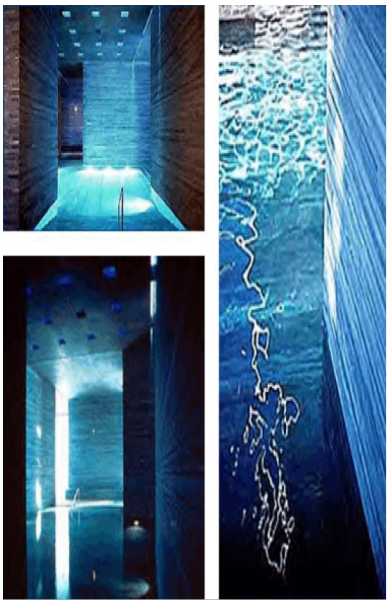
Lighting Design Seminar

TPA 6905 • 03 Credits Spring 2017



When you set out to work with the space of the sky or with light, you cannot mold and form it like clay. You have to use thought, almost like when you are working with sound. It should be really thought of as working with our perceptions, or developing our ways of seeing. My installations are in some ways analogous to the piano, which is quite a complex machine, but the sound that is produced by the piano has a life of its own and is what we hear in a piece of music. This puts us directly in touch with the sensual, it's about sensing.

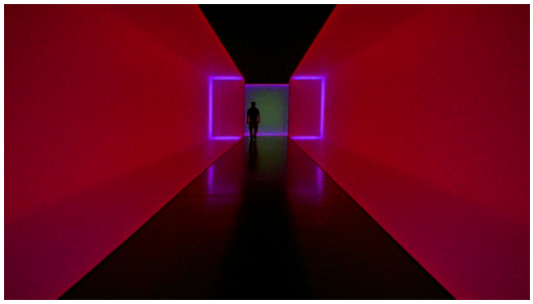
James Turrell

How would the painter or poet express anything other than his encounter with the world?

Maurice Merleau-Ponty

Introduction

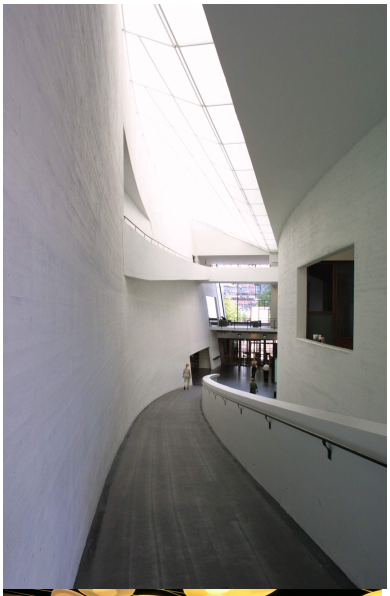
Students will explore the relations among humans and light — cultural interpretations (the poetics of light), historic applications of light, perception of light, physical properties of light as a wave phenomenon, interactions between light and surface, and electrical light systems. Investigations, coursework, and seminar discussions will focus on relating qualitative and quantitative evaluations of lighted environments as an expression of conceptual intentions through design. Students will access these ideas through: the study of lighting precedents in architecture and theater; case-study analysis of noted lighting designs; the use of prediction tools such as physical models, computer models and lighting calculations; and the implementation of design ideas as part of an integrated lighting design proposal.



Content

Lecture, seminar and project modes of learning will be employed to assist students in developing conceptual lighting design proposals and to refine schemes to a high degree of specificity.

Field investigations, measurement and analysis of occupied spaces will be conducted to establish an experiential basis for lighting concepts. Precedent research on well-integrated architectural lighting projects will be conducted by students and presented to the class to provide a wide range of design concepts and alternative lighting possibilities.



The design project this year will be to develop a lighting design scheme for Leonardo's 706 at 706 West University Avenue and related properties. The project will include the front exterior façade, exterior murals/performance stage and café, retail frame/gallery store, public restaurant area, parking lot and landscape lighting. Design teams will interact directly with the property owner and establishment renters as part of the creative process. Formal presentations will be made to the client at the conclusion of the project. **There is no expectation that design teams will have any claim to the designs presented**, but client may at their discretion implement some or none of the designs prepared by the class.

