

Code: ICAR/09

Credits: 6

Matter: Steel structures

Main language of instruction: Italian

Other language of instruction: English

Teaching Staff

Head instructor

Assistant Professor, Maria Zucconi - maria.zucconi@unicusano.it

Introduction

1. Objective of the course:

The course of "Steel structures" aims to provide the principals skills to the design of steel structure, including residential buildings and industrial plans. The definition of the structural scheme, greatly influenced by the aim of the construction, is analyzed in depth. The general features common to all type of steel structure have been introduced; the multy-storey building and the single-storey industrial building are largely treated, allowing the principal criterion for the basic design.

Objectives

2. Course Structure:

The course is organized in three subjects. The first subject is an introduction of structural safety. The second is aimed to introduce the steel structures, focusing the attention on i) the advantage and disadvantages of the steel as structural materials, ii) the structural scheme of the modern steel structures, and iii) the specifications of loads and method of design of beams and columns. In the third subject steel connections between structural elements are introduced, the standard bolted beam and column connections are shown and their principal of design are presented.

The knowledge acquired in theory lessons will be applied in the "virtual classroom" forum through exercises and other activities (E-tivity). The E-tivity is aimed to design a steel portal frame.

Competencies:

- knowledge of the main concept of structural safety.
- knowledge of advantage and disadvantages of steel structures
- knowledge and definition of the different structural scheme
- design of structural elements (beams and columns)
- design of steel connection

Syllabus

3. Programme of the course:

Subject 1. Structural safety

Subject 1. Steel structures

Subject 1. Steel connections

Evaluation system and criteria

The exam consists of a written test and one E-tivity carried out during the course in virtual classes.

The written test normally includes 1 numerical exercise and 2 theoretical questions on the main topics covered in the course.

During the written test, it is NOT allowed to use handouts, notes, texts or forms.

E-tivity is evaluated from 0 to 10 points, while 0-20 points are assigned at the written test.

Bibliography and resources

4. Materials to consult:

The educational materials (lecture notes, slides and video lessons) are available on the Unicusano platform.

5. Recommended bibliography:

Jack C. McCormac and Stephen F. Csernak, Structural steel design, fifth edition, Prenticelli Hall.