UE Selected topic in continuum mechanics

Level
Baccalaureate +5

ECTS
6 credits

Component
UFR PhITEM (physique, ingénierie, terre, environnement, mécanique)

- **Teaching language(s):** English
- **Open to exchange students:** Yes
- **Code d'export Apogée:** PAX9CEAA

Presentation

Description

- Kinematics : Physical space # frames # continuous media # deformation function # Lagrange and Euler variables
- Strains : Deformation gradient # metric tensor # Green deformation tensor # small strains # strain rate
- Material derivative and conservation laws
- Mass conservation # volume change # balance of momentum
- Stresses : Fundamental principle of dynamics # Cauchy stress tensor#equation of motion and boundary conditions # Piola# Kirchhoff stress tensors # virtual power formulation # linearization of equation of motion
- Examples of formulations of problems of continuum mechanics
- Frame invariance

Constitutive equations: Large elasticity # elastoplasticity incremental constitutive equations, generalized continuous media, Non local, second grade, Cosserat and micromorphic continuum mechanics # an introduction

Course parts

UE Selected topic in continuum mechanics - CM	Lectures (CM)	30h

Period : Semester 9

Useful info

Campus

- Grenoble - University campus