

# Physique statistique

## Lecturers

Pierre GASPARD (Coordinator) and Bortolo Matteo MOGNETTI

## Course mnemonic

PHYS-F303

## ECTS credits

10 credits

## Language(s) of instruction

French

## Course period

First and second terms

## Course content

Statistical description in classical mechanics and quantum mechanics; the equilibrium statistical ensembles (microcanonical, canonical, grand-canonical, isobaric-isothermal); the macroscopic equivalence of ensembles and the fluctuations; the concept of entropy; the ideal gases of atoms and molecules; the ideal quantum gases of bosons and fermions; the quasi-ideal mixtures; introduction to irreversible processes; diffusion processes and Brownian motion.

## Objectives (and/or specific learning outcomes)

The goal of statistical physics is to understand the properties of physical systems with their degrees of freedom statistically distributed according to some probability law.

## Pre-requisites and co-requisites

### Pre-requisites courses

PHYS-F201 | Thermodynamique | 5 crédits and PHYS-F203 | Introduction à la mécanique quantique | 5 crédits

## Teaching method and learning activities

Lectures and exercices

## References, bibliography and recommended reading

cf. lecture notes available on the web site "L'Université Virtuelle"

## Other information

### Contact(s)

Pierre Gaspard

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## Evaluation method(s)

Other

## Evaluation method(s) (additional information)

Written and oral tests

## Main language(s) of evaluation

French

## Programmes

### Programmes proposing this course at the faculty of Sciences

BA-PHYS | Bachelor in Physics | unit 3