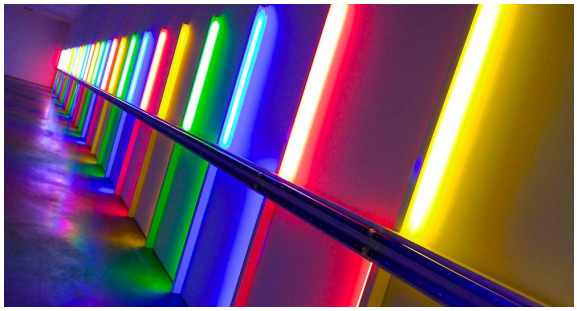
Course Structure

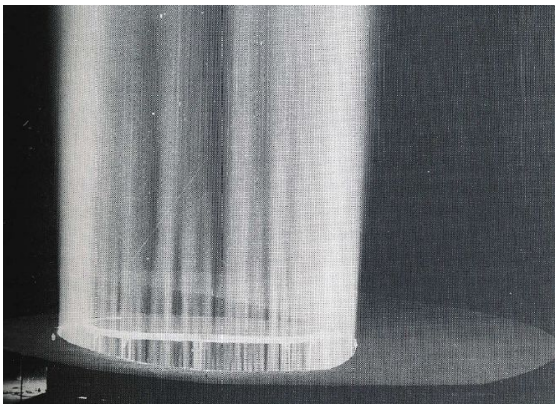
The seminar/studio course will include organized seminars, topical lectures, student presentations, open discussions and design collaboration time where we will review and critique project proposals. Students will work individually and collaboratively to explore lighting issues through research and design toward a design scheme represented through computer and/or physical scale model studies, lighting calculations, architectural drawings, conceptual diagrams, and product specifications. Concept development will be guided by IES lighting guidelines, individual research, site and program analysis and course critiques. This mode of inquiry and assimilation will carry the projects from conception through schematic design drawings including product selections and specifications to clarify design integration with architectural space, programmatic requirements, light distribution, light quality and energy efficiency.

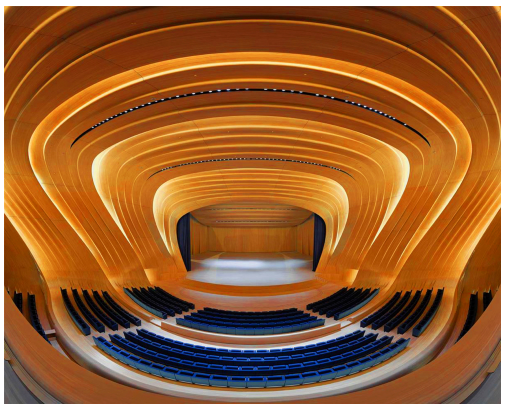
Field trips will be required as part of the course. Guest lighting experts that work professionally as lighting consultants, designers and educators will be brought in as available. Students will be asked to lead seminar discussions on lighting fundamentals and topical issues relevant to course research. Active participation in the discourse of the seminar format is critically important.

Course Issues

- Conceptualization and Scheming – design process
- Light and Culture – theoretical and historical precedents
- Human interactions – physiological responses to light (emotive and qualitative properties)
- Physical properties of light
- Day light and electric light
- Lighting design criteria - basic requirements
- Design process – architectural schemes that incorporate design concept, architectural surface and lighting strategies







- Explorative design tools for speculative and critical inquiry – concept **Design Applications**

- Electrical light generation and efficiency - light and energy
- Metrics of lighting - measurements and ratings (luminance, illuminance, brightness, Color Rendering Index (CRI), Visual Comfort Probability (VCP) and Equivalent Spherical Illuminations (ESI)
- Light distribution and luminaire depreciation - Coefficient of Utilization (CU)
- Light measurement techniques
- Control systems, dynamic lighting and emergent technologies
- Refinement of design scheme through detailed physical or computer models and drawings
- Presentation of lighting design scheme
  Diagrams. Physical models, computer models

Project Sequence

Course pedagogy will be engaged through three typological modes of inquiry. Firstly, analytical investigations into the objective and subjective parameters of light including physical, perceptual and quantitative conditions will be discussed – lecture format. The second, a cinematic composition (a noted film) will be deconstructed in an attempt to reveal linkages between archetypal themes, design conceptualizations and the creation of space, time and emotion through light as a constructed reality. Thirdly, we will develop a lighting scheme for an architecture program and civic organization as part of a renovation of a mid-century modern building. The project will explore the conceptualization of design proposals and the subsequent development of a lighting scheme drawn from the conceptual proposal, precedent research, modeling analysis, field measurements, fixture types, architectural conditions, code requirements, and IES design guidelines. The proposals will largely accept the proposed architectural renovation with suggestions for minor changes that enhance the role of light as part of the design.

