2015-2016 COURSE BOOKLET

CIVIL-435 **Advanced Structural Steel Behaviour and Design**

Instructor: Lignos Dimitrios

Cursus	Semester	Type
Génie civil	MA2, MA4	Opt.

Language: English, Credits: 3, Session: Summer, Semester Spring

Workload 90h, Weeks 14, Hours 3 weekly, Lecture: 2 weekly, Exercises 1 weekly

COURSE DESCRIPTION

Advanced topics in structural steel seismic and wind design. Topics include bolted and welded connections; beam-column connections; conventional and innovative steel lateral load resisting systems for seismic loading. Illustrative examples from real-world applications including failures from recent natural hazards around the world.

SUGGESTED PREREQUISITES

Structural Analysis, Structural Dynamics, Basic Course(s) in Structural Steel Design

Grading Components	Percentage to the Final Grade
Midterm Examination	25%
Final Written Examination	75%

EXPECTED STUDENT ACTIVITIES

homework assignments (not graded), seismic design of steel frame lateral load resisting systems based on Eurocodes 1,3,4 and 8

PREREQUISITE FOR

Master projects in design, nonlinear analysis, evaluation and testing of structural steel systems under natural hazards

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WEEKLY COURSE OUTLINE

Week	Dates	Content
1	23/02	Introduction and background/Steel lateral load resisting systems
2	01/03	Introduction to Eurocode 8 with emphasis on steel structural systems
3	08/03	Capacity design principles, second order effects
4	15/03	Steel Moment Resisting Frames (MRFs)
5	22/03	MRFs: Bolted Beam-to-Column connections
6	05/04	MRFs: Welded Beam-to-Column connections
7	12/04	Midterm examination (in-class)
8	19/04	MRFs: Beam-Column seismic design
9	26/04	Steel Concentrically Braced Frames (CBFs)
10	03/05	CBFs: Design of steel braces
11	10/05	CBFs: Design of gusset plate connections
12	17/05	CBFs: Design of steel beams and columns
13	24/05	Innovative lateral load resisting systems for seismic and wind loading
14	31/05	Examples and failures from past case studies

Final Examination Date and Location: TBA