



Course: Mechanics of composite and advanced materials		Teaching Language: English
SSD (Subject Areas): CEAR-06/A		CREDITS: 9
Course year: II	Type of Educational Activity: C	
Teaching Methods: During the course the teaching method will be in-presense		
Contents extracted from the SSD declaratory consistent with the training objectives of the course: Thermo-mechanics of materials: anisotropy, elastic and plastic deformation, Deformation Theory and Stress Theory in Continuum Mechanics. Viscoelastic Constitutive Laws. Theory of Homogenization: concepts and definitions, analytical and numerical homogenization and localization techniques, derivation of overall properties and failure mechanisms in composites. Numerical Modeling – Introducion to FE Method. Design and FEM modeling of composite structures.		
Objectives: The course “Mechanics of Composite and Advanced Materials” aims to provide students with theoretical models, computational methods and numerical procedures for the study, the analysis and the design of structural systems made of composite and innovative materials, allowing the possibility of predicting the behavior of new composites and, eventually, to tailor and design new materials, considering also their nonlinear behavior. Theoretical lessons are interspersed with exercises and numerical applications.		
Propaedeuticies: No one		
Is a propaedeuticity for: No one		
Types of examinations and other tests: The oral exam consists in discussing topics covered in the course showing the ability to be able to fully use the theoretical and applicative tools that were provided during the course and to be able to discuss the possible applications of innovative materials in various structural engineering problems. The final grade will be determined on the basis of the outcome of the oral exam. Particular importance will have the ability of the student in discussing about the possible use of composite and advanced materials in engineering applications.		