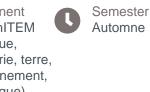


UE Microscale mechanics and fluidics I: Mechanics





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



> Teaching language(s): English

> Open to exchange students: Yes

> Code d'export Apogée: PAX7NFAH

Presentation

Description

Goal: Mechanics plays a forefront role at the nanoscale, from the generation of nano-structures by growth instabilities to the properties of nano-composite materials, the design of micro and nano-mechanical devices, the nano-imaging techniques, the control of biologic functions. This course introduces the mechanics of continuous media and its main applications to nanosciences and nano-technologies.

Content:

- Simple deformations, definition of elastic modulii E, G, K, nu
- Flexion of beams, static, dynamics and waves. Example: the AFM cantilever.
- 3D linear elasticity of isotropic media: strain tensor; elasticity as a field theory (expression of the free energy); stress tensor; general equilibrium equation
- elastic instabilities in thin films
- elasticity of membranes, ADN coil.

Course parts

UE Mechanics at the micro & nano-scale - CMTD

Lectures (CM) & Teaching Unit (UE)

24h

Period: Semester 7





Useful info

Place

> Grenoble

Campus

> Grenoble - University campus

