



Capacitor Theory and Applications Training

Course information sheet

Course duration 4 hours

Course overview

This four-hour course explains how capacitors store and release electrical energy and how their construction and applications affect work planning. Participants examine charging and discharging behavior, stored-energy and arc hazards, inspection and maintenance considerations, and the selection of safe work practices for capacitor-involved tasks.

Who should attend

Apprentices, electricians, maintenance technicians, supervisors, managers, planners, engineers, procurement personnel, and others involved in capacitor installation, replacement, maintenance, oversight, risk assessment, or work planning.

Learning outcomes

- Explain capacitor construction, operating principles, charging and discharging behavior, and common applications.
- Recognize stored-energy, shock, and arc hazards associated with capacitor equipment and maintenance.
- Describe inspection and maintenance considerations and the information needed before work begins.
- Analyze a simulated capacitor work scenario to identify hazards, evaluate risk, and select appropriate controls, including isolation, verification, discharge, and protection against reaccumulation as applicable.
- Evaluate a proposed maintenance plan and justify safe work practices, testing methods, and protective equipment appropriate to the equipment and task.

Topics covered

Capacitor types and construction; basic electrical characteristics and calculations; charging, discharge, and stored energy; applications; shock and arc exposure; inspection and maintenance; isolation, verification, discharge, and reaccumulation; testing, PPE, and scenario-based work planning.

Format and references

Instructor-led discussion, demonstrations, and simulated work scenarios. References: NFPA 70E (2027 edition); NFPA 70B (2026 edition); NFPA 70 National Electrical Code (2026 edition), where applicable; and applicable OSHA general industry and construction requirements. Employer procedures and equipment instructions govern task-specific methods.

Course completion supports task planning; employers determine task-specific qualification, procedures, and authorization.

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