

## **Intermediate Level Lighting Course- ED-150 Syllabus IES Philadelphia Section**

The new ED-150 course is designed as the next course for those who have already completed the ED-100 fundamentals program or have gained basic lighting knowledge in other educational programs (courses in academia or industry).

### **CLASS ONE: (LECTURE)**

- **Module 1: Designing for Lighting Quality**

The first session is intended to provide an overview of the course and to inspire attendees about the importance of lighting. It provides the "big picture" view of the lighting design process.

- **Module 2: Vision**

Good lighting design and engineering require an understanding of vision and the perceptions that result from it. Anatomy, optics and physiology comprise the components of vision that a lighting professional should understand. The module discusses how vision "works," and how that process affects lighting design.

- **Module 3: Color**

This module assumes that participants understand the fundamental concepts of color vision and builds on knowledge about the relationship between CCT and CRI. The derivation and limitations of these metrics is explored to justify specification of lamp color properties for various applications.

### **CLASS TWO: (STUDIO)**

- **Module 4: Establishing Lighting Goals (Schematic Design)**

A review of how the lighting design process provides a context for establishing design goals that address both visual performance and the quality of the visual environment before equipment selection. Topics include defining spatial/architectural constraints, setting luminous hierarchy goals and creating spatial impressions.

### **CLASS THREE: (LECTURE)**

- **Module 5: Light Sources**

Rather than reviewing specific products, the module explores the reasons behind new developments and the relevant performance metrics that can be used to assess new lamps and ballasts.

### **CLASS FOUR: (STUDIO)**

- **Module 6: Luminaires and Optical Control**

The principles of reflection, transmission, and refraction are explained and demonstrated to provide a clear understanding of how luminaires control light. The differences between the often-confused terms luminance and luminous intensity are explained.

- **Module 7A: Lumen Method**

Course attendees with extensive experience making lighting calculations with the lumen method may not understand its foundation. The module explains the limits of the method and its useful extensions, particularly in determining interreflected light.

### **CLASS FIVE: (STUDIO)**

- **Module 7B: Calculation of Illuminance at a Point**

The module provides an understanding the origin, use and limits of the inverse square law and the cosine law of incidence. It provides attendees with the ability to determine the illuminance from a point source in somewhat complicated geometries, and the illuminance from rectangular area sources using exitances and configuration factors in indirect and daylighting applications.

### **CLASS SIX: (LECTURE)**

- **Module 8: Controls for Lighting**

This session provides a foundation for understanding control strategies and reviews the factors that influence the basic selection of control techniques. By giving an overview of the various control technologies, attendees are able to integrate knowledge of control products with appropriate applications.

- **Module 9: Building Electrical Systems**

The characteristics of electric power systems as they relate to buildings and lighting systems is discussed to give greater understanding about power distribution to attendees who may have previously only specified lighting loads and used electrical engineers to design the overall system for a building.

### **CLASS SEVEN: (TOUR)**

- **Module 10: Daylighting Analysis**

The session focuses on the characteristics of daylight delivery systems (vertical fenestration, skylights, lightshelves, shading and overhangs), how they perform, how they can be integrated with electric lighting systems and how architecture must be modified to accommodate them.

- **Module 11: Economics**

A skill-based session with example problems and group exercises to provide hands-on experience in converting between present value, annualized cost and future cost, and in conducting and interpreting the results of a complete life cycle cost analysis of several lighting system options.

### **CLASS EIGHT: (STUDIO) Project Presentations**

#### **Course Materials Included in Fee**

#### **Intermediate Level Lighting Student Materials Note-taking workbook**

Contains speaker's presentation outline and supplementary note-taking space.

#### **Electronic CEU Certificate**