INDE 83 Course Outline as of Fall 2016

CATALOG INFORMATION

Dept and Nbr: INDE 83 Title: LIGHTING DESIGN
Full Title: Lighting Design
Last Reviewed: 9/27/2010

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	2.00	17.5	Lecture Scheduled	35.00
Minimum	3.00	Lab Scheduled	3.00	6	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	5.00		Contact Total	87.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 70.00 Total Student Learning Hours: 157.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
Concepts and principles of basic lighting design for interior spaces. Topics include the properties of light, human vision and perception, lighting equipment, lighting design concepts, lighting design documentation, and lighting applications.

Prerequisites/Corequisites:

Recommended Preparation:
Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:

Schedule of Classes Information:
Description: Concepts and principles of basic lighting design for interior spaces. Topics include the properties of light, human vision and perception, lighting equipment, lighting design concepts, lighting design documentation, and lighting applications. (Grade or P/NP)
Prerequisites/Corequisites:
Recommended: Eligibility for ENGL 100 or ESL 100
Limits on Enrollment:

Transfer Credit:
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**	Effective:	Inactive:
CSU GE:	**Transfer Area**	Effective:	Inactive:
IGETC:	**Transfer Area**	Effective:	Inactive:

CSU Transfer:	Effective:	Inactive:
UC Transfer:	Effective:	Inactive:

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Outcomes and Objectives:
Upon completion of this course, students will be able to:
1. Apply the lighting design process to a design project.
2. Identify and analyze programming issues in order to develop a lighting design.
3. Analyze lighting fixtures in terms of optics, scale, style, and use.
4. Interpret and apply lighting codes and standards in the development of a lighting design.
5. Produce appropriate design documentation.
6. Analyze lighting needs for a design project.
7. Design ambient, task, and special effect lighting that is aesthetically pleasing and appropriate for clients needs.
8. Identify, evaluate, and specify appropriate lighting fixtures and lamps for client needs.

Topics and Scope:

I. Lighting Design
  A. Design process
    1. Programming
    2. Schematic design
    3. Design development
    4. Construction documents
    5. Bidding and negotiation
    6. Construction
    7. Post occupancy evaluation
  B. Programming issues
    1. Players
    2. Preferences and impressions
    3. User needs and preferences
    4. Safety and security issues
    5. Architectural factors
    6. General lighting considerations

7. Budget
8. Energy considerations
9. Maintenance considerations
10. Programming communication
11. Programming documentation

C. Schematic design
1. Space users
2. Visual tasks
3. Lighting effects
4. Budget
5. Flexibility
6. System controls
7. Applicable codes
8. Design concepts

D. Design development
1. Selecting equipment
2. Luminaire layouts
3. Mounting details
4. Calculations
5. Communication and coordination
6. Documentation

II. Light, Vision and Color

A. Lighting terminology
1. Flux
2. Intensity
3. Illuminance
4. Exitance and luminance
5. Reflectance and transmittance

B. Vision
1. Eye anatomy
2. The retina
3. Photoreceptors
4. Visual perception
5. Visual acuity
6. Adaptation
7. Accommodation
8. Glare
9. Vision problems
10. Effects of age

C. Light and color
1. Nature of light
2. Color
3. Chromaticity (color temperature)
4. Spectral power distribution curve
5. Color rendering index

III. Light Sources

A. Measuring lamp performance

B. Lamp types

C. Fixtures

D. Daylighting

IV. Luminaries and Controls

A. Luminaries

1. Mounting
2. Distribution
3. Terms to know

B. Lighting controls
1. Hardware
2. Control strategies

V. Lighting Codes and Standards
A. National Electrical Code
B. Americans with Disabilities Act
C. Title 24
D. Other energy codes

VI. Lighting Concepts and Techniques
A. The layered approach
B. Composition
C. Downlighting
D. Uplighting
E. Cove lighting
F. Wall washing
G. Grazing
H. Accent lighting

VII. Lighting Design Documentation
A. Design development documents
B. Construction documents
C. Lighting design documents
D. Lighting plans
E. Detail drawings
F. Lighting fixture schedule
G. Control schedule
H. Lighting specifications
I. CSI (Construction Specifications Institute) specification format
J. Lighting catalog cut sheets

VIII. Lighting Applications
A. Office lighting
1. General considerations
2. Special design issues in office lighting
3. Office lighting applications
4. Additional resources

B. Hospitality lighting
1. General considerations
2. Layering approaches
3. Equipment
4. Sample applications

C. Retail lighting
D. Residential lighting

IX. The Lighting Professions

Assignment:

1. Reading: approximately 15 - 25 pages per week
2. Light study sketches (3 - 7)
3. Lighting design project: full documentation including project correspondence, lighting specifications, cut sheets, concept sketches, energy calculations, budgeting information

4. In-class presentation of design project
5. Lighting design project binder
6. Midterm examination
7. Field trip(s) during regularly scheduled class sessions

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Lighting design project documentation	Writing 10 - 20%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

None	Problem solving 0 - 0%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Lighting design project, sketches, oral presentation	Skill Demonstrations 40 - 60%

Exams: All forms of formal testing, other than skill performance exams.

Exams: multiple choice, matching items, completion, short answer	Exams 10 - 15%

Other: Includes any assessment tools that do not logically fit into the above categories.

Attendance and participation; project binder	Other Category 20 - 35%

Representative Textbooks and Materials:
Lighting Design Basics, Karlen, Mark and James Benya, John Wiley & Sons, 2004.
Instructor prepared materials.