

# UE Multiphysical couplings (THCM)



Niveau d'étude  
Bac +4



ECTS  
3 crédits



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



Période de  
l'année  
Printemps (janv.  
à avril/mai)

- > **Langue(s) d'enseignement:** Anglais
- > **Ouvert aux étudiants en échange:** Oui
- > **Code d'export Apogée:** PAX7MEAJ / PAX8MEAH

## Présentation

### 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.

### Objectifs

#### 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

---

## Heures d'enseignement

UE Multiphysical couplings (THCM) - CMTD

Cours magistral - Travaux dirigés

20h

---

## Pré-requis recommandés

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

**Période** : Semestre 8

## Infos pratiques

---

### Lieu(x) ville

› Grenoble

---

### Campus

› Grenoble - Domaine universitaire