ARCH 205aL: Architecture for Engineers

Units: 4
MON/WED 2:00pm-4:50pm
Location: Watt Hall B12

Instructor: Tarrah Beebe, AIA
Office Hours: By appointment
Contact Info: tbeebe@usc.edu | m 617.955.7277 | o 310.399.7975 x265

Course Description

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 beauty in our surroundings, and to create an appreciation and understanding of how and why these systems of beauty are established. The primary objective is to expose the student to current issues related to design in architecture, and to teach the intrinsic nature of architecture developed through principles based on the construction process. These topics are indications of the various value systems that come into play in the contemporary field of architecture. Understanding this and becoming aware that design is a synthetic process that is a balance of many concerns is a major objective of the course.

The course will explore basic principals of 2 and 3 dimensional compositions though a series of design exercises, lectures, 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.

The studio will also provide an opportunity for students to explore architecture within the urban laboratory of Los Angeles, where layers of development have resulted in a complex environment shaped by many tangible and intangible factors. An introduction to the collaborative process of design and development through the exposure to building construction, both completed and in progress, will be presented to students for analysis and understanding.

In summary, the discussions, investigations, and design projects will begin to reveal the complex design process that architects must facilitate as they move towards a thoughtfully designed and coordinated building or space. To that end, we invite lively debate and opinions, as well as old and new ideas into our discussions. This course will only be fully successful through the participation and engagement of all students.
Learning 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, both in progress and complete.
2. Observation: Students will keep a sketchbook to track design ideas and investigations.
3. Formal Analysis: Introduction to two and three-dimensional analytical techniques.
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: How proportional systems are used to organize designs.
2. Balance and Symmetry: How balance and symmetry (or lack thereof) affect meaning and perception of form.
3. Figure/Ground: How figure and ground interact to create and define spatial relationships.
4. 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. Lectures, active-learning presentations
3. Class discussions, critiques and reviews
4. Fieldtrip(s)
5. Final project
6. Studio Sketchbook

REQUIRED DRAWING EQUIPMENT:
Sketchbook 8.5"x11" or 9"x12" wire bound (portrait, unlined)
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, 24” roll
Eraser(s)
Eraser shield(s)
12” Roll Trace paper (white or buff color)
Tape Measure
X-Acto knife and spare blades
Cutting mat (recommended 18x24 minimum)
6” metal ruler
24” metal ruler

SKETCHBOOK:
The most important piece of equipment in this class will be your sketchbook. This is a critical component of the design process. Your sketchbook should be with you at all times. Use it for notes and diagrams taken from the assigned readings and school lectures. Additionally, use it to document design iterations and investigations for each project. No idea is a bad idea if it leads you to your finished product; design is an iterative process! Sketching is not about pretty pictures, but about truly understanding a subject through layers of observation and documentation. Sketches do not need to be beautiful, but they do need to convey ideas. Your sketchbook will be graded on intelligence, not elegance.

REFERENCES AND READINGS:
The role of readings in this course is not the absorption of information. It is the development of articulate viewpoints through discussion and sharing of ideas. The readings selected are meant to provoke thought and insight in relation to the projects and studio endeavors. To help with this kind of thinking, you are expected to record and graphically illustrate two important ideas from each reading in your sketchbook. These should include your thoughts and comments as well as those of the author. These insights will contribute to your sketchbook grade.
Required readings will be from the following texts or provided in advance on https://blackboard.usc.edu.

* Image of the City by Kevin Lynch
* The Mathematics of the Ideal Villa and Other Essays by Colin Rowe
* Architecture: Form, Space and Order by Francis Ching
* Design of Cities by Edmund Bacon

**Grading Breakdown**

<table>
<thead>
<tr>
<th>Assignment</th>
<th>% of Grade</th>
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<tbody>
<tr>
<td>(3) Design Studio Assignments</td>
<td>45</td>
</tr>
<tr>
<td>(1) Final Project</td>
<td>25</td>
</tr>
<tr>
<td>Attendance/Participation</td>
<td>15</td>
</tr>
<tr>
<td>Studio Sketchbook</td>
<td>15</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100</strong></td>
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**Class Schedule (Subject to Change):**

