University of Southern California  
School of Architecture  
Semester FALL 2017

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:
Print ISBN: 9781118745083, 1118745086
eText ISBN: 9781118745199, 1118745191

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:


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

Week 1
MON AUG 21
INTRODUCTION & ORIENTATION, REVIEW COURSE HANDOUTS
DISCUSSION: “WHAT is Architecture?” & “FIGURE GROUND”
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 AUG 23
DISCUSSION/EXERCISE: “DIAGRAMMING” & “CONTOUR LINE COMPOSITION”
--REVIEW READINGS AND ASSIGNMENT COMPOSITIONS
HOMEWORK:
--READ Dondis, Donis A. Primer of Visual Literacy, as provided.
FALL 2017  Units: 4  Instructor: Mina M. Chow, AIA, NCARB

--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 08/30/17).

Week 2
MON AUG 28
REVIEW: “A1: Definition of 2 Squares”
DISCUSSION: “DIAGRAM & ABSTRACTION”
HANDOUT: A2: Historic Precedent
HOMEWORK: Research & Diagramming

WED AUG 30
Sketchbook Assignment #1 DUE
CLASS DISCUSSION/ REVIEW: “RESEARCH”
3:00pm WOODSHOP ORIENTATION with Chris Beas
HOMEWORK: Research & Diagramming

Week 3
MON SEP 4
LABOR DAY Holiday — NO CLASS!

WED SEP 6
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 8½' x 11” paper.
Start development of Protocol Unit(s)

Week 4
MON SEP 11
REVIEW Paper Tower Research and Study Models
DISCUSSION: “DRAWINGS: ORTHOGRAPHIC PROJECTIONS”
HOMEWORK: Continue development of Protocol Unit(s)

WED SEP 13
Fieldtrip: A+D Museum (Los Angeles, CA)
Meet at 2:45pm at:  A+D Museum
900 E. 4th Street, Los Angeles, CA 90013
(213) 346-9734 | info@aplusd.org

Week 5
MON SEP 18
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 20
REVIEW Paper Tower Research and Study Models
HOMEWORK: Start Final Model

Week 6
### FALL 2017 Units: 4  Instructor: Mina M. Chow, AIA, NCARB

<table>
<thead>
<tr>
<th>DAY</th>
<th>ACTIVITY</th>
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| MON  | DESK CRITS: **A3:** Paper Tower  
|      | HOMEWORK: Start Final Drawings |
| WED  | DESK CRITS: **A3:** Paper Tower  
|      | HOMEWORK: Complete Final Model |

**Week 7**

| MON  | REVIEW: “**A2:** Paper Tower” DUE  
|      | HOMEWORK: [“Cardboard Furniture” Research](https://example.com)  
|      | --WRITE Research Report. |

**RESEARCH REPORT REQUIREMENTS:**

1. Select/Research (3) Furniture 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 Furniture  
|      | REVIEW READING/ LECTURE: “Presentation Drawings”  
|      | HOMEWORK: “Cardboard Furniture” Study models |

**Week 8**

| MON  | DESK CRITS/ REVIEW READING: **A4:** Cardboard Furniture  
|      | HOMEWORK: “Cardboard Furniture” Study models |

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

**Week 9**

| MON  | DESK CRITS: **A4:** Cardboard Furniture  
|      | HOMEWORK: “Cardboard Furniture” Study models/ Layout drawings |

| WED  | GROUP CRIT: **A4:** Cardboard Furniture Drawings  
|      | HOMEWORK: Final Drawings/ Complete Construction |

**Week 10**

| MON  | DESK CRIT: **A4:** Cardboard Furniture FINAL DETAILS  
|      | HOMEWORK: Final Drawings/ Complete Construction |

| WED  | REVIEW: “**A4:** Cardboard Furniture” DUE  
|      | HANDOUT: **A5:** Historic Precedents |

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*Mina Chow, AIA, NCARB Lecturer*

/Users/empresschow/Documents/USC/USC Classes/USC ARCH 205L/USC_ARCH 205aL/USC_ARCH 205aL_FA2017/A0_ADMIN/F16_205aL_Syllabus_07-27-17.docx
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<thead>
<tr>
<th>Week 11</th>
<th>MON</th>
<th>Historic Precedents #5</th>
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<tr>
<td>OCT 30</td>
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<td>WED</td>
<td>Historic Precedents #5</td>
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<td>NOV 1</td>
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<tr>
<th>Week 12</th>
<th>MON</th>
<th>Historic Precedents #5</th>
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<tr>
<td>NOV 6</td>
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<td>WED</td>
<td>REVIEW: “Historic Precedents #5” DUE</td>
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<td>NOV 8</td>
<td>HANDOUT: “Phenomenal Garden” (Capture a phenomenon with structure)</td>
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<tr>
<th>Week 13</th>
<th>MON</th>
<th>Phenomenal Garden Introduction.</th>
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<tbody>
<tr>
<td>NOV 13</td>
<td>DISCUSSION: “PHENOMENA VS. MATERIAL” (subject to change)</td>
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<td></td>
<td>Meet in your teams.</td>
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<td>HOMEWORK: 1. RESEARCH phenomena. and precedents. 2. SKETCH ideas.</td>
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<td>WED</td>
<td>Phenomenal Garden RESEARCH DUE.</td>
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<td>NOV 15</td>
<td>REVIEW ideas. Discussion and meet with your teams.</td>
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<td>HOMEWORK: 1. Study models and sketches.</td>
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<tr>
<th>Week 14</th>
<th>MON</th>
<th>Phenomenal Garden STUDIES: ¼” dwgs and ½” study model DUE.</th>
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<tbody>
<tr>
<td>NOV 20</td>
<td>Discussion and meet in your teams.</td>
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<td>HOMEWORK: 1. Study models and sketches.</td>
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<td>NOV 22-26</td>
<td>THANKSGIVING RECESS</td>
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<td>Meet with your teams.</td>
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<tr>
<th>Week 15</th>
<th>MON</th>
<th>Phenomenal Garden STUDIES: ¼” sketches and ½” model of Construct DUE. Meet with your teams.</th>
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<tbody>
<tr>
<td>NOV 27</td>
<td>HOMEWORK: Explore 4 connection details.</td>
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<td>WED</td>
<td>Phenomenal Garden STUDIES: Revise Design of Construct.</td>
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<tr>
<td>NOV 29</td>
<td>Discussion and meet with your teams.</td>
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<td>HOMEWORK: 4 connection details DUE.</td>
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<th>Week 16</th>
<th>MON</th>
<th>STUDY WEEK: Phenomenal Garden</th>
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<tr>
<td>DEC 4</td>
<td>Continue Construction for Space Design</td>
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<td>Discussion and meet in your teams.</td>
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<td>WED</td>
<td>STUDY WEEK: Phenomenal Garden</td>
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<tr>
<td>DEC 6</td>
<td>Continue Construction for Space Design</td>
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<td>Discussion and meet in your teams.</td>
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FRI  DEC 8

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