*

- Never work on electric devices with an operation voltage of 600 volts or greater while energizes. Facilities Management will need to take extras measures to protect employees during energize work.
- Be aware of your electrical surrounding, look for electrical hazards.
- Ensure that all authorized or staff have received appropriate training in order to operate equipment.
- Electric equipment must be deenergized before moving or working on the equipment.
- Maintain a three-foot clearance around electrical panels.
- Always follow lockout/tag-out procedures when working on electrical equipment (Lockout/Tag-out Program). See University Safety Manual Chapter 15 <http://www.eiu.edu/~environ/manual/Safety%20Manual%20Chapter%2015.pdf>
- Wear appropriate Personal Protective Equipment (PPE) such as safety glasses, rated rubber gloves, rated rubber sleeves, insulated boots, and face shield.
  - University Safety Manual 4-12.35 *Personal Protective Equipment* -- Approved protective headgear shall be worn by all personnel when: Employees are present in areas where a hazard exists from falling or flying objects or from other harmful contacts or exposures or where there is a risk of injury from electric shock, hair entanglement, chemicals, or temperature extremes.
- Never override safety devices such as electrical interlocks.
- Remove all rings, key chains or other metal objects when working around electricity.
- Wear appropriate personal protective equipment, such as eye protection and insulated gloves, as needed.
- Never use metal ladders when working near energized wiring.
- *Battery Handling 29 CFR 1910.268(b)(2)(i)*
  - Eye protection devices which provide side as well as frontal eye protection for employees shall be provided when measuring storage battery specific gravity or handling electrolytes, and the employer shall ensure that such devices are used by the employees. The employer shall also ensure that acid resistant gloves and

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aprons shall be worn for protection against spattering. Facilities for quick drenching or flushing of the eyes and body shall be provided unless the storage batteries are of the enclosed type and equipped with explosion proof vents, in which case sealed water rinse or neutralizing packs may be substituted for the quick drenching or flushing facilities. Employees assigned to work with storage batteries shall be instructed in emergency procedures such as dealing with accidental acid spills.

- Is the responsibility of all lab managers, principal investigators, stage managers, and faculty

## Training Requirements and Competency Assessment

Training Requirement, Class Title	Target Audience	Frequency
Basic Electrical Safety Awareness	All Employees work on exposed electrical wiring or electrical devices that may pose a potential for electrical shock or arc flash	At time of employment and periodically thereafter
Advanced Electrical Safety	Employees who work directly with electrical systems from 50 to 600 volts, Authorized Persons	At time of employment
Lock Out/Tag Out	Employees who work directly with electrical systems from 50 to 600 volts, Authorized Persons	At time of employment
Hazardous Electrical Voltage Safety	Employees who work with or in the proximity of electrical equipment or systems over 600 volts, Qualified Electrical Worker (QEW)	Annually , by the Electrical Shop

- Work unit specific training may also be required for specific workplace activities or equipment. Notify your supervisor if you have any questions.