



COURSE DESCRIPTION LABORATORY OF CONSTRUCTION TECHNIQUE

SSD: TECNICA DELLE COSTRUZIONI (ICAR/09)

DEGREE PROGRAMME: ARCHITETTURA (N14)
ACADEMIC YEAR 2022/2023

COURSE DESCRIPTION

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GENERAL INFORMATION ABOUT THE COURSE

INTEGRATED COURSE: NOT APPLICABLE
MODULE: NOT APPLICABLE
CHANNEL:
YEAR OF THE DEGREE PROGRAMME: IV
PERIOD IN WHICH THE COURSE IS DELIVERED: SEMESTER I
CFU: 12

REQUIRED PRELIMINARY COURSES

Scienza delle Costruzioni

PREREQUISITES

Scienza delle Costruzioni

LEARNING GOALS

Course objectives *The purpose of the course is to provide the foundations of an analysis methodology aimed at understanding the problems related to the structural design. The goal is to provide the ability for proceeding with the conception, sizing and verification of very simple structural types made in different building materials, so that the future architectural designer, although not able to replace the structural engineer, can competently proceed to the preliminary dimensional setting of simple architectural works. The course does not aim to train a professional figure able to develop autonomously structural projects.*

EXPECTED LEARNING OUTCOMES (DUBLIN DESCRIPTORS)

Knowledge and understanding

Knowledge and understanding *During the five years, through lectures, seminars and laboratory activities, the student knows the issues related to the conception and general calculation of the structures as integrated elements of the elaboration of the architectural project in the various fields of its application and understands the interconnections with the other disciplines that contribute to the formation of the architectural project.*

Applying knowledge and understanding

Ability to apply knowledge and understanding *The student develops the ability to apply the theoretical and methodological knowledge related to the structural aspects of the architectural project and to produce general and simple design drawings by comparing themselves with the different degrees of depth of the architectural project, at the different scales and in the different areas of its application.*

COURSE CONTENT/SYLLABUS

The course is essentially divided into two modules, aimed at jointly addressing the main theoretical issues and implementation problems. The first module (first semester) introduces the problem of structural safety and the design / verification methodologies of very simple structural elements in reinforced concrete. The second module (second semester) introduces the design / verification methodologies of simple structural steel elements. The problems related to earthquake engineering are postponed to future courses, in one with the tools of analysis and verification of complex structural organisms such as buildings. The second module develops two design / verification exercises of two structural sub-elements (beams and floors) in two different materials; the reference to real structural elements is purely symbolic.

Theoretical lessons

The materials

1. Concrete and steel

The calculation at admissible stresses

2. The elastic calculation of the sections in reinforced concrete 2.1 axial force 2.2 bending 2.3 eccentric axial force 2.4 shear 2.5 twist 2.6 adherence

3. Structural safety and limit states

3.1 limit state for axial stresses 3.2 limit state of cracking

4. Pre-stressed structures: hints

Steel structures 5. General information 6. Characteristics of construction steels 7. Bolted and welded connection 8. Foundation-column connection, flange joint, corner joint, continuity joint 9. Stability of simple and coupled beams 10. Composite structures 11. Truss beams

Exercises and final tests | EXERCISE reinforced concrete slab EXERCISE II: steel structure

READINGS/BIBLIOGRAPHY

ELIO GIANGRECO, Teoria e tecnica delle costruzioni, Liguori editori
Luda copy, notes on steel structures
CNR 10011-85 steel structures,
actual codes, last edition

TEACHING METHODS OF THE COURSE (OR MODULE)

Lessons and exercises

EXAMINATION/EVALUATION CRITERIA

a) Exam type

- Written
- Oral
- Project discussion
- Other : Preliminary written test

In case of a written exam, questions refer to

- Multiple choice answers
- Open answers
- Numerical exercises

b) Evaluation pattern

The exam consists of an oral interview with or without an unsuccessful introductory written test. During the oral interview, students are asked to demonstrate a good command of the theoretical topics covered and to illustrate the project exercises carried out in itinere

Overall evaluation