

## **CLASS SYLLABUS**

**University of Southern California  
School of Architecture**

### **A. GENERAL**

Course:	<b>ARCH-611: ADVANCED BUILDING SYSTEMS INTEGRATION</b>
Semester Offered:	SPRING 2019, (4 units)
Professors:	Tigran Ayrapetyan, P.E. ( <a href="mailto:tigran30@gmail.com">tigran30@gmail.com</a> ) Michael Hricak ( <a href="mailto:hricak@me.com">hricak@me.com</a> )
Office Hours:	By appointment
Section:	11500D
Day and Time:	<b>Thursday</b> from 3:30pm to 6:50pm
Location:	HAR-101

### **B. OBJECTIVE**

During this course, students will learn the following, based on the National Architectural Accreditation Board (NAAB). These are Student Performance Criteria (SPC) for this course that NAAB requires students to demonstrate to earn an accredited degree. The following legends are used at the end of each paragraph below to indicate how each SPC is demonstrated: (L) lecture, (R) Reading, (Q) Quiz, (F) Final Exam, (A) Assignment, (P) Project.

B.3. Codes and Regulations: Ability to design sites, facilities, and systems that are responsive to relevant codes and regulations, and include the principles of life-safety and accessibility standards. (Demonstrated in L2-12, R2-12, Q1-11, F, A1, P)

B.4. Technical Documentation: Ability to make technically clear drawings, prepare outline specifications, and construct models illustrating and identifying the assembly of materials, systems, and components appropriate for a building design. (Demonstrated in L1-12, A1-6, P)

B.5. Structural Systems: Ability to demonstrate the basic principles of structural systems and their ability to withstand gravitational, seismic, and lateral forces, as well as the selection and application of the appropriate structural system. (Demonstrated in L2-6, R2-6, Q1-5, F, A2-6, P)

B.6. Environmental Systems: Ability to demonstrate the principles of environmental systems' design, how design criteria can vary by geographic region, and the tools used for performance assessment. This demonstration must include active and passive heating and cooling, solar geometry, daylighting, natural ventilation, indoor air quality, solar systems, lighting systems, and acoustics. (Demonstrated in L7-8, R7-8, Q6-7, F, A5-6, P)

B.7. Building Envelope Systems and Assemblies: Understanding of the basic principles involved in the appropriate selection and application of building envelope systems relative to

fundamental performance, aesthetics, moisture transfer, durability, and energy and material resources. (Demonstrated in L9-10, R2-12, Q8-9, F, A5-6, P)

B.8. Building Materials and Assemblies: Understanding of the basic principles used in the appropriate selection of interior and exterior construction materials, finishes, products, components, and assemblies based on their inherent performance, including environmental impact and reuse. (Demonstrated in L3-6, R3-6, Q2-5, F, A2-6, P)

B.9. Building Service Systems: Understanding of the basic principles and appropriate application and performance of building service systems, including lighting, mechanical, plumbing, electrical, communication, vertical transportation, security, and fire protection systems. (Demonstrated in L7-8, R7-8, Q6-7, F, A2-6, P)

C.2. Integrated Evaluations and Decision-Making Design Process: Ability to demonstrate the skills associated with making integrated decisions across multiple systems and variables in the completion of a design project. This demonstration includes problem identification, setting evaluative criteria, analyzing solutions, and predicting the effectiveness of implementation. (Demonstrated in L1-12, A1-6, P)

C.3. Integrative Design: Ability to make design decisions within a complex architectural project while demonstrating broad integration and consideration of environmental stewardship, technical documentation, accessibility, site conditions, life safety, environmental systems, structural systems, and building envelope systems and assemblies. (Demonstrated in L1-12, A2-6, P)

*"The USC School of Architecture's five year BARCH degree and M.ARCH degree are accredited professional architectural degree programs. All students can access and review the NAAB Conditions of Accreditation (including the Student Performance Criteria) on the NAAB Website, [http://www.naab.org/accreditation/2009\\_Conditions.aspx](http://www.naab.org/accreditation/2009_Conditions.aspx)."*

### **C. PURPOSE**

1. After this course, students are expected to be able to contribute in the design and development of architectural, structural, and environmental systems in an Architectural / Engineering firm, or in a Design and Build firm.

