



University of Naples Federico II

Department of Structures for Engineering and Architecture

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Proposed Short Course for PhD Students (24 hrs – 3 CFU)

Title

DESIGN OF STEEL STRUCTURES ASSISTED BY FINITE ELEMENT ANALYSIS

Abstract

The course briefly addresses key aspects related to advanced modelling of steel structures and details for structural assessment purposes. Namely, both the finite element method (FEM) and the finite strip method (FSM) are presented, i.e., with the aim to address specific issues of steel elements such as their static and fatigue response and buckling phenomena in thin members. Provided insights are framed in the context of the new European prEN1993-1-14:2023 document, which gives specific indications on steel structures design assisted by numerical modelling.

Final Exam

Discussion of addressed topics with reference to a relevant numerical application on steel structures and components.

Instructors

A. Milone - Assistant Professor of Structural Engineering (12 hrs)

R. Tartaglia - Tenure Track Assistant Professor of Structural Engineering (12 hrs)

Short Course Program

Topic	Hours	Date
Introduction and overview of addressed topics	1	05/2025
Key insights included in prEN1993-1-14:2023	2	05/2025
Recall on basics of Finite Element Modelling for structural purposes	2	05/2025
Analysis Methods for steel structures and components encoded in Eurocode 3	2	05/2025
Material models for FE modelling of steel components: Static, Cyclic, Fatigue	3	05/2025
Typical issues in FEM modelling of steel structures and components	2	05/2025
Insights on FEM-based seismic assessment of steel structures: Global modelling	2	05/2025
Insights on FEM-based seismic assessment of steel structures: Local modelling	2	05/2025
Insights on FEM-based fatigue assessment of steel structural details	2	05/2025
Numerical modelling of cold formed steel members	2	05/2025
Numerical application for a real case study	4	05/2025