

EPEC Bronze Module 1: Introduction to Electrical Products

Objectives

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

- Identify the professional advantages of knowing a broad range of electrical products and their relationships within electrical systems.
- Define basic electrical terms, functions, and relationships.
- Follow the EPEC Electrical Products Triangle—a concept you can use to uncover product sales opportunities throughout an electrical system.
- Describe all the considerations that play a part in the product selection process.
- Analyze sample plans and specifications to look for sales opportunities.

Chapter Outline

Chapter One: Expanding Your Opportunities in Electrical Distribution

- A. Your Role in, and Contribution to, the Electrical Industry
- B. The EPEC Opportunity

Chapter Two: The Basics of Electricity

- A. Electricity: The Source
- B. Flow, Force, and Resistance in Electric Current
- C. Circuits and Related Terms
- D. The Relationships of Amperes, Volts, Ohms, and Watts

Chapter Three: The EPEC Electrical Products Triangle

- A. Loads: Light, Heat, Power, Communications, and Receptacles
- B. Controls
- C. Distribution System and Physical Protection
- D. Electrical Protection
- E. Service Entrance
- F. Fittings, Boxes, and Supplies
- G. Tools and Instruments

Chapter Four: Considerations for Product Selection

- A. Product Selection Variables
- B. Industry Influences

Chapter Five: Product Selection Application

- A. From Ideas to Reality
- B. Choices and Trade-Offs in Product Selection

Chapter Six: EPEC Assignment

- A. EPEC Electrical System: The Guardhouse
- B. EPEC Assignment

EPEC Bronze Module 2: Residential

Objectives

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

- Recognize common considerations for selection of electrical products used in residential environments.
- Practice using the EPEC Triangle and the *National Electrical Code* or *Canadian Electrical Code* introduced in Module 1 to analyze product choices for commercial and residential systems.
- Recognize ways that individual electrical products work together as a system in a residential environment.
- Create product submittals for a specific residential scenario.

Chapter Outline

Chapter One: Lighting Basics

- A. What is Light?
- B. Vision Basics
- C. Lighting Metrics
- D. What is Color?
- E. Color Rendering
- F. Color Temperature
- G. How Are They Different?
- H. Lamp Families

Chapter Two: Electric Comfort Heating and Controls

- A. The Advantages of Zonal Electric Heating
- B. Zonal Electric Heat Methods
- C. Heating Controls

Chapter Three: Communication Devices

- A. What is a Transformer?
- B. Residential Communications

Chapter Four: Receptacles

- A. Residential Applications

Chapter Five: Distribution System

- A. Wire and Cable
- B. Cable Types and Applications
- C. Series and Parallel Circuits

Chapter Six: Electrical Protection

- A. Circuit Protection: Terms and Definitions
- B. Fuse Construction and Operation
- C. Circuit Breakers
- D. GFCI Devices
- E. AFCIs

Chapter Seven: Service Entrance Equipment

- A. Functions and Components
- B. Load Centers

Chapter Eight: Fittings, Boxes, and Supplies

- A. Boxes, Covers, and Connectors

Chapter Nine: In the Tool Box

- A. Product Opportunities

Chapter Ten: EPEC Assignment

- A. EPEC Electrical System: Single-family Residence
- B. EPEC Assignment

EPEC Bronze Module 3: Light Industrial

Objectives

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

- Consider lighting, distribution, and installation needs that impact industrial and commercial applications.
- Use the EPEC Triangle to analyze industrial electrical systems.
- Identify the multiple electrical products required to adequately supply an industrial jobsite.

Chapter Outline

Chapter One: Incandescent Lamps

- A. What is a light bulb?
- B. Other Types of Incandescent Lamps

Chapter Two: Fluorescent Lamps

- A. How do Fluorescent Lamps Work?
- B. Types of Fluorescent Lamps
- C. Fluorescent Ballasts

Chapter Three: Discharge Lamps

- A. High-Intensity Discharge (HID)
- B. Low-Pressure Sodium
- C. Ballasts & Starters

Chapter Four: Light Emitting Diodes (LED)

- A. LED Characteristics
- B. How LEDs Work
- C. Advantages and Disadvantages

Chapter Five: Electric Heating Products

- A. Properties of Heat
- B. Product Opportunities

Chapter Six: Motors and Motor Controls

- A. Motor Ratings and Terminology
- B. Motor Controls
- C. Motor Control Diagrams
- D. Motor Control Circuits

Chapter Seven: Communication Devices

- A. Signaling Devices
- B. Industrial and Commercial Communications
- C. Exit Signs



Chapter Eight: Receptacles

- A. Receptacles in an Industrial Environment

Chapter Nine: Distribution System and Physical Protection

- A. Three-Phase Systems
- B. Industrial Raceways
- C. Raceway Considerations
- D. Distribution Busway
- E. More on Transformers
- F. Electrical Enclosures

Chapter Ten: Electrical Protection and Service Entrance Equipment

- A. Circuit Protections: Industrial Considerations
- B. Safety Switches

Chapter Eleven: Fittings, Boxes, and Supplies

- A. Installation Opportunities

Chapter Twelve: In the Tool Box

- A. Product Opportunities

Chapter Thirteen: EPEC Assignment

- A. EPEC Electrical System: Cabinet Maker Shop
- B. EPEC Assignment

EPEC Bronze Module 4: Commercial & Outdoor

Objectives

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

- Identify what impacts appropriate product selection for industrial and commercial environments.
- Use the EPEC Triangle to analyze industrial and commercial electrical systems.
- Make appropriate product selections for given industrial and commercial applications.

Chapter Outline

Chapter One: What's a Luminaire?

- A. Concepts of Lighting Control
- B. Luminaire Classifications
- C. Luminaire Mounting Methods
- D. Luminaire Types
- E. Roadway Lighting Distribution Types
- F. Lighting for Highlights and Shadows

Chapter Two: Retail Lighting

Chapter Three: Office Lighting

Chapter Four: Communication Devices

Chapter Five: Receptacles

- A. Isolated Ground Receptacles
- B. Other Receptacles

Chapter Six: Distribution System and Physical Protection

- A. Commercial Considerations
- B. Distribution System Options

Chapter Seven: Electrical Protection and Service Entrance Equipment

- A. Electrical Protection Considerations
- B. Panelboard or Load Center?
- C. Panelboard Characteristics
- D. Multiple Metering

Chapter Eight: In the Tool Box

- A. Product Opportunities Chapter Nine: EPEC Assignment

Chapter Nine: EPEC Assignment

- A. EPEC Electrical System: The Strip Mall
- B. EPEC Assignment

EPEC Bronze: Final Exam

This exam presents 100 random questions based on the content presented in Bronze Modules 1 through 4. There is no time limit for this exam, and you need to score 75% or higher to pass.

EPEC Bronze: Capstone Project

Objectives

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

- Review plans and specifications.
- Create a bill of materials for the products selected.
- Determine the best product for each application.
- Develop a cut package of all selected products including related items from the EPEC Triangle.
- Consider product selection variables and trade-offs.

Chapter Outline

- A. EPEC Electrical System: Enhanced Strip Mall
- B. EPEC Capstone Project