### **D. COURSE REQUIREMENTS**

1. Students are expected to have completed the required prerequisites (ARCH-411 and ARCH-511) for the course, or equal (check with your school adviser).
2. The students will be required to attend all lectures, complete all reading assignments, quizzes, drawings relating to each weekly topic, architectural models (if needed), and project. See attached course outline for more details.
3. Students will be treated as beginning architects/engineers working for a design office and are expected to fully participate in classroom discussions, and to communicate with each other regarding the subject matter on daily bases, as it would be required in a design office.

4. ATTENDANCE: Read below carefully Section-N, "Attendance" that may significantly influence your grade.
5. Electronic communication devices must be turned off or in vibration mode during class.
6. Examination behavior: Any use of external assistance during an examination or quiz, or attempt to benefit from work of another student, shall be considered academically dishonest. If clear violation has occurred, the instructor may disqualify the student's work as unacceptable and assign a failing mark for the assignment, quiz, or examination and such incident will be reported to the Student Service Office. See also "Statement on Academic Conduct" in Section-Q below.

#### **E. COURSE OUTLINE**

1. The course outline is attached to this syllabus.
2. The course outline contains schedule of all assignments and events for this class.
3. Please note that the course outline will be revised during the semester to accommodate possible scheduling conflicts for the assignments, projects, or required reading.
4. The footer on the syllabus and the course outline shows the revision date. Make sure always to refer to the latest edition of the syllabus and the course outline that will be distributed in class, or posted on Blackboard.

#### **F. READING ASSIGNMENTS**

1. Reading assignments are listed in the attached course outline based on the text books listed in the bibliography below.
2. It is imperative to keep up with the reading to be able to participate in classroom discussions and complete all the required class assignments and quizzes.

#### **G. ASSIGNMENTS (25% of the final grade)**

1. Handouts outlining requirements for each assignment will be distributed during the semester according to the attached course outline.
2. The assignments are meant to provide insight into the design, detailing, construction process, and materials methodology, etc., according to the objective outlined above.
3. Late assignments will not receive a full credit.
4. See Assignment Outlines for more details.

#### **H. QUIZZES (15% of the final grade)**

1. Quizzes will be given throughout the semester according to the attached course outline.
2. Each quiz will typically consist of about 20-25 questions that would be based on the reading assignments and the previous lectures. It will be graded on a curve.
3. Quizzes cannot be made up at an earlier date, or a later date.

#### **I. FINAL EXAM (25% of the final grade)**

1. The final exam will be multiple-choice (about 100 questions), graded on a curve.
2. The final exam cannot be made up at an earlier date, or a later date.
3. Meeting time and place to be confirmed. See Course Outline for more details.

#### **J. PROJECT (25% of the final grade)**

1. Handout outlining requirements for the project will be distributed during the semester.
2. See Project Outline for more details.

#### **K. CLASS PARTICIPATION / PORTFOLIO REVIEW (10% of the final grade)**

1. Participation is an important part of this course. Students are expected to work in groups, participate in discussions, pose critical questions at lectures, and be proactive at desk crits and reviews. A portion of the final grades evaluates participation.
2. Each student must prepare and submit portfolio, neatly organized in a three hole binder. The portfolio must include student's complete class work for the semester.
3. In addition, the students will be required to submit the electronic scans of the same portfolio in .PDF format on a CD or DVD, depending on the electronic file size.
4. If any portion of the student's class work will be missing at the end of the semester, it will result in a lower final grade, regardless of the fact that it has being previously graded, or not. Hence, it must be the student's responsibility to maintain carefully hard copies and electronic copies of their complete class work for the entire semester. Note: Students must constantly backup their electronic class work throughout the semester to prevent any unforeseen electronic data loss.
5. The final grade will be based on the combined review of all class work including the portfolio submitted at the end of the semester.

