EPEC Lighting 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 Lighting Module 2: Lighting Basics

Objectives

Upon completion of this module, you will be able to:
- Understand the definition of light.
- Explain the basics of vision.
- Recognize lighting metrics.
- Understand the definition color.
- Explain correlated color temperature (CCT).
- Define the color rendering index (CRI).

Chapter Outline

Chapter One: Basics of Light & Seeing
- What is Light?
- Vision basics
- Lighting Metrics

Chapter Two: Color & Light
- What is Color?
- Color Rendering Index
- Correlated Color Temperature
- Understanding Differences of CRI & CCI

Chapter Three: EPEC Assignment
- EPEC Electrical System: Single-Family Residence
- EPEC Assignment
EPEC Lighting Module 3: Lighting Sources & Ballasts

Objectives

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

- Recognize how light sources differ.
- Be familiar with the different lamp families.
- Understand how light sources work.
- Identify the different types of incandescent lamps.
- Be aware of the features of dimming.
- Comprehend how a fluorescent lamp works.
- Classify the different types of fluorescent lamps.
- Be familiar with ballasts and their functions.
- Recognize the specific features of high-intensity discharge lamps.
- Understand the benefits of low-pressure sodium lamps and ballasts.
- Name the features and benefits of light-emitting diode (LED) lamps.

Chapter Outline

Chapter One: Light Sources
   A. How are they different?
   B. Lamp Families

Chapter Two: Incandescent Lamps
   A. What is a Light Bulb?
   B. Types of Incandescent Lamps

Chapter Three: Fluorescent Lamps
   A. How do Fluorescent Lamps Work?
   B. Types of Fluorescent Lamps
   C. Fluorescent Ballasts

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

Chapter Five: Light-Emitting Diodes (LEDs)
   A. LED Characteristics
   B. How LEDs Work
   C. Applications, Advantages and Disadvantages

Chapter Six: EPEC Assignment
   A. EPEC Electrical System: Cabinet Maker Shop
   B. EPEC Assignment
EPEC Lighting Module 4: Luminaires & Calculations

Objectives

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

- Recognize the four major ways to control light.
- Be familiar with the two major luminaire classifications.
- Understand the various secondary classifications.
- Identify the classification based on distribution types.

Chapter Outline

Chapter One: What's a Luminaire?
- Concepts of Lighting Control
- Luminaire Classifications
- Luminaire Mounting Methods

Chapter Two: Outdoor Luminaire Characteristics
- Luminaire Types
- Roadway Lighting Distribution Types
- Lighting for Highlights and Shadows

Chapter Three: Photometry and Lighting Calculations
- Photometry
- Lighting Calculations

Chapter Four: EPEC Assignment
- EPEC Electrical System: The Condominium Lighting Project
- EPEC Assignment
EPEC Lighting Module 5: Lighting Applications & Energy Management

Objectives

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

- Identify home lighting applications.
- Name several lighting methods to sell and enhance products in a retail setting.
- Understand the variables, considerations, and visual comfort in an office setting.
- Distinguish key factors in functions, comfort, and design for outdoor lighting applications.
- Evaluate light distribution and spacing criteria factors in a warehouse lighting design.
- Assess industrial environmental settings for lighting solutions.
- Estimate costs of commercial buildings and propose lighting controls to play an important part in cost reduction.
- Judge reasons for incorporating daylight into the lighting scheme of a building and how it’s an important element of sustainable design.
- Apply principles of capital investment to lighting design evaluation.

Chapter Outline

Chapter One: Residential
  A. Lighting Design for Home Spaces

Chapter Two: Retail Lighting

Chapter Three: Office Lighting

Chapter Four: Warehouse Applications

Chapter Five: Industrial Applications
  A. Economics of Quality Industrial Lighting
  B. Industrial Lighting Design Considerations
  C. Industrial Environments
  D. Task Lighting
  E. Hazardous Locations

Chapter Six: Outdoor Lighting Applications and Design
  A. Outdoor Lighting Considerations
  B. Outdoor Lighting Design
  C. Sports Lighting

Chapter Seven: Energy Management
  A. Controls
  B. Daylighting
  C. Sustainable Building Design

Chapter Eight: Lighting Management
Chapter Nine: EPEC Assignment
   A. EPEC Electrical System: Energy Management
   B. EPEC Assignment
EPEC Lighting: Final Exam

This exam presents 100 random questions based on the content presented in Lighting Modules 1 through 5. There is no time limit for this exam, and you need to score 75% or higher to pass.

EPEC Lighting: 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: Department Store and Amusement Park
B. EPEC Capstone Project