

university of oregon - school of architecture and allied arts - department of architecture
spring 2012, 2 credits CRN 31189 / 31261, M 9:00-11:50, seven sessions April 2 - May 14

Arch 410 / 510

LIGHT AND SHADOW

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<http://aaablogs.uoregon.edu/light/>
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AAA Voices luminaire by Matthew Linn

Light reveals our visual universe. Light shapes how we perceive form and the boundaries of space. Light gives vitality to immutable form, revealing the familiar "in a new light". Small adjustments in light intensity, composition and viewpoint can yield big changes in highlights and shadow patterns.

Students will learn how to aesthetically control light and shadow for through hands-on experiments and examples from art, design and architecture. The class will explore design as discovery, looking for emergent visual phenomenon in material manipulation. We will study how architectural surfaces, materials and apertures can be activated by changing light and we will play with how surfaces can be cut, creased, crimped, carved, or colored to create light and shadow effects. Students will be encouraged to experiment with unfamiliar materials and processes such as digital fabrication and video.

OBJECTIVES

- to understand how shaping materials can create light and shadow effects.
- to hone form-finding methods that engage material qualities
- to discover elements of a personal formal vocabulary
- to build design communication and fabrication skills

PROCESS

Class sessions will include presentations, practice, teamwork, and discussion. Short creative exercises will culminate in a final project. Students can propose alternate ways to achieve the exercise objectives, especially if it will help them experiment with something new.

Students will archive assignments with a blog for documenting work-in-progress, reflecting on progress and publishing design work. All course student work in progress will feed into a group website. We will use the website <<http://aaablogs.uoregon.edu/light/>> to share resources, and communicate. The final project must be documented as an Adobe Acrobat PDF document, 11" x 17" horizontal format.

EXPECTATIONS & ASSESSMENT

This class is a joint effort that depends on everyone's participation. Your enthusiasm can make the class fun! Can you contribute to group efforts and create a supportive environment? Please take responsibility for your own learning and come prepared to each class, researching topics of interest, using the attached bibliography.

Graduate students taking 510 will be expected to do more thorough research for their projects than undergraduates. In addition to documenting their research online, they will have to give an oral report about an in-depth precedent study. While all students will engage in peer teaching, graduate students are expected to take a mentoring role for undergraduates.

EVALUATION:

Student will be given qualitative feedback through pinups and online comments. Grades will be given 3 times during the quarter. Students are encouraged to revise their work for the final portfolio.

Attendance is required: **students who miss more than 1 class will be in danger of not passing.**

UNDERGRADS

10% Participation
80% Assignments (3 small assignments, draft assignment, final assignment)
10% Learning ePortfolio

GRADS

10% Participation
75% Assignments (3 small assignments, draft assignment, final assignment)
10% Learning ePortfolio
5% Inspiration Presentation

Academic Conduct: All students are required to familiarize themselves with the UO Student Conduct Code <<http://conduct.uoregon.edu>> and follow academic honesty, copyright and fair use requirements. <http://w2.eff.org/IP/eff_fair_use_faq.php>. Information about plagiarism, a common form of inadvertent academic misconduct, is available at <<http://www.libweb.uoregon.edu/guides/plagiarism/students>>

Inclusion Statement: The School of Architecture and Allied Arts is a community that values inclusion. We are committed to equal opportunities for all faculty, staff and students to develop individually, professionally, and academically regardless of ethnicity, heritage, gender, sexual orientation, ability, socio-economic standing, cultural beliefs and traditions. We are dedicated to an environment that is inclusive and fosters awareness, understanding, and respect for diversity. If you feel excluded or threatened, please contact your instructor and/or department head. The University Bias Response Team is also a resource that can assist you. Find more information at their website at <http://bias.uoregon.edu/index.html> or by phoning 541-346-2037.

Special Needs: Students with special needs requiring academic accommodations should 1) register with and provide documentation to Disability Services (DS) at <http://ds.uoregon.edu>; 2) bring a letter to the instructor from the DS indicating that you need academic accommodations, and we will arrange to meet them. This should be done during the first week of class.

ASSIGNMENT OVERVIEW

The assignments provide the opportunity for hands-on exploration of light and shadow phenomena.

Students should consider giving continuity to the studies by focusing on

- a particular design process (i.e. lasercutting, CNC milling, folding, joinery)
- a visual phenomena (i.e. prismatic diffraction, bounced light, caustics)
- a material property (i.e. directional transparency, pattern, texture)
- a specific design scenario (i.e. a space in your architectural design studio project)

1. SHADOW PANELS

Using the material and tools of your choice, create 12" x 12" panels that explore the expressive quality of shaded surfaces and cast shadows. Work with a partner to check how the panels work under different lighting conditions, creating photos and video clips of work in progress. Then **focus on one phenomenon** such as layers, translucency / opacity, bounced light or diffraction.

- a. Immediately register: Add a comment to the classblog with your blog address or come to a help session on Wednesday April 5 in Nancy's office at 11am to set it up.
- b. By Friday April 6 morning: Create a blogpost with at least three shadow examples and 2 paragraphs explaining what you have discovered and what you plan to develop.
- c. On Monday, April 9, 9am: Bring 3 of your best panels and 3 digital images printed in B&W on 11" x 17" HORIZONTAL of the best shadows for discussion. Please make them stand up.

