

# Essential Electrical Theory and Concepts

Two-Day Course Outline



## Ensuring Dependable Operation and Safety

The dependable operation and maintenance of electrical equipment requires a strong foundational understanding of complex and interrelated electrical concepts.

Providing personnel with a strong base empowers continued education and results in skilled, knowledgeable, and successful teams.

Conversely, neglecting to educate on these essential principles can jeopardize the continued dependable operation of equipment and place lives at risk.

### Next Level Reliability

To learn more about ERS Training Services, please contact us at 1 877-468-6384 or visit [ERS.vertiv.com](http://ERS.vertiv.com)

## Course Overview

This course is designed to introduce core electrical concepts and common electrical components. Component safety and protection, as well as tools and resources necessary for testing and troubleshooting, will be presented.

Utilizing the considerable expertise of the instructor, this course provides flexible content that adapts its focus to the specific needs of the student and/or hosting organization, allowing for an optimized transfer of knowledge and skills within the allotted time.

Anyone seeking to gain an essential understanding of electrical theory and componentry should attend.

**Course Duration: 16 Hours.**

## Two Day Seminar Course Outline:

### Day 1

#### Electrical Theory

- Atomic Structure
- Ohm's Law
- Magnetic Theory
- Sine Wave Theory
- Sine Wave, Frequency, Average, RMS, Peak, Peak-to-Peak Values

#### Electrical Circuits

- Resistors, Capacitors, and Inductors
- Series Circuits
- Kirchhoff's 1st Law (current)
- Parallel Circuits
- Kirchhoff's 2nd Law (voltage)
- Combination Series, Parallel Circuits
- Capacitive Circuits
- Inductive Circuits
- Impedance

### Day 2

#### Power Distribution

- Single Phase Power Systems
- Three Phase Power Systems
- Power Triangle

#### Electrical Components

- Insulators
- Conductors
- Resistors
- Semiconductors
- Control Transformers

#### Practical Application

- Measurements
- Devices
- Systems
- Essential Test Equipment

## Training Materials

Electrical Reliability Services (ERS) will provide student manuals, supplemental materials, video presentations, and demonstration equipment. A "Certificate of Completion" is provided for students meeting or exceeding minimum course standards. Minimum course standards are defined as a 80% score on the written post course examination.