

UE Multiphysical couplings (THCM)



Level
Baccalaureate
+4



ECTS
3 credits



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



Semester
Tous les ans

- > **Teaching language(s):** English
- > **Open to exchange students:** Yes
- > **Code d'export Apogée:** PAX7MEAJ / PAX8MEAH

Presentation

Description

Multiphysics models deal with multiple simultaneous physical phenomena, which include, but are not limited to, coupling between solid and fluid mechanics, heat and mass transfer. Knowledge obtained through these models can be applied in many industrial fields and help us in the decision making process.

Objectives

Course objectives:

This course will focus on the statement and analysis of the main multiphysical models, such as thermo/hygro/poro - elasticity, transport by diffusion and convection through porous media, transfer with phase change (sublimation condensation, solidification...).

Course program:

I: Examples

II: Single physics problems (reminder) : basics in solid, fluid mechanics and heat and mass transfer

III: Multi-physics problems

- Diffusion / conduction (Soret, Dufour, Seebeck, osmotic.... effects)
- Diffusion / convection / dispersion in porous media
- Thermo / hygro /poro elasticity — Analogy and differences

Course parts

UE Multiphysical couplings (THCM) - CMTD

Lectures (CM) & Teaching Unit (UE)

20h

Recommended prerequisites

Basics in solid mechanics, fluid mechanics, heat and mass transfer

Useful info

Place

> Grenoble

Campus

> Grenoble - University campus