**CE 539**

**“Advanced Steel Structures”**

## SYLLABUS – Spring 2017

**Text:** STEEL STRUCTURES DESIGN for Lateral and Vertical Forces

AISC Seismic Design Manual

AISC Steel Manual (not required)

**Location:** OHE 100 D Tuesday-Thursday 3:30 – 4:50

**Prerequisite:** Steel Design (undergraduate)

**Professor:** Gregg E. Brandow, PhD, PE, SE 213-740-1040 tel

KAP 268C [brandow@usc.edu](mailto:brandow@usc.edu)

**TA:**

**Overview:**

This course will look at structural steel and its properties, the design of typical steel buildings, and design and performance of steel buildings for earthquake loads.

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| **Day** | **Date** | **Class Subject Material and Test Schedule** | **Chapters/Sections** |
| Tue  Thu  Tue  Thu  Tue  Thu  Tue  Thu  Tue  Thu  Tue  Thu  Tue  Thu  Tue  Thu  Tue  Thu  Tue  Thu  Tue  Thu  Tue  Thu  Tue  Thu  Tue  Thu  Tue  Thu  Tue  Thu  Tue | 1/10  1/12  1/17  1/19  1/24  1/26  1/31  2/2  2/7  2/9  2/14  2/16  2/21  2/23  2/28  3/2  3/7  3/9  3/14  3/16  3/21  3/23  3/38  3/30  4/4  4/6  4/11  4/13  4/18  4/20  4/25  4/27  5/9 | Introduction & Overview  Steel, Steel framing, Loads  Beam Design  Beam Design  Composite Design  Composite Design  Vibrations  Vibrations  Connections  Connections  Compression Members  Tension Members  Plastic Design & Ductility  Lateral Systems (LFRS), Seismic  Seismic Loads  Midterm Exam  Preliminary Design Moment Frames  Special Moment Frame Design  Spring Recess  Spring Recess  Northridge Earthquake Lessons  Special Moment Frames (SMRF)  Concentric Braced Frames (CBF)  Concentric Braced Frames  Concentric Braced Frames  Eccentric Braced Frames (EBF)  Eccentric Braced Frames  Buckling Restrained Braced Frames  BRBF  Steel Shear Walls  Combined Structural Systems  Future Research  Final Exam (2-4 pm) | Chapter 1  Chapter 2.1-2.3, 2.10, 2.11  Chapter 4  Chapter 5.1-5.2  Chapter 13.1, 13.5-13.7  Reference provided  Chapter 10 & 11  Chapter 5.5-5.7  Chapter 6  Chapter 9  Chapter 8, Chapter 14.1-14.2  Chapter 2.9  Chapter 2.9  Chapter 3.4  Chapter 14.7  References provided  Chapter 14.7  Chapter 14.3-14.5  Chapter 16.6  Reference provided  Reference provided  Reference provided |

**Policies**

**Examinations:**

Midterm and Final Exam.

**Grading/Values:**

The assignments will be design oriented and may extend over multiple weeks.

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| Assignments | 20% |
| Midterm | 35% |
| Final Exam | 45% |

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1. **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. Website and contact information for DSP: http://sait.usc.edu/academicsupport/centerprograms/dsp/home\_index.html, (213) 740-0776 (Phone), (213) 740-6948 (TDD only), (213) 740-8216 (FAX) [ability@uscedu](mailto:ability@usc.edu).

1. **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, ([www.usc.edu/scampus](http://www.usc.edu/scampus) or <http://scampus.usc.edu>) contains the University Student Conduct Code (see University Governance, Section 11.00), while the recommended sanctions are located in Appendix A.

1. **Emergency Preparedness/Course Continuity in a Crisis**

In case of a declared emergency if travel to campus is not feasible, USC executive leadership will announce an electronic way for instructors to teach students in their residence halls or homes using a combination of Blackboard, teleconferencing, and other technologies.