USC School of Architecture

FALL 2016 Units: 4 *Instructor:* ***Mina M. Chow, AIA, NCARB***

University of Southern California
School of Architecture
Semester FALL 2016

ARCH 205aL: ARCHITECTURE FOR ENGINEERS
The process and communication of building design: Physical building shells, systems for structure, enclosure, and space ordering.

Prerequisite: NONE

Instructor/Coordinator: Mina Mei-Szu Chow, AIA, NCARB
MON/WED 2:00pm-4:50pm Location: WATTB12
Office Hours: M W ***by appointment***

This is a foundation studio course in an interdisciplinary program with the School of Engineering that first was established in the 1970's. The three-year interdisciplinary program is based in the School of Civil and Environmental Engineering Studies. This program will familiarize the student with architecture, landscape architecture, planning, structural, mechanical, and electrical engineering and the related issues that contribute to the built environment for our society. It introduces the process of coordinating all of these aspects for the engineering student.

This course will help the student comprehend the nature of order in our surroundings, and to create an appreciation and understanding of how and why these systems are established. Projects will focus on the intrinsic properties of materials applied in structural and conceptual expression. The primary objective is to expose students to current issues related to design in architecture, and to teach the intrinsic nature of architecture developed through principles based on the design and construction process.

This first course will explore basic principals of 2 and 3 dimensional compositions though a series of design exercises, discussions, and critiques; focusing on the intrinsic properties of materials applied in structural and conceptual expression. Emphasis is placed on design as a creative, conceptually driven, iterative process. Attention is given to theories of context, unity, order, proportion, shape, balance, form, and space as they apply to abstract composition and structural design. Expression of ideas and values present in physical form are explored through observation, analysis, transformation, and synthesis. Students develop and document projects using a variety of means, including model making, REVIT or OTHER software programs, sketching, mechanical drawing, and photography. ***Project craft and execution are emphasized.***

In addition, the studio will address the important role that architects and engineers play in the sustainability of our environment. We will discuss the 2030 Challenge in how design should *engage the environment* in a way that dramatically reduces or eliminates the need for fossil fuel and find applications to the design of our structures.

In summary, the lectures, discussions and design problems will begin to reveal how architects and design professionals think, and what they *must* think about when designing a building or a space.

COURSE OBJECTIVES:

A) Apply two and three dimensional formal design principles and theories to simple design problems, investigating the intrinsic properties of materials applied in structural and conceptual expression.

B) Develop alternative solutions to a given design problem through the use of iterative design process.

C) Employ fundamental theories of visual perception to create spatial unity, dialog, contrast, balance, tension, rhythm, and harmony in design projects.

D) Use research, critical thinking, and analytical skills to find and reveal the cultural values embedded in a physical object created by a society.

E) Through abstraction, create design projects that reveal the essential meanings of their subjects.

F) Employ knowledge of ordering principals such as proportional systems, scale, solid/void, figure/ground, balance and symmetry, balance and asymmetry to organize a design solution that clearly reflects a design concept.

G) Demonstrate mastery of basic presentation craft and organization though verbal, graphic, and model building means.

H) Communicate a comprehensive design concept using verbal, graphic and model making skills.

COURSE CONTENT:

Analysis:

1. **Research:** Students will perform research at libraries and/or using scholarly online portals, and by visiting significant works of architecture.
2. **Observation**: The relationship of the whole environment to its parts, especially as related to the structure of building elements.
3. **Formal Analysis:** Introduction to two and three-dimensional analytical techniques.
4. **Contextual Analysis:** Study of factors effecting the perception and meaning of environments.
5. **Problem Analysis**: Investigating constraints and opportunities presented by a variety of design problems.
6. **Application:** Synthesis of the above critical process into coherent design solutions that creatively address issues revealed through analysis.

Design principles:

1. **Primary Elements of Form:** What they are and how they relate to the design of structures.

2. **Form Generation:** How forms are generated and used in the design process.
3. **Context and meaning:** The interrelationships between an object, its environment, and meaning.
4. **Scale:** How size and proportion affect meaning.

Organizational principles:

1. **Proportion:** Ancient and modern systems used to organize works of architecture and art. How proportional systems are used to organize designs.
2. **Balance and Symmetry:** How balance and symmetry affect meaning and perception of form.
3. **Balance and Asymmetry:** How balance is achieved between design elements in asymmetrical relationships.
4. **Figure/Ground:** How figure and ground interact to create and define spatial relationships.
5. **Solid/Void:** Solid and void interrelationships and their effect on meaning and experience.

Design realization:

1. **Synthesis:** Integration and resolution of disparate and conflicting design issues into clear, well-organized, aesthetically and structurally sound solutions.

COURSE OBJECTIVES WILL BE ACHIEVED THROUGH THE FOLLOWING:

1. Design studio assignments.
2. Discussions, active-learning presentations.
3. Project critiques and reviews
4. Fieldtrip(s)
5. Final project.

