

Course Contents

Courses comprise two broad categories:

- **Essential knowledge** courses are intended to give the student a general approach to the fundamental concepts of mission critical infrastructure. Two essential knowledge courses granting PDHs are offered for free to any student enrolled in the Professional Development courses.
- **Professional development** courses provide in-depth education on several aspects of mission critical infrastructure. These courses grant PE's Professional Development Hours (PDHs).

Course Pricing

- **Professional Development Hours (PDH) Online Courses** — \$400/course with 8 PDHs awarded. Includes two Essential Knowledge Courses which earn you an additional 16 PDHs for the first course only.
- **Foundations of Mission Critical Infrastructure** — A certificate program is available to allow students to purchase all the courses in the Mission Critical Education category at a discounted price of \$2,000. After completing all the courses provided, the student will receive a Certificate in the "Foundations of Mission Critical Infrastructure."

If you are interested in enrolling into this **Certificate Program**, please contact us at education@powermanage.com

Course Descriptions

Mission Critical Electrical Systems Maintenance

PDH: This course credits 8 Professional Development Hours.

Maintenance of electrical systems is integral to ensuring continuous power to critical infrastructure.

Understanding a facility's electrical infrastructure, internal building deficiencies, as well as being proactive in evaluating test reports is required in order to implement a proper maintenance program.

In addition to addressing these requirements, the importance of how standards and regulations affect electrical maintenance safety will be presented.

Standby Generators

PDH: This course credits 8 Professional Development Hours.

In an age where emergency preparedness is increasingly under public attention, the necessity for standby power has become paramount.

In addition, planning, emergency procedures and nonlinear load problems are important to the overall implementation and maintenance of an effective standby power system, all of which shall be addressed.

Fuel System Design and Maintenance

PDH: This course credits 8 Professional Development Hours.

Fuel quality is critical to generator performance. Proper maintenance of fuel oil systems will assure good fuel quality and integrity thereby optimizing the reliability, service life, and performance of the engine generator.

In addition to learning about proper fuel oil maintenance, design of fuel systems, proper testing and storage of fuel will also be discussed with the appropriate application of codes and standards.

Automatic Transfer Switches

PDH: This course credits 8 Professional Development Hours.

During a power interruption, the ability to transfer the power load to an emergency source via an Automatic Transfer Switch (ATS) is of utmost importance to any facilities manager, especially when concerned with life safety and critical systems.

A detailed view of ATS' and their features, requirements, control devices, uses, and safety regulations are presented to indoctrinate better understanding of ATS' and their relation to safety and reliability.

Static Transfer Switches

PDH: This course credits 8 Professional Development Hours.

A Static Transfer Switch (STS) is critical to any redundant power system supplying data center loads. In the event of a power loss, switching to an alternate source of power without dropping the load is vital.

In order to understand the importance of STS', an in-depth look at the major components, parameters, common locations, maintenance, and testing is required.

Fundamentals of Power Quality

PDH: This course credits 8 Professional Development Hours.

Understanding power quality is crucial to ensuring continuous operation of critical facility infrastructure. Poor power quality can put undue wear and tear on your computers, data, and mission critical infrastructure.

In order to understand power quality and it's affect on a facility, an overview of troubleshooting possible power problems, power monitoring, and the tolerance of computer equipment will be discussed.

UPS Systems

PDH: This course credits 8 Professional Development Hours.

There is no doubt that Uninterruptible Power Systems are integral to the continuous supply of clean power for mission critical infrastructure.

In order to understand the UPS systems and their influence on reliability, an overview of UPS terminology, concepts of integrating UPS systems, static systems, rotary systems, redundancy, configuration, batteries, and energy storage systems will be discussed.

Data Center Cooling

PDH: This course credits 8 Professional Development Hours.

Data center cooling is one of the main requirements to consider in mission critical designs. Servers and other electronic components exhaust massive amounts of heat during normal operation which must be cooled or risk overheating. Overheating may cause permanent damage, and loss or corruption of sensitive data in just a matter of minutes. The cooling systems in data centers must be run constantly at peak efficiency with the help of proper maintenance procedures and strict adherence to the condition and operation of all components.

Raised Access Floors

PDH: This course credits 8 Professional Development Hours.

A raised access floor creates a space between the floor slab and the underside of the access floor and provides space for building services such as air conditioning, fire detection and suppression, security and cabling for electric power, data, telecom/voice, and environmental control, to name a few. Design considerations with respect to loads, air flow requirements, safety concerns and others will be discussed as well as panel cutting and floor maintenance.

Fire Protection in Mission Critical Infrastructure

PDH: This course credits 8 Professional Development Hours.

An introduction to fire detection, alarm and suppression within critical environments according to fire codes will be reviewed. Fire detection systems using smoke detectors, heat detectors, flame detectors, and others will lead into various forms of fire suppression systems using wet-pipe, dry-pipe, pre-action, watermist, and gaseous chemical systems. Advantages, disadvantages and requirements of each system will further help in the understanding of the different types of systems available on the market and how they are applicable.

Overview of Electrical Codes and Safety Standards

PDH: This course credits 8 Professional Development Hours.

An introduction to codes and standards to reduce hazards in the workplace will lead to examples of codes from the NEC, NESC, and others to provide a foundation for safe installation and operation of electrical systems. Hazardous locations will be clearly classified and protection techniques will be identified using special grounding systems.

Essential Knowledge Courses

Mission Critical Facilities Engineering

PDH: This course credits 8 Professional Development Hours.

When approaching mission critical facilities engineering, it is imperative to understand all aspects of the design and operation of the facility in order to address risk tolerance, reliability, maintainability, and proactive preventative maintenance.

In addition, identifying appropriate redundancy and critical design considerations in a mission critical facility, knowing the role of the mission critical facilities manager, and recognizing the importance of the boardroom will further promote understanding of Mission Critical Facilities Engineering and decrease the potential for catastrophic events.

Reliability and Resiliency

PDH: This course credits 8 Professional Development Hours.

Reliability and resilience are the essence of the mission critical mindset. Understanding the impact of these ideas and their relation to downtime is crucial.

In order to understand the impact of downtime and how it can be prevented by a routine maintenance schedule and employee training will be addressed.