

Uninterruptible Power Supplies

This five-day course begins by reviewing the fundamental concepts of power inverters, converters, and UPS systems. Other major topics include power conditioning, basic UPS applications, principles of battery operation, power inverters and waveshaping, voltage regulation, static switching and auxiliary circuits, and UPS troubleshooting and maintenance.

I. Fundamental Concepts of Power Inverters, Converters, and UPS Systems

- Alternating Current
- Inductors and Capacitors
- Relays
- Transformers
- Atomic Review
- Transistors and Transistor Applications
- Silicon Controlled Rectifiers (SCR)
- DV/DT Snubbing
- Triac and Diac
- Logic Gates
- Operational Amplifiers
- Metering Equipment

II. Power Conditioning

- Characteristics of Electrical Noise
- Causes of Electrical Noise
- How Electrical Noise Enters Sensitive Circuits
- Effects of Noise on Equipment Performance
- Solutions to Electrical Noise Problems

III. Basic UPS Applications

- Static Inverters
- Inverter Systems
- Basic UPS Layouts

IV. Principles of Battery Operation

- Battery Electrochemical Action
- Battery Components
- Storage Batteries
- Battery Charging Fundamentals

V. Power Inverters and Waveshaping

- Theory of Operation
- SCR Gating
- SCR Commutation

VI. Voltage Regulation

- DC Voltage Regulation
- Voltage Regulator Transformers
- Load Tap Changers

VII. Static Switching and Auxiliary Circuits

- Static Switching
- Auxiliary Circuitry

VIII. UPS System Troubleshooting and Maintenance

- Troubleshooting
- Preventive Maintenance