**Week 1**

* Monday, August 24th
  - What is a sketch? How do we perceive architecture?
  - Reading: Excerpt from *Visual Notes* by Norman Crowe and Paul Laseau
  - Campus Sojourn and Sketching

* Wednesday, August 26th
  - The urban landscape
  - Reading: Kevin Lynch *The Image of the City*
  - Personal Map of Los Angeles
  - Project 01: Personal Living Space

**Week 2**

* Monday, August 31st
  - Project 01: Personal Living Space
  - Desk Crits

* Wednesday, September 2nd
  - Project 01: Personal Living Space
  - Desk Crits

**Week 3**

* Monday, September 7th
  - NO CLASS – LABOR DAY

* Wednesday, September 9th
  - Project 01: Personal Living Space
  - Desk Crits
**Week 4**  
Monday, September 14th  
- Project 01: Personal Living Space  
- Final Presentation  

Wednesday, September 16th  
- Kit of Parts Exercise  
- Architectural Precedent Study  

**Week 5**  
Monday, September 21st  
- Architectural Precedent Study Review  

Wednesday, September 23rd  
- Field Trip: DTLA Walking Tour  
- Reading: Architecture and Music  

**Week 6**  
Monday, September 28th  
- Project 02: Music Model  
- Desk Crits  

Wednesday, September 30th  
- Project 02: Music Model  
- Desk Crits  

**Week 7**  
Monday, October 5th  
- Project 02: Music Model  
- In-Class Pinup  

Wednesday, October 7th  
- Project 02: Music Model  
- Desk Crits  

**Week 8**  
Monday, October 12th  
- Project 02: Music Model  
- Desk Crits  

Wednesday, October 14th  
- Project 02: Music Model  
- MIDTERM REVIEW – Final Presentation  

**Week 9**  
Monday, October 19th  
- Office Tour – Killefer Flammang Architects, Santa Monica, CA  
- Reading: Francis Ching Form, Space and Order
Wednesday, October 21st
Project 03: Bird House

**Week 10**
Monday, October 26th
Project 03: Bird House
Desk Crits

Wednesday, October 28th
Project 03: Bird House
Desk Crits

**Week 11**
Monday, November 2nd
Project 03: Bird House
Desk Crits

Wednesday, November 4th
Project 03: Bird House
Final Presentation

**Week 12**
Monday, November 9th
Los Angeles and Exposition Park Tour
Project 04A: Bus Stop Context Study
Group Project and Collaboration
Reading: Edmund Bacon Design of Cities

Wednesday, November 11th
Project 04A: Bus Stop Context Study
Group Project and Collaboration

**Week 13**
Monday, November 16th
Project 04A: Bus Stop Context Study
Neighborhood Study Presentation
Project 04B: Bus Stop Design

Wednesday, November 18th
Project 04B: Bus Stop Design
Desk Crits

**Week 14**
Monday, November 23rd
Project 04B: Bus Stop Design
Desk Crits / In-Class Pinup

Wednesday, November 25th
NO CLASS — THANKSGIVING BREAK
Week 15
Monday, November 30th
   Project 04B: Bus Stop Design
   Desk Crits

Wednesday, December 2nd
   Project 04B: Bus Stop Design
   FINAL REVIEW — Final Presentation

Portfolio Due Date: TBD
Construction Site Visit: TBD
All-School Lecture Series: TBD

Statement on Academic Conduct and Support Systems

Academic Conduct
Plagiarism — presenting someone else’s ideas as your own, either verbatim or recast in your own words — is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Section 11, Behavior Violating University Standardshttps://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct/.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the Office of Equity and Diversity http://equity.usc.edu/ or to the Department of Public Safety http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us. This is important for the safety whole USC community. Another member of the university community — such as a friend, classmate, advisor, or faculty member — can help initiate the report, or can initiate the report on behalf of another person. The Center for Women and Men http://www.usc.edu/student-affairs/cwm/ provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Support Systems
A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the American Language Institute http://dornsife.usc.edu/ali, which sponsors courses and workshops specifically for international graduate students. The Office of Disability Services and Programs http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, USC Emergency Information http://emergency.usc.edu/ will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.