

## **CE 5304: Advanced Design of Structural Systems**

Department of Civil Engineering



Monday/Wednesday: CRBL C204 3:00PM to 4:20PM

Final Exam: None

### **Instructor**

---

Jeff Weidner, Ph.D.

Office - A-222

Lab - E-214

Office - (915)-747-6913

[jweidner@utep.edu](mailto:jweidner@utep.edu)

Office Hours: By appointment – Schedule at <https://weidner.as.me/>

### **Course Description**

---

From the university course catalog:

Behavior and design concepts for concrete, steel, and composite structural systems.

Topics include a detailed review of design specifications, detailing of frames, floor systems, and bracing components. Students will also be exposed to computational design tools.

My description:

This course will focus on understanding the design and construction process with a specific focus on steel buildings. Topics include general design understanding, developing a building vocabulary, load determination and assignment, and structural design of the primary building components that make up a structural system. Computational design tools will be used.

### **Course Objectives**

---

By the end of this course you should be able to:

1. Identify design goals and constraints for engineered systems
2. Understand the individual systems that comprise a building, and how they interact
3. Understand how to use design codes throughout a design effort
4. Understand the structural components that comprise a building structural system
5. Determine design loads and load combinations
6. Design structural components including beams, columns, braces, composite decks, and roof trusses
7. Design structural steel connections
8. Use structural analysis software to aid in design

## ***Grading***

---

Term Project:           70%  
Final Project:           30%

## ***Term and Final Project***

---

There will be a term project and a final project that focus on a design problem involving a fictional structure here in El Paso. Details will follow.

## ***Attendance Policy***

---

I do not take attendance during class. Your work is your responsibility, and you make the decision to show up in person or not.

## ***Class Approach***

---

Lectures will be a combination of chalk/whiteboard, Powerpoint, and note shells where I complete the notes during class. In the second half of the term, many lectures will be dedicated to working on our project. I have no issues with you using technology in the classroom.

## ***Honor Code***

---

Students are expected to adhere to the Honor Code of the Department of Civil Engineering, which can be found here (<http://ce.utep.edu/honorcode.htm>). Instances of suspected cheating or other violations of the Honor Code will be handled according to the procedures in the UTEP Handbook of Procedures.

## ***Textbook and Resources***

---

Required:

None

Highly Recommended:

ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures  
International Building Code 2018  
AISC Steel Manual – 15<sup>th</sup> edition  
Structural Steel Design 6<sup>th</sup> Edition – Jack McCormac and Stephen Csernak

Useful Resources (Not online):

Fundamentals of Building Construction – 6<sup>th</sup> Edition – Edward Allen and Joseph Iano

Useful Online Resources:

- The Architect's Studio Handbook – Edward Allen and Joseph Iano
- 2018 International Building Code Illustrated Handbook – Thornburg, Douglas
- Structural Load Determination: 2018 IBC and ASCE/SEI 7-16 – Fanella, David
- Building Design for Wind Forces: Overview of the Wind Load Provision of the ASCE 7-16 Standard – Taher, Rima