

# 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

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## Course parts

UE Multiphysical couplings (THCM) - CMTD

Lectures (CM) & Teaching Unit (UE)

20h

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## Recommended prerequisites

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

## Useful info

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### Place

➤ Grenoble

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### Campus

➤ Grenoble - University campus