Chaminade University
Environmental + Interior Design Program
EID 325 Introduction to Lighting Design - Spring 2014
Instructor: Junghwa Suh, D.Arch, LEED GA

EID 325 COURSE DESCRIPTION & OBJECTIVES

Class hours: Tu-Th 8:30 – 9:50
Office hours: MWF 12:30 – 1:30

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COURSE DESCRIPTION:

EID 325 Introduction to Lighting Design (3)
Introduction to the theory, practice and application of lighting design including the analysis and interpretation of quality of lighting design in an interior environment. History of lighting advancements and industry terminology will be researched and various luminaire products and new technology will be discussed. This course also serves as an introduction to the use of both daylighting and electric lighting in various functions of interior space. Qualitative and quantitative measures of lighting will be explored as well as effective use of lighting in working with problem-solving design concepts. Students will learn to take lighting as one of key design elements in spatial design for creating a functional, safe, environmentally efficient and sensitive, and aesthetically pleasing interior environment. Offered annually. Pre-requisites: Admission to the major or consent of instructor

CLASS FORMAT:

This course is an introduction to fundamental lighting design principles, methods and their application in the field of interior design. During the semester we will explore creative use of daylighting and electrical lighting in various functions of interior space. Development of technical skills will also be an important component of the course. You will also be required to keep a lighting design sketch journal.

In-class participation and collaboration will be stressed. An essential aspect of any design endeavor is the ability to present your own work in an articulate and coherent manner, both verbally and visually. To that end, the exchange of ideas and feedback from your peers will be invaluable to your development, as well as help you develop your critical thinking. Projects will be worked on in class, during which we will have private or group critiques. Projects require your ability in both physical and digital model-building. You will be required to bring lecture notebook every class and be prepared to use computer to research, model-building, technical drawing.

There will be three design projects during the course of the semester. Each project will help you to explore different types and various functional use of lighting. Project #2 is especially designed to give you an opportunity to enter national lighting design competition.

OBJECTIVES:

- Understanding the benefits of daylighting with electric lighting for the environment and human health
- Selecting appropriate lighting types for residential and non-residential spaces based upon the function of the space, psychological and perceptual aspects of lighting, and energy efficiency
- Understanding pros and cons of various luminaire types
- Presenting lighting types and selections in the technical drawing of electrical and reflected ceiling plans with appropriate architectural symbols

LEARNING OBJECTICES AND OUTCOMES

- Understanding the benefits of daylighting with electric lighting for the environment and human health
- Selecting appropriate lighting types for residential and non-residential spaces based upon the function of the space, psychological and perceptual aspects of lighting, and energy efficiency
- Understanding pros and cons of various luminaire types
- Presenting lighting types and selections in the technical drawing of electrical and reflected ceiling plans with appropriate architectural symbols

EVALUATION CRITERIA:

- quality and creativity of lighting design work
- thoroughness and craft in presentation
- technical proficiency
- contribution of ideas and engagement in class
- willingness to experiment and to challenge yourself
- rigor
- professional demeanor

Each individual has his or her own voice which makes them unique. Imitation or conformity will compromise both your grade, and your individuality**.** Value is placed on originality, conviction, and autonomous thought. That said however, you are encouraged to work with others as much as possible and share ideas. This process will help to strengthen your work far more than by keeping your ideas to yourself.

This is a demanding and challenging course, and participation implies 100% commitment. Should you have to miss a class, please inform me in advance when possible. You will be responsible to make up the work. All projects must be complete and submitted on time, unless otherwise arranged. Any unexcused late submissions will be marked down by one letter grade.

GRADING:

Your final grade will be weighted as follows:

Project #1	15%
Project #2	25%
Project #3	25%
Exams (2)	30%
Participation	5%
	100%

REQUIRED TEXTS:

Winship, S. (2011). *Fundamentals of Lighting*. 2nd ed. NY: Fairchild.

