COURSE DESCRIPTION
FUNDAMENTALS OF SCIENCE OF CONSTRUCTIONS

SSD: SCIENZA DELLE COSTRUZIONI (ICAR/08)

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

COURSE DESCRIPTION

TEACHER: DE CICCO SIMONA
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GENERAL INFORMATION ABOUT THE COURSE

INTEGRATED COURSE: NOT APPLICABLE
MODULE: NOT APPLICABLE
CHANNEL: 02 Cognome A - Z
YEAR OF THE DEGREE PROGRAMME: II
PERIOD IN WHICH THE COURSE IS DELIVERED: SEMESTER I
CFU: 8

REQUIRED PRELIMINARY COURSES
Mathematical analysis 1/Geometry

PREREQUISITES
None

LEARNING GOALS
The course aims to provide students with the theoretical and applicative foundations of the mechanics of solids and structures, through the study of the statics and kinematics of the flat framed structures, and of the technical theory of the beam. The ability to apply knowledge and understanding of the topics addressed intend to ensure the acquisition of a methodological approach that provides the basis for the design and structural verification of beam systems and for the analysis of the tenso-deformation state in continuous bodies.

EXPECTED LEARNING OUTCOMES (DUBLIN DESCRIPTORS)

Knowledge and understanding

The student must demonstrate to have understood basic concepts such as displacement, rotation, force, and momentum and to know the structural analysis of beams subject to external actions.

Applying knowledge and understanding

The student must be able to manipulate simple physical-mathematical relationships, understand their link with reality and solve elementary problems of structural mechanics

COURSE CONTENT/SYLLABUS

Elements of Vector Algebra. Definition of Displacements and Kinematics. Kinematic analysis of flat structures; Labile, isostatic and hyperstatic structures Definition of the concept of strength and balance. Cardinal equations of statics. Definition of the Characteristics of the stress. Variation laws and diagrams of stress characteristics. Lattice beams. Elements of area geometry. Technical theory of the beam; Differential equation of the elastic line; Mohr corollaries; Methods for the analysis of hyperstatic structures: congruence equations and the principle of virtual works.

READINGS/BIBLIOGRAPHY

The bibliography consists of the notes taken by each student during the lessons. However, to make up for any discontinuity of attendance, only students who regularly follow the course can request the teacher for a possible integration.

TEACHING METHODS OF THE COURSE (OR MODULE)

The course takes place over two semesters and is divided into lectures: theoretical and applicative. Attendance of the course is not mandatory, but strongly recommended. Registration is also not mandatory but linked to the subdivision by letter to which it is necessary to strictly adhere.

EXAMINATION/EVALUATION CRITERIA

a) Exam type

☑ Written

☐ Oral

☐ Project discussion

☑ Other : There will be an optional written test to be carried out in the period between the end of the first teaching module and the beginning of the second. If you pass this test, you will be assigned a grade that will be taken into account in the final exam.

In case of a written exam, questions refer to

☐ Multiple choice answers

☐ Open answers

☑ Numerical exercises

b) Evaluation pattern