

Insegnamento: MICROMECHANICS OF HETEROGENEOUS MATERIALS	
Modulo /i:	
CFU: 9	SSD: ICAR/08
Ore di lezione:	Ore di esercitazione:
LAUREA MAGISTRALE IN INGEGNERIA STRUTTURALE E GEOTECNICA - Anno di corso: I o II	
Obiettivi formativi: With the aim of modeling and designing innovative materials and structures, here we will first treat the thermo-mechanics of elastic, visco-plastic and poro-elastic media, from the <i>continuum</i> point of view, also analyzing damage, fracture and fatigue phenomena. Therefore, we will investigate the mechanical behavior of heterogeneous media, exploring their physical and geometrical features at the micro-scale level, to finally obtain – at the macro-scale level – overall properties and constitutive laws for porous solids, anisotropic composites and fiber-reinforced materials, in the framework of the theory of <i>homogenization</i> .	
Contenuti: Thermo-mechanics of materials: anisotropy, elastic and plastic deformation, creep and stress relaxation, thermo-elasticity, elements of damage, fracture and fatigue; Poroelasticity: poro-elastic models of solid-fluid interactions, honeycomb, micro-porous and granular materials; Theory of Homogenization: concepts and definitions, analytical and numerical homogenization and localization techniques, derivation of overall properties and failure mechanisms in composites.	
Docente: ELIO SACCO	
Codice:	Semestre:
Prerequisiti / Propedeuticità: Scienza delle Costruzioni	
Metodo didattico: Lezioni frontali ed esercitazioni	
Materiale didattico : Nemat-Nasser and Hori, <i>Micromechanics of heterogeneous media</i> , North-Holland, 1999	
Modalità di esame: Prova finale orale	