

Seismic Steel Building Design Course Syllabus

Classroom: Online

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Required Text:

Seismic Principles (ISBN-13: 978-1979573085)
AISC Steel Construction Manual

Course Objectives:

The aim of this course is to give students the ability to analyze and design steel systems and components for extreme lateral loads induced by earthquakes. Focus will be placed on: basic theory of dynamic response and application of seismic design provisions; understanding of lateral load paths in structural steel systems; and the analysis and design of common steel seismic systems and components. After completion of the course students should be able to:

1. Understand building earthquake considerations using structural dynamics principles and compute lateral demands using current seismic design provisions;
2. Analyze and design diaphragm systems within steel buildings
3. Analyze and design collector systems
4. Analyze and design various steel lateral force resisting systems including: Special Moment Resisting Frames (SMFs), Special Concentrically Braced Frames (SCBFs), and Buckling Restrained Braced Frames (BRBFs).

Grades: Grades are based on homework and exam performance. The final grade distribution is as follows:

Homework	30%
Midterm Exam	30%
Final Exam	40%

Homework:

Homework assignments are listed in the attached course schedule.

Course Schedule –

Module	Topic / Discussion	HW Set
1	Introduction to dynamic loading and the seismic provisions	1
2	Lateral loading paths: analysis and design of diaphragm and collector systems	2
3	Introduction to capacity based seismic design	3
4	Analysis and design of steel Special Moment Frame (SMF) systems	4
5	Analysis and design of steel Special Concentrically Braced Frame (SCBF) systems	5
6	Analysis and design of steel Buckling-Restrained Braced Frame (BRBF) systems	6
7	Braced frame gusset plate design considerations	7
8	Recent research into steel lateral force resisting systems and course project	8