REFERENCES:

Gordon, G. & Nuckolls, J. (2003). *Interior Lighting for Designers*. 4th ed. (Recommended)
Karlen, M. & Benya, J. (2004). *Lighting Design Basics*. Wiley. (Recommended)
Cuttle, C. (2003). *Lighting by design*. Architectural Press.
Rea, M. (2000). *The IESNA Lighting Handbook*; 9th ed. Illuminating Engineering Society of North America
Russell, S. (2008). *The Architecture of Light*. La Jolla, CA; Conceptnine

EID PROGRAM OUTCOMES:

1) Professionalism – understand, apply and participate in ethical design practices on a personal, project, peer and industry-wide level. *(CIDA 2, 3, 4, 5, 6, 7, 8, 11, 12, 13, 14)*

2) Process – ability to identify problems/challenges and demonstrate an understanding of the complete design process from inception to installation, execute documentation supporting design decisions and effect comprehensive, creative, focused and functional design solutions. *(CIDA 4, 6, 9, 10, 11, 12, 13, 14)*

3) Principles & Priorities – integration of pedagogy, research, historic contexts, theory, and interdisciplinary collaboration to effectively and creatively analyze, evaluate and execute best design practices resulting in functional and aesthetically inspiring design. *(CIDA 2, 3, 4, 5, 6, 8, 9, 10, 12, 13, 14)*

4) Public & Environmental Protection – demonstrate an understanding of the concepts, resources and implications of design decisions relative to the human interaction, technological impact and ecological balance of the built environment. *(CIDA 2, 3, 4, 7, 8, 10, 12, 13, 14)*

5) Presentation – demonstrate ability to communicate design concepts and problem solving justifications through written, oral and a variety of visual media. *(CIDA 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14)*

LECTURE & IDEA JOURNAL

Each student is expected to maintain a lighting design journal throughout the course of the semester. The journal has several functions:

- to learn to communicate ideas through visual representations
- to record your ideas, thoughts, reflections and speculations about design
- to document your process as well as progress in your design education
- to explore and integrate new concepts
- to synthesize (create) and analyze (critique)
- to raise and resolve questions
- to collect and gather information

Your journal is a visual and textual narrative of your process and development, and as such will not be submitted as a finished work. It will be evaluated not on the content itself, but on the degree of commitment and exploration manifested. As this is a personal tool there are no requirements as to the format or type of instruments you use, but the quality of the paper should be good (lined notebook paper is not acceptable). You should have your journal in your possession at all times and entries should be made on a regular, if not daily, basis.

A sketchbook does not imply sketching only. Use it to document lectures and brainstorm various ideas. Make sure to date your each journal entry. Your journal will be collected occasionally, so bring it to every class.

n.b. Course content and scheduling are subject to change at the instructor's discretion in the interest of sound pedagogy.

EID 325 COURSE SCHEDULE

		Assignment:
Week #01:	Course introduction; Intro to Quality Lighting Project #1: Light Box	Chapter 1 HW assn: light box
Week #02:	History of Lighting; Color, Directional Effects	Chapter 2 HW assn: light box
Week #03:	Natural & Artificial Light Sources	Chapter 3 HW assn: light box
Week #04:	**Project #1 presentation**; intro to Project #2: RBT competition Energy, the Environment, and Sustainable Design (Ecotect Analysis exercise)	Chapter 4
Week #05:	Energy, the Environment, and Sustainable Design	Chapter 4 HW assn: RBT competition
Week #06:	Illumination, Human Health and Behavior; Commercial Applications	Chapter 5, 12 HW assn: RBT competition
Week #07:	Lighting Systems I: Luminaires	Chapter 6 HW assn: RBT competition
Week #08:	Lighting Systems II: Controls	Chapter 7 HW assn: RBT competition
Week #09:	**Mid-term exam;** Quantity of Light	Chapter 8 HW assn: RBT competition
Week #10:	RBT competition; **Project #2: presentation**	
Week #11:	Spring Break (3/24 - 3/28)	
Week #10:	RBT Competition due (4/1); Lighting Design Process I: Project Planning thru Design Development	Chapter 9 HW assn: RBT competition
Week #12:	Lighting Design Process II: Contract Documents thru Post Occupancy Evaluation begin Project #3: Residential lighting design project	Chapter 10 HW assn: project #3
Week #13:	Residential applications	Chapters 11 HW assn: project #3

