

**ARCH 4303 / 5303 STRUCTURAL PRINCIPLES**

**INSTRUCTOR:** David J. Thaddeus, AIA, Professor  
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Office Hours: By Appointment

**SCHEDULE:** This course will meet in CHHS 161 on Tuesdays and Thursdays from 08:30-09:45 AM

**DESCRIPTION:** "Materials should be employed in a manner consonant with the formulation of a structure. Their proper use contributes to the clarity of the structural expression; their misuse, on the other hand, diminishes the effectiveness of the design".  
Eugene Emmanuel Viollet Le Duc

A tripod represents stability, which in structural analysis is determined through the appropriate manipulation of the elements of the tripod: *load, material and geometry*. The artful manipulation of these parameters is of primary concern in architecture. Harmony in architectural design will not be realized unless accompanied by an inner harmony that comes only with an understanding of the structure of form. Nature is a witness to this harmony.

This course is a general introduction to statics and strength of materials. It is devoted to enhancing your intuitive understanding of the fundamental concepts that underlie structural design.

**PROCEDURE:** Several fundamental topics and structural principles will be addressed in a series of lectures, presentations and projects. The course involves a fair amount of numeric calculations to arrive at practical conclusions. In essence, understanding the structural logic of any calculations is what really matters. Graduate students will have additional visits and documentation requirements of their projects

**EVALUATION:** The following values for student evaluation and progress are tentative,

▪ 2 Exams x 20% Each	40 %
▪ Final Exam	20 %
▪ Pop Quizzes	12 %
▪ Homework	08 %
▪ Project(s) Adopt A Site	20 %

Late submissions will not be accepted

**TEXTBOOKS:** **Required Textbooks:**

- Onouye, Barry with Kevin Kane. *Statics and Strength of Materials for Architecture and Building Construction*. Upper Saddle Hill, NJ: Prentice Hall, 2007.
- Allen, Edward & Joseph Iano. *The Architect's Studio Companion*. New York: John Wiley and Sons, Latest Edition

**Recommended Textbooks:**

- Underwood, Rod & Michele Chiuini. *Structural Design, A Practical Guide for Architects*. New York: John Wiley and Sons, 1998.
- Ronald Shaeffer, *Elementary Structures for Architects and Builders*. Upper Saddle Hill, NJ: Prentice Hall, 4<sup>th</sup> Edition, 2002.
- Schodek, Daniel, *Structures*, 3<sup>rd</sup> Edition. Upper Saddle Hill, NJ: Prentice Hall, 1998.
- Ambrose James, *Building Structures*. Upper Saddle Hill, NJ: Prentice Hall, 1993
- Ching, Francis, *A Visual Dictionary of Architecture*, New York: John Wiley and Sons, 1996
- Madan Mehta Walter Scarborough, and Diane Armpriest *Building Construction. Principles, Materials and Systems.*, 2nd Edition. Pearson 2012

**ATTENDANCE:** You are allowed three (3) absences. For any class you are absent, you will receive a grade of zero if a quiz, test, exam, or other graded activity is given that day. Additional absences (4 or more) will result in a letter grade reduction for each additional class missed. You are NOT allowed to use your laptop or cell phone during class for any reason.