ASSIGNMENTS/GRADING:

60% (5) Design Studio Assignments
25% (1) Final Project
15% Attendance and Participation for studio lectures, discussions and fieldtrip

REQUIRED DRAWING EQUIPMENT: (See equipment list for details.)
Drafting board or parallel rule (42” min. recommended)
Adjustable triangles (30/60, 45 degrees)
Architectural and Engineering scales (1/16”, 1/8”, 1/4”, 1/2”, etc… and 1:10, 1:20, 1:30 etc…)
Drafting leads and mechanical pencils (H, 2H, 3H, F, B, 2B etc…)
Drafting lead holder
Sketch pencils and pens

Clearprint no. 1000 HP vellum paper or mylar
Eraser(s)
Eraser shield(s)
Trace paper (white or buff color)

REFERENCES:
Readings will be from the following texts.
Some will be ***provided in advance*** on: https://blackboard.usc.edu.

REQUIRED:
Architecture: Form Space and Order *4th ed. Ching, Francis, D.K. (2014) John Wiley & Sons;*
***($55)· Print ISBN**: 9781118745083, 1118745086*
***($35)· eText ISBN:** 9781118745199, 1118745191*
http://www.wiley.com/WileyCDA/WileyTitle/productCd-1118745086.html

Structure and Design *1st edition Schierle, Goetz. G. (June 2008) Cognella, Inc.;*
***($59-$72)·Print ISBN:** ISBN-13: 978-1934269374 ISBN-10: 1934269379*
http://www.amazon.com/gp/offerlisting/1934269379/ref=sr_1_1_olp?s=books&ie=UTF8&qid=1471475409&sr=1-1&keywords=structure+and+design

RECOMMENDED:
Design Basics *3rd edition Lauer, David A/ Pentauk Stephen 2nd edition (11-09 2007) Wadsworth;* ISBN: 10-0495500860
Creation in Space: Fundamentals of Architecture Vol.1, Friedman, Jonathan, Block, Kendall/Hunt Publishing Company; (2000) ISBN: 0-7872-2383-2
Understanding Architecture, 2nd Ed., Steen Eiler Rasmussen, The MIT Press; (1964) ISBN-10: 0262680025.
Art and Visual Perception *A psychology of the creative Eye. The New Version 2nd edition, Arnheim, Rudolph, (July 1983) Univ. California Press; ISBN: 0520026136*

CLASS SCHEDULE (SUBJECT TO CHANGE- PLEASE STAY INFORMED):

Week 1 INTRODUCTION & ORIENTATION, REVIEW COURSE HANDOUTS
MON **DISCUSSION: *"WHAT is Architecture?" & "FIGURE GROUND"***
AUG 22 **HANDOUT: A1_Definition of 2 Squares**
HOMEWORK:
--**READ** Ching, Francis. *Form, Space and Order*, Chapter 7, p.349 - 423.
--**READ** Lauer, David and Stephen Tentak. *Design Basics*, Chapter 2, 3, 4, 5, 6 as provided on Blackboard.
--CREATE 4-5 test compositions of "Definition of 2 Squares" @ ½ size (9" x 12") for class review.

WED **DISCUSSION/EXERCISE: *"DIAGRAMMING" & "CONTOUR LINE COMPOSITION"***
AUG 24 --REVIEW READINGS AND ASSIGNMENT COMPOSITIONS
HOMEWORK:
--**READ** Dondis, Donis A. Primer of Visual Literacy, as provided.

--**READ** Gargis, Jacqueline. *Ideas Of Order: A Formal Approach Architecture*-- as provided on Blackboard.
--**REVISE** 4-5 test compositions of "Definition of 2 Squares" @ ½ size (9" x 12") for class review.
--**SKETCH** pure contour drawings (**10 total in sketchbook DUE: Wed. 08/31/16**).

Week 2

MON AUG 29
REVIEW: "A1: Definition of 2 Squares"
DISCUSSION: *"DIAGRAM & ABSTRACTION"*
HANDOUT: A2: Historic Precedent
HOMEWORK: Research & Diagramming

WED AUG 31
Sketchbook Assignment #1 DUE
CLASS DISCUSSION/ REVIEW: "RESEARCH"
3:00pm WOODSHOP ORIENTATION with Chris Beas
HOMEWORK: Research & Diagramming

Week 3

MON SEP 5
LABOR DAY Holiday — NO CLASS!

WED SEP 7
REVIEW: "A2: Historic Precedent" DIAGRAMS DUE
DISCUSSION: *"PAPER TOWER"*
HANDOUT: A3_Paper Tower
HOMEWORK: A3: Paper Tower Research and Study models
Create (6) paper studies manipulating 8 ½ x 11" paper.
Start development of Protocol Unit(s)

Week 4

MON SEP 12
REVIEW Paper Tower Research and Study Models
DISCUSSION: *"DRAWINGS: ORTHOGRAPHIC PROJECTIONS"*
HOMEWORK: Continue development of Protocol Unit(s)

WED SEP 14
Fieldtrip: **Broad Museum** (Los Angeles, CA)
Meet at 2:45pm at: **Broad Museum**
221 S. Grand Avenue
Los Angeles, CA 90012

Week 5

MON SEP 19
DESK CRITS: **A3: Paper Tower** Protocol Units
WORKSHOP: Plans, Elevations, Sections
HOMEWORK: Continue development of Protocol Unit(s)
DRAW initial plan, section, elevation studies.

