

CLASS SYLLABUS

**University of Southern California
School of Architecture**

A. GENERAL

Course: ARCH-305b, Building Science II
Semester Offered: SPRING - 2013, (4 units)
Professor: Tigran Ayrapetyan, P.E.
How to contact Professor: tigran30@gmail.com
Day and Time: Tu and Th from 1:00pm to 3:50pm
Location: Harris 115

B. OBJECTIVE

During this course, students will explore design alternatives of various architectural structures using wood, steel, masonry, and concrete materials with emphasis on lateral load design using **Rigid Diaphragms**.

C. PURPOSE

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

D. COURSE REQUIREMENTS

Students will be treated as beginning engineers working for a design office. Students will be required to complete architectural design, renderings, and set of architectural plans for various buildings; engineer the buildings for vertical, seismic, and wind loads; prepare corresponding structural plans and structural details; and consider “green aspects” for the buildings.

E. SUBJECT MATTER

Sufficient overview of the wood, steel, masonry, concrete designs and detailing would be provided to the students during the course for them to complete required engineering task. In addition, wind and seismic provisions from current building code would be presented during the course to help students to apply theory to practice.

F. ASSIGNMENTS

Midterm project (home take), due on 3-5-13 at 1:00p.m. (To be confirmed)
Final project, with presentation scheduled for 5-2-13 at 1:00p.m (To be confirmed)
Portfolio review and submittal, scheduled for (To be Confirmed)
Homework
Assigned reading

G. GRADING

Students will be graded on their ability to perform architectural and engineering designs and to draw corresponding structural plans and details, and on their ability to work as teammates to complete assigned projects and present it as they would be required to do in a design office.

Homework	40%
Projects	40%
Class Portfolios	10%
Class participation	10%

H. BIBLIOGRAPHY

CBC-2010 (California Code)

ASCE 7-05 (Minimum Design loads for Buildings and Other Structures)

AISC 13TH Edition (Steel)

NDS-05 (Wood)

ACI 318-05 (Concrete)

ACI 530-05 (Masonry)

Brandow/Ekwueme/Hart (2006) Design of Reinforced Masonry Structures

Roark's Formulas for Stress & Strain

Ambrose / Vergun (1999) Design for Earthquakes

City of LA, Type V Construction

G. G. Schierle, PhD, FAIA (2008) Structure and Design (Highly recommended for this class)

Tigran Ayrapetyan, M.S., P.E., Structural Consultant; Calc's & Draw's of Actual Projects

I. COMPUTER USAGE:

AutoCAD

Enercalc

SketchUp or similar software

SAP90 or StaadPro or similar software

J. ADDITIONAL INFORMATION:

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Statement on Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *Scampus*, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A:

<http://www.usc.edu/dept/publications/SCAMPUS/gov/>. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at:

<http://www.usc.edu/student-affairs/SJACS/>.