

EDGE Course Outline

EDGE Module 1: Fundamentals of Electricity

Objectives

Upon completion of this module, you will be able to:

- Learn how electricity is generated and distributed to customers.
- Understand Ohm's Law, AC and DC current, and the differences between single-phase and three-phase systems.
- Examine the different types of electrical controls and important safety considerations.

Module Outline

Lesson One

- A. Our Dependence on Electricity
- B. A Common Electrical Circuit

Lesson Two

- A. What is Electricity?
- B. The Exchange of Electrons

Lesson Three

- A. Characteristics of Electricity
- B. Ohm's Law

Lesson Four

- A. Types of Electrical Current
- B. Transmission of Electricity
- C. Single and Three-Phase System

Lesson Five:

- A. Basic Electrical Controls
- B. Safety in an Electrical System

Final Exam:

- A. 30 Questions

Duration: 2 Hours

EDGE Module 2: Electrical System Products

Objectives

Upon completion of this module, you will be able to:

- Recognize the essential products that electrical distributors sell, such as wire and cable, raceway, boxes, switches, receptacles and plugs.
- Know which essential products form the pathway for electrical current from its source of origin to the point of use. Practice using the EPEC Triangle and the *National Electrical Code* or *Canadian Electrical Code*
- Understand the basic characteristics of these products, key considerations, and their appropriate applications.

Lesson Outline

Lesson One:

- A. Basic Conductors: Wire & Cable
- B. Insulation and Protection Jackets

Lesson Two:

- A. Types of Wire and Cable
- B. Reading Catalogs

Lesson Three:

- A. Raceway: Conduit and Wireway
- B. Raceway: Fitting and Accessories

Lesson Four:

- A. Electrical Boxes
- B. Wiring Devices

Final Exam:

- A. 30 Questions

Duration: 1.5 Hours

EDGE Module 3: Apparatus Products

Objectives

Upon completion of this module, you will be able to:

- Understand how many electrical apparatus products that are used throughout an electrical circuit from the power source to the loads.
- Learn about transformers, circuit breakers, panelboards and load centers, safety switches, busway, and motors
- Know these products functions and uses and what you need to consider when helping your customers with their specific applications.

Lesson Outline

Lesson One:

- A. What is a Transformer?
- B. Important Transformer Ratings
- C. Additional Transformer Considerations

Lesson Two:

- A. Functions of Circuit Breakers
- B. Selecting Circuit Breakers

Lesson Three:

- A. Panelboards and Load Centers
- B. Panelboard Configurations
- C. Selecting Panelboards/Load Centers

Lesson Four:

- A. How Safety Switches Work
- B. Safety Switch Classifications

Lesson Five:

- A. Busway Types and Functions

Final Exam:

- A. 30 Questions

Duration: 2 Hours

EDGE Module 4: Lamps and Lighting Products

Objectives

Upon completion of this module, you will be able to:

- Identify difference between lamps and luminaries and how light sources are measured and compared.
- Examine the history of incandescent, halogen, fluorescent, and HID lighting and their functions and appropriate applications.
- Understand how LEDs have revolutionized the lighting industry and replaced legacy lighting products because of their flexibility, efficiency and cost savings.

Lesson Outline

Lesson One:

- A. Lamps and Luminaries
- B. Measuring Light Sources
- C. Light Source Characteristics

Lesson Two:

- A. Incandescent Lighting
- B. Halogen and Ultra Long Life Lamps

Lesson Three:

- A. Fluorescent Lamps
- B. Ballasts
- C. Fluorescent Luminaires

Lesson Four:

- A. High Intensity Discharge (HID) Lighting

Lesson Five:

- A. What is an LED?
- B. LED Benefits and Applications
- C. Luminaires

Final Exam:

- A. 30 Questions

Duration: 2.25 Hours