#### **L. PROTOCOL FOR ANY ELECTRONIC FILE SUBMITTAL**

1. All electronic files shall be burned on CD for portfolio submittal.
2. Use the following protocol for naming all .PDF files for your submittals:
  - a) Assignments: **A- #\_ARCH611\_RosterName.pdf**
  - b) Project: **Project\_ARCH611\_RosterName.pdf**

#### **M. GRADING**

Course final grades will be determined using the following scale:

A	95-100
A-	90-94
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
F	59 and below

#### **N. ATTENDANCE**

1. A maximum of one absence (excused or unexcused) is permitted, adhering to the University and School of Architecture policies for one day per week courses.
2. After one absence, students will be issued a Letter of Unsatisfactory Progress stating the potential negative impact on their final course grade. Additional absences subsequent to the letter may require the student to consider the option of withdrawing from the course to avoid the possibility of obtaining a failing grade.
3. At a minimum, any students missing a class session will be required to make up the missed session by fulfilling an assignment provided by the faculty consistent with the content and intentions of the course.
4. Students need to inform the faculty via e-mail of any anticipated absence as soon as it is determined that the student will not be able to attend and explain in writing the nature of the conflict that prevented full participation in the class.
5. Students that are late for class or absent for a part of the class period are liable for a reduced grade or failing grade depending on the extent of the absence and its impact on performance in the class.
6. The university recognizes the diversity of our community and the potential for conflicts involving academic activities and personal religious observation. The university provides a guide to such observances for reference and suggests that any concerns about attendance or inability to participate fully in course activity be discussed with your instructor at the beginning of the term.

## **O. BIBLIOGRAPHY**

### **Required Texts:**

1. Architectural Detailing: Function, Constructability, Aesthetics, 3rd Edition, 2016, Edward Allen, Patrick Rand, Published by John Wiley & Sons, Inc.
2. The Architect's Studio Companion: Rules of Thumb for Preliminary Design, 5th Edition, 2011, Edward Allen, Joseph Iano, Published by John Wiley & Sons, Inc.
3. Integrated Buildings: The Systems Basis of Architecture, 2002, Leonard R. Bachman, Published by John Wiley & Sons, Inc.

### **Recommended Texts:**

1. Fundamentals of Building Construction Materials & Methods, 6th Edition, 2014, Edward Allen and Joseph Iano, Published by John Wiley & Sons, Inc.
2. Mechanical and Electrical Systems in Buildings, 5th Edition, 2014, Richard R. Janis and William K.Y. Tao, Published by Pearson Prentice Hall
3. Building Construction Illustrated, 5th Edition, 2014, Francis D. K. Ching, Published by John Wiley & Sons, Inc.

4. Architectural Graphic Standards - Student Edition, 11th Edition, 2008, Edited by Bruce Bassler, Published by John Wiley & Sons, Inc.

#### **P. SUGGESTED COMPUTER SOFTWARE (But not required):**

1. AutoCAD, Revit, or similar software.
2. SketchUp or similar software.
3. Adobe Creative Suite (Photoshop, Illustrator, In-Design, Acrobat, etc.) or similar software.

#### **Q. ADDITIONAL INFORMATION**

##### **Statement on 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 Part B, Section 11, “Behavior Violating University Standards” <https://policy.usc.edu/scampus-part-b/>. 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>.

##### **Statement on Support Systems:**

*Student Counseling Services (SCS) - (213) 740-7711 – 24/7 on call*

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. <https://engemannshc.usc.edu/counseling/>

*National Suicide Prevention Lifeline - 1-800-273-8255*

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. <http://www.suicidepreventionlifeline.org>

*Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-4900 - 24/7 on call*

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. <https://engemannshc.usc.edu/rsvp/>

*Sexual Assault Resource Center*

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: <http://sarc.usc.edu/>

*Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086*

Works with faculty, staff, visitors, applicants, and students around issues of protected class. <https://equity.usc.edu/>

*Bias Assessment Response and Support*

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. <https://studentaffairs.usc.edu/bias-assessment-response-support/>

*The Office of Disability Services and Programs*

Provides certification for students with disabilities and helps arrange relevant accommodations. <http://dsp.usc.edu>

*Student Support and Advocacy – (213) 821-4710*

Assists students and families in resolving complex issues adversely affecting their success as a student  
EX: personal, financial, and academic. <https://studentaffairs.usc.edu/ssa/>

*Diversity at USC*

Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. <https://diversity.usc.edu/>

*USC Emergency Information*

Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible, <http://emergency.usc.edu>

*USC Department of Public Safety – 213-740-4321 (UPC) and 323-442-1000 (HSC) for 24-hour emergency assistance or to report a crime.*

Provides overall safety to USC community. <http://dps.usc.edu>