WED SEP 21
REVIEW **Paper Tower** Research and Study Models
HOMEWORK: Start Final Model

Week 6

MON
DESK CRITS: **A3: Paper Tower**

SEP 26 **HOMEWORK:** Start Final Drawings

WED DESK CRITS: **A3: Paper Tower**
SEP 28 **HOMEWORK:** Complete Final Model

Week 7
MON **REVIEW: "A2: Paper Tower" DUE**
OCT 3 **HANDOUT: A4: Cardboard Chair**
HOMEWORK: "Cardboard Chair" Research
--**READ** Rasmussen, Steen Elier, *Experiencing Architecture, Chapter V, pp. 104-126*
--**WRITE** Research Report.

RESEARCH REPORT REQUIREMENTS:

1. Select/Research (3) chair precedent based on strong concept and a relationship to its construction material(s).
2. Describe *why* you selected each precedent, what are the *concept(s)* behind it, what are the *relationships to the human body* and *how they manifest* in the form, connections and details.
3. 8 ½ x 11" format, Arrange each page in 2 columns. One(1) column for visual images, one (1) column for descriptive text.

WED DESK CRITS: **A4: Cardboard Chair**
OCT 5 **REVIEW READING/ LECTURE:** "Presentation Drawings""
HOMEWORK: "Cardboard Chair" Study models

Week 8
MON DESK CRITS/ REVIEW READING: **A4: Cardboard Chair**
OCT 10 **HOMEWORK:** "Cardboard Chair" Study models

WED Fieldtrip: **Buro Happold** (Los Angeles, CA)
OCT 12 Meet at 2:45pm at: **Buro Happold**
800 Wilshire Blvd
Los Angeles, CA 90017

Week 9
MON DESK CRITS: **A4: Cardboard Chair**
OCT 17 **HOMEWORK:** "Cardboard Chair" Study models/ Layout drawings

WED GROUP CRIT: **A4: Cardboard Chair** Drawings
OCT 19 **HOMEWORK:** Final Drawings/ Complete Construction

Week 10
MON DESK CRIT: **A4: Cardboard Chair** FINAL DETAILS
OCT 24 **HOMEWORK:** Final Drawings/ Complete Construction

WED **REVIEW: "A4: Cardboard Chair" DUE**
OCT 26 **HANDOUT: A5: Historic Precedents**

Week11

MON OCT 31 **Historic Precedents #5**

WED NOV 2 **Historic Precedents #5**

Week 12

MON NOV 7 **Historic Precedents #5**

WED NOV 9 **REVIEW: "Historic Precedents #5" DUE**
HANDOUT: "Phenomenal Garden"
(Capture a phenomenon with structure)

Week 13

MON NOV 14 **Phenomenal Garden** Introduction.
DISCUSSION: ***"PHENOMENA VS. MATERIAL"*** (subject to change)
Meet in your teams.
HOMEWORK: 1. RESEARCH phenomena. and precedents. 2. SKETCH ideas.

WED NOV 16 **Phenomenal Garden RESEARCH DUE.**
REVIEW ideas. Discussion and meet with your teams.
HOMEWORK: 1. Study models and sketches.

Week 14

MON NOV 21 **Phenomenal Garden STUDIES:** ¼" dwgs and ½" study model DUE.
Discussion and meet in your teams.
HOMEWORK: 1. Study models and sketches.

NOV 23-27 THANKSGIVING RECESS
Meet with your teams.

Week 15

MON NOV 28 **Phenomenal Garden STUDIES:** ¼" sketches and ½" model of Construct DUE. Meet with your teams.
HOMEWORK: Explore 4 connection details.

WED NOV 30 **Phenomenal Garden STUDIES:** Revise Design of Construct.
Discussion and meet with your teams.
HOMEWORK: 4 connection details DUE.

Week 16

MON DEC 5 **Phenomenal Garden STUDIES:** Revise Design of Construct
Discussion and meet in your teams.
HOMEWORK: Start Site Construction for Space design.

WED DEC 7 **Phenomenal Garden**
Continue Construction for Space Design
Discussion and meet in your teams.

FRI DEC 9	**FINAL REVIEW PRESENTATION: "Phenomenal Garden"** **Watt Lawn** **Lower Level Hollow.** DINNER: *Chitzen Itza* LOCATION: 3655 S Grand Ave. (& 37th St) Los Angeles, CA 90007 (213) 741-1075 TIME: 5:30pm
MON DEC 12	***PORTFOLIO DUE*** **@ 5:00PM**