Week #14:	Residential applications	Chapter 11 HW assn: project #3
Week #15:	Residential applications	Chapter 11 HW assn: project #3
Week #16:	**Project #3: presentation**	
Week #17:	M 5/5 - Final exam 8:30 am - 10:30 am Tu 5/6 - Final exam 8:30 am - 10:30 am	

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EID 325 LIGHTING DESIGN PROJECTS

Lighting is a visual design element best learned by guided activity and reflection. Students will complete a series of related projects, each of which builds upon the class lectures and exercises. Evaluation will be made based on specific criteria given for each project.

Project #1: Light Box — 3 weeks

Exercise:
This project explores the use of color, shadow and lighting as design elements in the interior environment and how they apply to create certain visual and spatial experience.

Start this project with research on precedent architectural/interior design projects that have used light as key design element to execute their design concept and idea. Then, you need to analyze what, why and how lighting design is integrated in the space then extract the key design points of the lighting design. Working with 10" (width) x 20" (length) x 10" (height) light box, create dimensional space by the use of color, shadow, and light. Take a series of interior pictures of lighting effect in various angles, then present your lighting design research, analysis, understanding and reinterpretation of the design.

Deliverables:
Lighting design analysis presentation including:
- analytic research materials (sketches, pictures, etc)
- light box design process
- a series of interior pictures of lighting effect

Project #2: Lighting Design: Commercial Application — 5 weeks

RBT Annual Student Light Fixture Design Competition

Design Problem:
A prominent high-end hotel chain in a major city in the Mid-west is renovating their main ballroom. They want to install a chandelier that is both decorative and functional. The ballroom is 30' wide by 120' long with a ceiling height of 20'. It is divisible into 3 separate spaces. The ballroom is used for meetings, conferences, parties, dining and stage events. Temporary theatrical lighting and video projection restrict the drop of the chandelier to 17' above the finished floor. Design a light fixture that will be a signature piece for the room(s), contribute sufficient light for the various tasks, be energy efficient and work when the room is divided or open. It is up to you to determine the ballroom design. Consider maintenance issues and the appearance of the fixture when it is on and off. Your chandelier should use energy-efficient lamps, such as fluorescent, LED, OLED or other light sources with good color rendering and long life. The ballast or power supply should be integral to the fixture. Self-ballasted lamps and other retrofit lamps that fit into incandescent screw base sockets are not acceptable. Identify all major components and materials.

Competition project information: http://www.rbtcompetition.org/index.html

Deliverables:
presentation: maximum 4 pages of 11" x 17" sheets including
- a maximum 250 word description of your concept, the product and its use

- conceptual design process
- dimensioned plan, diagram and sections of lighting fixture
- perspective sketch or rendering of the product and the product in use
- light distribution illustration
- up to 5 digital images of the model

Project #3: Lighting Design: Residential Application **4 weeks**

Exercise:
Taking one of your previous residential projects, you will create lighting design for different functions of the space. Your lighting design should be combination of daylighting and electrical lightings. The design should also support and enhance your original interior design concept. Diagrams of how daylighting and electrical lighting support the experience of the spaces is required. Detailed lighting specification package and electrical and reflected ceiling plan will be developed.

Deliverables: **presentation**
scaled floor plan with lighting design (fixtures, window placement), scaled building section with lighting design, diagrammatic illustration of lighting design, scaled electrical & reflected ceiling plan, lighting specification package