

Training on «Design of Steel Structures for Buildings in Seismic Areas»

Organized in collaboration with INFOSTEEL (www.infosteel.be)

Reference book: *Eurocode 8: Design of Structures for Earthquake Resistance Part: 1 General Rules, Seismic Action and Rule for Buildings.*

Speakers: Prof. Raffaele Landolfo, University of Naples "Federico II", Italy
Prof. Dan Dubina, Politehnica University of Timisoara, Romania
Assistant Prof. Mario D'Aniello, University of Naples "Federico II"
Assoc Prof. Aurel Stratan, Politehnica University of Timisoara, Romania

DAY 1 (06/12/2018)

<u>Date</u>	<u>Topic</u>	<u>Content</u>	<u>Comments</u>
09:15 - 09:30	Welcome & Introduction	- Content, objectives - Logic of the book and of the lectures - Structures at risk, examples of failures	
09:30 - 11:00	Principle and fundamentals of Seismic Design	Philosophy and contents of EN 1998. Structures located in moderate to high seismic areas. Structures located in low seismic areas (Landolfo)	Introduce main concepts to put all participants at same min., level of understanding.
11:00 - 11:15	Break	Coffee	
11:15 - 12:45	Conceptual design of seismic resistant structures	Structural Systems, Ductility Classes, Choice of Material, Ductile Components, Design Overstrength, Fuses and Replaceable Elements (Dubina)	Introduce more advanced concepts specifically related to seismic design of steel structures
12:45 - 13:30	Break	Lunch	
13:30 - 15:00	Structural analysis for seismic action	Seismic load combination. Overview of structural analysis methods. Modal response spectrum analysis. Effective modal mass. The lateral force method. Linear dynamic analysis. Pushover analysis. Non-linear dynamic analysis. Accidental torsion. Accounting for torsional effects in structural analysis. Combination of the effects of the components of the seismic action. (Stratan)	Introduce main concepts and give background to perform seismic analysis of structures in order to give all participants the minimum level of knowledge to understand the practical examples.
15:00 - 15:15	Break	Coffee	
15:15 - 16:45	Seismic design of MRFs, X-CBF and V-CBFs (1/2)	Discussion of differences between DCH/DCM/DCL (D'Aniello)	Provide background, discussion and calculation examples on MRFs, X-CBF and V-CBFs
16:45 - 17:00	Conclusions	Conclusion of Day 1	

DAY 2 (07/12/2018)

<u>Date</u>	<u>Topic</u>	<u>Content</u>	<u>Comments</u>
09:15 - 09:30	Welcome	Summary of Day 1 and questions	
09:30 - 11:00	Seismic design of MRFs, X-CBF and V-CBFs (2/2)	Discussion of differences between DCH/DCM/DCL (D'Aniello)	Provide background, discussion and calculation examples on MRFs, X-CBF and V-CBFs
11:00 - 11:15	Break	Coffee	
11:15 - 12:45	Seismic design of eccentrically braced frames and dual frames	Structural characteristics of eccentrically braced frames. Choice of ductility class. Design for ductility of dissipative components. Capacity design rules for non-dissipative components. Specific requirements for dual frames. Benefits of dual frames. Re-centring dual frames. (Stratan)	Provide background, discussion and calculation examples on EBFs and dual frames
12:45 - 13:30	Break	Lunch	
13:30 - 15:00	Design Case Studies - 1	(1) Multistory Building (2) Single Story Industrial Hall (Dubina)	Provide design examples on real case studies
15:00 - 15:15	Break	Coffee	
15:15 - 16:45	Design Case Studies – 2	Lightweight Steel Structures (3) Residential and (4) Social Buildings (Landolfo)	Provide design examples on real case studies
16:45 - 17:00	Conclusions	Conclusion of the training session	