



Course: Fundamentals of Structural and Geotechnical Engineering Module 1: Continuum Mechanics Module 2: Geotechnical Engineering Module 3: Structural Engineering		Language: English
SSD (subject areas): Module 1: CEAR-06/A Module 2: CEAR-05/A Module 3: CEAR-07/A		CREDITS: 9 ECTS Modulo 1: 3 ECTS Modulo 2: 3 ECTS Modulo 3: 3 ECTS
Year: I	Type of Educational Activity: B	
Teaching methods: in presence		
Extracted contents coherent with course objectives: Module 1: Introduction to the fundamentals of continuum mechanics. Kinematics of deformation. Linearization. Stress concept. Constitutive equations. Yield criteria. Elastic response. Work and energy. Virtual work theorem. Simple linear elasticity problems. Stress state of a 3D beam under axial force, bending moment, shear and torsion. Module 2: Overview of basic concepts and experimental tools for characterizing and modelling the physical-mechanical properties of soils for analysing their behaviour under design conditions. Module 3: General criteria and application techniques for the design, safety verification and construction aspects of reinforced concrete and steel structural elements. Includes structural design principles, material behaviour, constitutive laws, safety verification according to limit-state design, and reference to international building codes and Eurocodes.		
Objectives: Module 1: Understanding principles and analysis methods for strength and behaviour of solids and structures; awareness and critical use of main models. Module 2: Introduction to soil mechanics and geotechnical modelling with focus on civil engineering applications; deriving soil properties from laboratory tests and in-situ investigations. Module 3: Basic knowledge and methodologies for calculation and safety verification of reinforced concrete and steel members according to semi-probabilistic limit-state methods; reference to international codes, Eurocodes, and construction techniques.		
Propaedeuticities: -		
Is a propaedeuticity for: -		
Types of examinations and other tests: Written practical assignments and simple numerical applications. Final oral exam including discussion of assignments and numerical applications.		