2. BOUNCED COLOR

- a. Scavenger hunt: Capture images of Bounced Color, post to ePortfolio.
- b. Create a lighting model of a room that is min 8" cube, maximum that uses the phenomenon of bounced color. Photograph the model under different lighting conditions.
- c. Submit a proposal for your final project

3. CHANGING LIGHT

Create video or animation that shows the movement of light over time.

- a. Test capture : Familiarize yourself with the technology equipment, document an existing condition or an existing model.
- b. Create your own : Create a movie showing how the interior of the room changes over time. Develop and modify your previous model by substituting a new light modulating surface OR create another simple version.

This may be done either as a digital or a physical exercise:

Take still images (changing light or viewpoint) and combine them into an animated GIF (i.e. Photoshop) or movie (iMovie)

Use a video camera to capture motion of light

Use a rendering program to create a animation showing changing daylight or day to night animation.

4. FINAL PROJECT

Your final project is an opportunity to apply the design processes, material studies and visual phenomena to an architectural setting. You may either

- a. Work in real materials by creating a luminaire or a physical installation

OR

- b. Use physical or digital methods to develop a spatial / environmental lighting design (i.e building entrance, storefront display, a theatre set or a shading system for a building facade.)

FOR THE AMBITIOUS:

1) Bridge the physical - digital gap. Design a lamp, use CNC to build the components, then render how the lamp would work within a building.

2) Connect visualization to analysis: model a shading device and measure how it performs for daylighting and thermal comfort. (either physical modeling in the Energy Studies for Buildings Lab or a digital lighting analysis programs - Diva for Rhino, AGI-32 or Ecotect.

5. GRAD INSPIRATION PRESENTATION

Research and present the design questions, tools and processes behind a designer's work.

CURRICULUM MAP

Assignment	Skills	NAAB 2009 Student Performance Criteria	Knowledge	Artifacts
0 Electronic Portfolio	Using online systems for reflective blogging, resource sharing & design presentation.	A1 Communication Skills, A3 Visual Communication Skills	How coursework and co-curricular activities contribute to learning objectives & performance criteria.	Weekly portfolio posts & comments
1 Shadow Panels	Physical modeling & digital fabrication, design through observation & analysis	A5 Investigative Skills, A6 Fundamental Design Skills, A8 Ordering System Skills, C1 Collaboration	How materials can be manipulated to shape light and shadow	12"x 12" panels + photos
2 Bounced Color	Physical modeling & digital fabrication, design through observation & analysis	A6 Fundamental Design Skills, A8 Ordering System Skills,	How reflected color can enliven a space, how surface attributes affect reflection	Daylighting model, photographs
3 Changing Light	Working with motion graphics		How dynamic light can radically change form and space	Video clip with annotation
4 Final Project	Iterative development of an idea	A2 Design Thinking Skills, A5 Investigative Skills, A11 Applied Research	How small studies can be adapted to environmental scale	Luminaire, physical or virtual model, installation, analysis graphics.
5 Grad Inspiration Presentation	Researching precedents and finding lessons to apply, citing sources appropriately	A7 Use of Precedents, A5 Investigative Skills, C3 Research	How to build on others' situations, approaches & solutions	Illustrated verbal report and PDF document

SCHEDULE

1	Apr 2	Course + SHADOWS Introduction Hand-out Assignment 1: Shadow Panels Create & Capture Shadows
2	Apr 9	Review Assignment 1 LIGHT ART talk Hand-out Assignment 2: Bounced Color Discuss Reading 1: Moholy Nagy, <i>Vision in Motion</i> , pp. 199-210 Swirnoff, Lois, <i>Dimensional Color</i> , pp. 115-123 Recommended: Tanizaki, Junichiro, <i>In Praise of Shadows</i>
3	Apr 16	Review Assignment 2 SKINS talk Hand-out Assignment 3: Changing Light Discuss Reading 2: Millet, Marietta, <i>Light Revealing Architecture</i> , Ch. 1-2 Recommended: Butterfield, Jan, <i>The Art of Light and Space</i>
4	Apr 23	Review Assignment 3 FOLDING talk Hand-out Assignment 4: Final Project Discuss Reading 3: Hauer, Erwin, <i>Continua</i> March, Lionel & Philip Steadman, <i>Geometry of Environment</i> , Ch 3
5	Apr 30	Inspiration Presentations Work-in-Progress discussion Discuss Reading 4: Millet, Marietta, <i>Light Revealing Architecture</i> , Ch. 3-4
6	May 7	Review Final Project Drafts Discuss Reading 5: Guzowski, Mary, <i>Carbon-Neutral Daylighting Design</i> http://www.architecture.uwaterloo.ca/faculty_projects/terri/carbon-aia/strategies1e2.html
7	May 14	Review of Final Projects Final blogposts due May 21 Recommended: Olafur Eliasson Studio <i>Encyclopedia</i>



image by Zach Prowda

QUESTIONS:

- What makes something beautiful to me?
- How can material experiments be scaled up to create evocative environments?
- How can we make the design process both delightful and reflective?

LIGHTING REFERENCES

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