

Transport phenomena



Crédits ECTS
4 crédits



Période de
l'année
Automne

En bref

> **Langue de cours:** Anglais

Présentation

Objectifs d'apprentissage

Thermodynamics:

- remembering three laws of thermodynamics
- knowing and understanding definitions of energy, enthalpy and entropy
- knowing and understanding definitions of heat and temperature
- identify transforms of thermodynamic systems and begin able to identify relations between states related by a given transform

Continuum mechanics:

- knowing Reynolds transport theorem
- knowing and being able to compute strain and stress tensors for elastic media
- knowing and being able to compute strain and stress tensors for Newtonian fluids
- being able to derive governing equations for mass and momentum conservation in solids or fluids
- solving equations for laminar flows in classical configurations
- computing efforts inside an elastic solid in classical configurations
- computing efforts by a fluid on a solid in sample configurations
- having knowledge of constitutive laws for more complex media

Heat transfer:

- knowing all three modes of heat transfer
- being able to compute heat flux for all three heat transfer modes in classical configurations
- being able to establish the heat budget of a given system considering all relevant heat transfer modes
- begin able to compute relevant heat fluxes in classical configurations
- begin able to compute temperature of a system with heat transfer in steady state
- begin able to compute temperature of a system with heat transfer in transient state

Description du programme

The course is split in three parts consisting of an overview of fundamental aspects of thermodynamics, continuum mechanics and heat transfer. The proposed lectures remain at an introductory level.

Equipe pédagogique

- Cécile BARON (CNRS - Institut de Recherche sur les Phénomènes Hors Equilibre)
- Pascal DENIS
- Frédéric SCHWANDER

Total des heures

CM	Cours Magistral	24h
TD	Travaux Dirigés	8h
		32h

Infos pratiques

Nom responsable UE

Responsable pédagogique

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