

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](#)