Content Community Connection

United States
The Electricity Forum Inc.
742 Pre Emption Road
Geneva, NY 14456
Tel 289-387-1025

Canada
The Electricity Forum
1885 Clements Rd, Unit 218
Pickering, ON L1W3V4
Tel 905-686-1040
Fax 905-686-1078
Toll Free 855-824-6131

UPS System Training

View Course Details

COURSE DATES AND TIMES

February 25-26 , 2026

10:00 am - 4:30 pm ET

June 15-16 , 2026

10:00 am - 4:30 pm ET

October 5-6 , 2026

10:00 am - 4:30 pm ET

Why UPS System Training Matters

This instructor-led UPS System Training course provides a comprehensive understanding of how uninterruptible power supply (UPS) systems are designed, selected, installed, and operated in industrial, commercial, and institutional electrical environments. The course focuses on the role UPS systems play in maintaining power continuity, power quality, and equipment protection for critical loads.

Participants learn how UPS systems function at the system level, including rectifiers, inverters, static and maintenance bypass systems, control logic, monitoring, alarms, and operating modes. The course explains how UPS systems interact with electrical distribution systems, generators, grounding and bonding networks, and sensitive electronic loads.

Rather than focusing on battery testing or maintenance procedures, this course emphasizes UPS system architecture, application, sizing principles, power quality considerations, operational behavior, and common failure modes. Participants will gain the knowledge needed to select appropriate UPS solutions, understand system performance limitations, recognize abnormal operating conditions, and make informed decisions when specifying, commissioning, or managing UPS installations.

This course is ideal for electrical engineers, technicians, electricians, facility managers, and maintenance personnel responsible for the design, operation, or oversight of UPS systems. Detailed battery testing and maintenance procedures are covered separately in the UPS Battery Testing and Maintenance course.

LEARNING OBJECTIVES:

- Understand The Functionality Of Different UPS Type
- Size The UPS And Battery Bank For An Application
- Recommend Solution For A Practical Implementation
- Perform Maintenance And Parameter Settings On A UPS
- Perform Battery Maintenance And Results Interpretation
- Design A Complete UPS System And Recommend The Proper Grounding Solution

WHO SHOULD ATTEND

- Industrial, Commercial, Institutional Electrical Engineers
- Electrical Maintenance Tradespeople & Technicians
- Instrumentation And Control Engineers
- Power System Protection And Control Engineers
- Consulting Electrical Engineers
- Building Service Designers
- Data Systems Planners And Managers
- Other Electrical Personnel Involved In The Maintenance Industrial, Commericial And Institutional Power Systems

STUDENTS RECEIVE

- 100-Page Digital Power Quality/UPS Handbook - Value $20
- 1.2 Continuing Education Unit (CEU) Credits
- A **FREE** Magazine Subscription (Value $50)
- **$100** Coupon Toward Any Future Electricity Forum Event (Restrictions Apply)
- Course Materials In Paper Format

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UPS System Training Course Outline

DAY ONE

Why Have a Uninterruptible Power Supply System (UPS)

Types and Duration of UPS

- **Power System Disturbances**
  - Sags
  - Surges And Spikes
  - Outages
  - Phase Relationships

The CBEMA Curve

Three General Types of UPS

- Kinetic (Motor Generator Sets)
- Flywheel

Static

- Rectifier
- Batteries
- Inverter

THREE TYPES OF STATIC UPSs

- The Traditional UPS
- The Static UPS
- The Static UPS With Bypass

REVIEW OF PASSIVE ELECTRONIC COMPONENTS

Volts, Ohms and Amps in DC and AC Circuits

Resistors

Capacitors

- Formed Caps
- Failure Mode Of Electrolytic Capacitors

Inductors

- Coils And Chokes
- Single Phase Transformers
- Three Phase Transformers
- Wye
- Delta

RLC Circuits in Series and Parallel

- Tuned Circuits
- Harmonics
- Ferro Resonance

REVIEW OF ACTIVE COMPONENTS

Diodes

- Half-Wave Rectification
- Full-Wave Rectification
- Polyphase Rectification
- Wye/Delta Rectification
- Troubleshooting Diodes

Transistors

- Applications Of Transistors
- Troubleshooting Transistors

Thyristors

- SCRs
- Applications
- Troubleshooting

TRIACS

- Applications
- Troubleshooting

IGBTs

- Applications
- Troubleshooting
- Triggering Circuits

Operational Amplifiers

- Instrumentation Amplifier
- Inverting Amplifier
- Non-Inverting Amplifier
- Ramping Applications

DAY TWO

HOW BATTERIES WORK

Primary Batteries

Secondary Batteries

Lead Acid

- The Chemistry
- Battery Types
- Capacity Factors
- S-Curves
- Battery Safety And Maintenance
- Float And Equalize Voltages
- Load Testing

Lithium Ion

- The Chemistry
- Battery Types
- Capacity Factors
- Battery Safety And Maintenance
- Float And Equalize Voltages
- Load Testing

UPS TOPOLOGIES

Single Phase

- Rectifiers
- Inverters

Three Phase

- Rectifiers
- Inverters

INSTALLATION COORDINATION AND BEST PRACTICES

Equipment movement & placement

- Weight loading, raised floor vs concrete floor
- Seismic provisioning

Bonding & Grounding

- Bonding with respect to raised floor systems
- Grounding requirements as per CEC and NEC

Cable management

- Best practices for Teck vs conduit
- Sizing and terminations

Contractor issues

- Recommended pre-commissioning checklists
- Coordination with GC for HVAC and structural provisions
- Environmental requirements for decommissioning old units during equipment swaps

TROUBLESHOOTING & MAINTENANCE

Expected electrical values

Typical features of UPS HMI or software for alarming & trending

Manufacturer's recommending maintenance practices Installation

- Quarterly Checklists
- Annual Checklists
- Tools And Equipment
- Basic Arc Flash Electrical Safety

COURSE SCHEDULE:

Both days:

Start: 10 a.m. Eastern Time
Finish: 4:30 p.m. Eastern Time

Contact us Today for a FREE quotation to deliver this course at your company's location.

Request Quote