Reading assignments and course discussions will occur on a regular basis. Students are required to read and prepare points of discussion from the readings prior to the class meeting. Participation in the course discussions with regard to the reading material is required.

Guest Designer and industry professionals.

To be announced.

Student Evaluation (grading)

As a seminar, consistent attendance and active topical contributions by students engenders learning. Enthusiastic engagement in this mode of learning will be rewarded in the final evaluations. Interim reading/discussion assignments will be given that will be included in the participation portion of the student evaluation. Projects (3) will comprise the remainder of performance evaluation.

Participation	20%
Project 1: Cinematic Deconstruction	30%
Project 2: Design Intervention	50%
Total	**100%**

Required Course Texts:

Lighting Handbook 10th Edition. Editors: David DiLaura, Kevin Houser, Richard Mistrick, Gary Steffy. ISBN # 978-0-87995-241-9. This text is being made available to students in this course at the special price of $200 (regularly $595) by the Illuminating Engineering Society of North America (IESNA). This is a new edition and will be current for the next 10 years – this should be included in your personal reference library. Students have the choice of a PDF version or print version (the print version requires an additional $20 shipping charge).

To order, go on-line to one of the following links:

Link for ordering the print version:
https://www.ies.org/handbook/

Link for ordering the PDF version:
https://www.ies.org/handbook/pdf/

When you are ordering, it will ask for a promotional code. At that location enter **(skaye)** for the discount. Please do not share this information with others as the number of texts is limited. It expires March 1 2017. The cost is very low at $ 200.00

In Praise of Shadows, Junichiro Tanizaki, et al. Leete's Island Books; 1988. ISBN: 0918172020. This text is under $5.00 for a print version at a variety of on-line booksellers (this should added to your personal library). A PDF version is available for download on the course file share site (see page 5). This is available as a download on Canvas.

Other handouts and articles may be assigned and will be made available by the course instructors either in class or through Canvas.

Class Meeting

Fridays Period 2,3,4 (8:30-11:00)
Nadine McGuire 218 Studio

Instructor:

Kaye
Phone: 352.273.0510
e-mail:stankaye@arts.ufl.edu
Hours: by appointment or as posted

Electronic Interface

Reference information, articles and other important information for the course can be found at: https://www.dropbox.com/sh/6h8vb5z4lzfl492/AAB-q5AhabOq3d6Y55KW5SVma?dl=0

Presentation Topic	Group Name	Presentation Date
Electric Light Sources	Red	Jan 13
Qualities of Design- The qualities of Light	Green	Jan 20
Lighting Metrics	Orange	Jan 27 M.Gold
Color	Blue	Feb 17
Luminaires and Design	Purple	Feb 24
Lighting Controls	Aqua	March 24

Cinema Project	Group Name	Presentation Date
Group Red Presents	Red	Feb 3
Group Green Presents	Green	Feb 3
Group Orange Presents	Orange	Feb 3
Group Blue Presents	Blue	Feb 10
Group Aqua Presents	Aqua	Feb 10
Purple Group Presents	Purple	Feb 10

Minimum Subjects areas to be covered in each presentation

Electric Light Sources and Electricity: Presentation must include at least the following subjects: incandescent lamps, discharge lamps, bases, filament, lamp types, low voltage, colored light, fluorescents, HID, Low pressure Sodium LED/solid state.

Qualities of Design-The qualities of Light: Presentation must include at least the following: Perception, visible light, the eye, the brain, brightness perception., the sense of light, emotional impact. Degrees of stimulation, the dimensionality, subjective impressions, variation, distribution of light, three dimensional form, glare and sparkle, materials and reflections

Color: Presentation must include at least the following: Color temperature, color rendering, subjective impressions, interaction of color, surface finished and color of light, daylight, spectrum.

Lighting Metrics: Presentation must include at least the following: measurements of light, illuminance values. Illuminance calculations. surface reflectance,

Luminaires and Design: Presentation must include at least the following: Housings, light and glare control, types-form factors, visual clarity, surfaces, task, ambient, lighting art, balance, energy efficiency, integrating light and architecture.

Lighting Controls: Presentation must include at least the following: Switch control, control. Dimming control,, centralized lighting control systems. Manual, zoning, motion sensor, timers, dynamics, computer, theatrical/architectural integration, high end dynamic systems, solar based.

