



Course: Structural Mechanics		Teaching Language: English
SSD (Subject Areas): CEAR-06/A		CREDITS: 9
Course year: I	Type of Educational Activity: C	
Teaching Methods: in-person		
Contents extracted from the SSD declaratory consistent with the training objectives of the course: Analysis of elastic structures. Equilibrium and resultants of forces and moments, distributed loads, statically determinate and indeterminate structures, equilibrium of statically determinate structures, truss structures, internal forces in beams, Euler–Bernoulli and Timoshenko beam models, analysis of statically indeterminate structures, equilibrium and compatibility equations, force and displacement methods, principle of virtual work (primal and dual formulations), introduction to the finite element method. Beam theory. Axial loading, pure bending, biaxial bending, geometric and elastic properties of a beam cross-section, shear stresses in beams, Jourawski’s formula for thin-walled sections under shear, torsion, circular beams under torsion, first and second Bredt formulas, torsion of thin rectangular sections. Beam stability. Euler’s formula for pinned–pinned columns and its extension to columns with other boundary conditions, eccentric loading, effects of imperfections. Torsional and flexural–torsional buckling.		
Objectives: The course aims to provide the fundamental principles of the mechanics of materials and structures, and to develop a critical understanding of structural modelling through the solution of equilibrium problems involving solids and rigid or elastic structural systems, with particular emphasis on beam systems and planar problems in linear elasticity		
Propaedeuticities: none		
Is a propaedeuticity for: none		
Types of examinations and other tests: oral examination and written test		