

UE Out-of-equilibrium Statistical physics



Niveau d'étude
Bac +5



ECTS
3 crédits



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



Période de
l'année
Automne (sept.
à dec./janv.)

- > **Langue(s) d'enseignement:** Anglais
- > **Ouvert aux étudiants en échange:** Oui
- > **Code d'export Apogée:** PAX9NFAD

Présentation

Description

This course is an introduction to complex interacting systems. It provides the theoretical tools for the stochastic and deterministic descriptions of the time evolution of interacting systems, and the understanding of the dynamical response of systems in microscopic terms.

Content:

- Introduction: Equilibrium and non-equilibrium statistical mechanics with some examples, general overview;
- Stochastic variables;
- Brownian motion and Langevin equation;
- The Fokker-Planck equation;
- The Master equation;
- Introduction to stochastic thermodynamics;
- Linear response theory and correlation functions;
- Non equilibrium thermodynamics and Onsager relations.

Heures d'enseignement

UE Out-of-equilibrium Statistical physics - CMTD

Cours magistral - Travaux dirigés

22,5h

Pré-requis recommandés

Undergraduate course in statistical mechanics, undergraduate course in mathematical methods in physics.

Période : Semestre 9

Bibliographie

- Equilibrium and Non-Equilibrium Statistical Thermodynamics
Michel Le Bellac , Fabrice Mortessagne , G. George Batrouni ;
- Nonequilibrium Statistical Physics, Noëlle Pottier ;
- Lecture Notes on Non-equilibrium Statistical Physics, Bertrand Fourcade.

Infos pratiques

Campus

› Grenoble - Domaine universitaire