Week	Date	Topics	Prep Reading*
1	1/6/ Jan	**Course introduction** Conceptualizations of Light Introduce Project 1: Cinematic Lighting Analysis (film selections) Tour School of Theatre and Dance	
2	1/13/ Jan	**Vision, Perception & Properties of Light** Reading discussion Lab session Film Abstracts-Due Incandescent, fluorescent, gas discharge & LED **Electric Light sources**	*In Praise of Shadows* (PDF) *Set Pieces* (PDF)
3	1/20/2017	**Field Trip –** Leonardo 706 restaurant and site survey-possible 2nd site of local residence. (10:00 tot 11:00 AM) Qualities of Design- The qualities of Light **Project site visit**	Diane Ackerman Articles – Light, Color (PDF) IESNA Chapters 1, 2, 3, 4 & 6
4	1/27/ Jan Stan out of Town	**Lighting Design Process** Reading Discussion Case Study Updates Field Measurements –metering	Review IESNA Chapters 21 & 24 (relative to the project program)
5	2/3 Feb	*Case Study presentations* PowerPoint presentations	IESNA Chapters 9 &11 Red, Green and Orange Present Cinema Study
6	2/10 Feb	**Lighting Modeling Tools** Computer Models Physical Models & Reading Discussion **Initiate Project-DialLux and AGi32-** **M.Gold Zonal Cavity lecture**	The Eyes of the Skin – Pallamaa (PDF) IESNA Chapter 10, 21 & 24 Blue and Aqua Purple Present Cinema Study
7	02/17 Feb	**Color in Light**	IESNA Chapter 7, 13 &16
8	2/24 Feb	**Daylight** Light qualities and architectural responses- M.Gold Guest	IESNA Chapter 14 Gaston Bachelard (PDF)
9	3/3 March	*Project reviews and discussion*	
10	3/17 March	**Spatial Qualities of Light** Light, form and spatial interactions Project review and discussion	Light Revealing Form: Millett Chapter (PDF) IESNA Chapter 8 &12
11	3/24 March	**Dynamics in Electric Light** Lighting Control	Review Readings to date
12	3/31 March	**Parametric issues** Product Literature Traditional Lighting Calculations	IESNA Chapter 10 (review)
13	4/7 April	*Project reviews and discussion*	
14	4/14 April	Project presentations**	

Course Schedule

** Readings must be completed in preparation for the discussion on the date they are listed.*

*** Attendance at all project presentations is required for full credit in the course*

Course Reference Texts:

The following texts have been requested for reserve in the Architecture and Fine Arts Library, reference texts will sometimes have assigned readings. They are available to provide a resource for presentations; as a supplement to the course texts; and to stimulate and reinforce the discussions in the course.

Interior Lighting for Designers 4th Edition, Gary Gordon Wiley, 2003
Architectural Lighting: Second Edtition. M. David Egan, Victor Olgyay, McGraw Hill, New York, 2002. ISBN 0-07-020587-6.
Architectural Lighting Design. Gary R. Steffy, Vab Nostrand Reinhold company, 1990.
The Architecture of the Well Tempered Environment, Second Edition. Reyner Banham, University Of Chicago Press; Second Edition, Revised edition, 1984. ISBN-13: 978-0226036984
American Building: The Environmetnal Forces that Shape It., (updated), James Marston Fitch with William Bobenhausen. Oxford University Press, USA, 1999. ISBN-13: 978-0195110401
Daylight in Architecture. Benjamin H. Evans, McGraw-Hill Book company, 1981. ISBN-13: 978-0070197688
Daylighting for Sustainable Design. Mary Guzowski McGraw_Hill, 2000.
Light Revealing Architecture Marietta Millet, Van Nostrand Reinhold, 1996.
Lightbook: The Practice of Lighting Design, Ulrike Brandi and Christoph Geissmar-Brandi, Berkhäuser, 2001. ISBN-13: 978-3764363031
Made of Light: The Art of Light and Architecture, Mark Major, Johnathan Speirs, Anthony Tischhauser, Birkhauser, Basel, 2005. ISBN-13: 978-3764368609
Stage Lighting Design by Richard Pilbrow, Design Press, and imprint of Quite Specific Media Group, Ltd. 260 Fifth Avenue. 1997. ISBN-13: 978-0896762350
Sun, Wind & Light: Architectural Design Strategies, 2nd Edition by G. Z. Brown, Mark DeKay, John Wiley & Sons, 2000. ISBN- 0471348775
The Dramatic Imagination by Robert Edmund Jones, Theatre Arts Books, 1987. ISBN: 0878305920
The Empty Space, Peter Brook, Touchstone Books, reprint 1997, ISBN: 0684829576

