Multiphysics Modeling

ECTS
3 crédits

Etablissement(s)
UFR Chimie,
UFR des
Sciences
fondamentales
et biomédicales

Volume horaire
24h

Période de l'année
Semestre 2

En bref

> **Langue(s) d'enseignement:** English

> **Forme d'enseignement :** Cours TD

> **Ouvert aux étudiants en échange:** Non

Présentation

DESCRIPTION

In Physics and chemistry, many phenomena can be described through differential equations such as heat transfer, chemical reactions, mass transport, electrostatic potential, Schrodinger equation, etc. Differential equations are however difficult or even impossible to solve using analytical equations.

The goal of this course is then to introduce students to the Finite Element Method (FEM) enabling to solve partial differential equations by dividing a complex chemical system into many smaller and simpler sub-units.

Students will learn how to build a Multiphysics model and to further use it to study different configurations and operating conditions or to predict macroscale physical and chemical properties. Through several chemically-relevant examples, students will learn how to make modeling assumptions, how to discretize the space by defining system geometry, mesh and nodes, to apply relevant boundary conditions and to display, assess and interpret the relevance of the collected results.

The course will include modeling the transport of chemical species in solution, homogeneous and heterogeneous reaction processes and charged interfaces.

Multiphysics models are also relevant for studying the magnetic properties of materials, in electrochemistry, in optics, etc.

Pour en savoir plus, rendez-vous sur > u-paris.fr/choisir-sa-formation

HEURES D'ENSEIGNEMENT

| Multiphysics Modeling | Cours Magistral | 12h |
| Multiphysics Modeling | Travaux Dirigés | 12h |

PRÉ–REQUIS OBLIGATOIRES

Undergraduate degree in chemistry or related field.

En bref

CONTACTS

Responsable pédagogique

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LIEU(X)

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