Other recommended texts:

Design With Innovative Daylighting. P. J. Littlefair BRE Publications 1996.
Interior Lighting for Designers. Gordon & Nuckolls, John Wiley & Sons, 1995.
Light. Michael Sobel University of Chicago Press 1987. *Light and Space: Modern Architecture 1.* A. D. A. EDITA, Tokyo Co., Ltd., 1994.
Light and Space: Modern Architecture 2. A. D. A. EDITA, Tokyo Co., Ltd., 1994.
Light: The Shape of Space. Lou Michel, Van Nostrand Reinhold, 1996
Lighting: An Introduction to Light, Lighting and light Use. Janet Turner, B. T. Batsford Ltd. 1994.

Mechanical and Electrical Equipment for Buildings (8th Edition) Stein & Reynolds, John Wiley & Sons, 1992.
Simplified Design of Building Lighting. Marc Schiler, John Wiley & Sons, 1992.
Architectural Lighting Seminar
TPA 6905
Spring 2017 Stan Kaye

Case Study Project

This project is designed to engage students with emotive, spatial and dramatic enhancements evoked through the artful interplay of light, form and surface. Cinematographers have successfully exploited light for over 100 years, often borrowing from movements in painting while leveraging advancing technologies to suggest fantasy, realism, the surreal, macabre and the futuristic. Through these modes, by carefully crafting scenes in the support of larger themes, cinema has married light and culture.

In this study, students are asked to select a movie from the list below and study the use of light to convey a cinematic landscape, frame a cultural condition, enhance an emotive moment or dramatize a particular event. Rather than analyze the entire movie, please focus on 5 to 7 scenes that explicitly characterize aspects that the movie is exploring. These scenes should be carefully deconstructed and analyzed with regard to the physical circumstances of the scene (spatial configuration); deployment of light within the 'set' to achieve the lighting effect; discussion of what is trying to be achieved; and how are any thematic strategies throughout the movie adapted to the particulars of the scene. Other issues to consider include view frame (expansive or confined), distance, movement of view and point of view relative to the action.

Students should examine scenes through spatial diagrams that include plan, section and 3D mockups (physical or digital) to deconstruct the lighting angles and positions of actors, spatial defining elements and the point of view. Critical surfaces, objects and the actors themselves should be located. Scene mapping should also be conducted to look at the two dimensional framing (the portal) and how light, action and space is depicted on the screen. This could be evaluated through diagrammatic mapping, figure ground relationships, analysis of proportional relationships and analysis of foreground, middle-ground and distant field relationships presented in the flattened perspective.

Students will develop a powerpoint presentation that includes narrative (500 to 700 words) and presentations slides that include narrative summaries with sample scenes from the film and diagrammatic analysis of those scenes.

Submission/Presentation Requirements:

Teams: No more than three (3) students will work both collaboratively and individually to select, view, analyze, develop analytical drawings and narrative, and compose the presentation to be presented to the class.

Title slide:	Name of the film, date of release, director, significant actors, a summary sentence on the position the analytic team has taken regarding the use of light within the movie, and the names of the analysis team.
Presentation:	10 to 15 slides with graphic and narrative analysis of aspects of light as utilized in 5 to 7 scenes in the film. This should include at least one slide characterizing the film themes, creative intention and the cultural context in which the film was made. Two slides of narrative only that includes a summary of the analysis with concepts referenced to the diagrams in the preceding slides. One slide with bibliographical information that might include critiques of the film, articles or other publications that discuss the film critically – other references are required.
Submission:	Submissions are due in printed and electronic format (two copies) at the beginning of the class presentation. The presentation should include all team members and last no longer than 15 minutes.

Film Options

Metropolis 1929
Fritz Lang

Shanghai Express 1932
Joseph von Sternberg

Cleopatra 1934
Cecil B DeMille

Jezebel 1938
William Wyler

Gone With the Wind 1939
Victor Flemming

Wuthering Heights 1939
William Wyler

Citizen Kane 1941
Orson Wells

Casablanca 1942
Michael Curtiz

Maltese Falcon 1941
John Huston

Spellbound 1945
Alfred Hitchcock

Naked City 1948
Jules Dassin

The Third Man 1949
Carol Reed

Rear Window 1954
Alfred Hitchcock

Shane 1953
George Stevens

I am Cuba 1964
Mikhail Kalatozov