

UE Optic and magnetic spectroscopies



Level
Baccalaureate
+4



ECTS
3 credits



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



Semester
Automne

- > **Teaching language(s):** English
- > **Open to exchange students:** Yes
- > **Code d'export Apogée:** PAX7NCAB

Presentation

Description

Spectrum This course is organized in two parts, each made of nine sessions of 1.5 hours. In each part, five sessions are devoted to lectures, and four sessions are exercise classes devoted to problem-set solving.

The first part encompasses optical spectroscopies and focuses on the interaction of the electrical field component of light with matter. It deals with infrared and UV-visible spectroscopies, based on vibrational and electronic motions in the molecules. Some elements of group theory are presented to explain the occurrence of the transitions and the aspect of the spectra related to the molecular structures.

The second part of the course focuses on the interaction of the magnetic field component of light with matter. This part aims at illustrating the principle of magnetic resonance spectroscopies, both nuclear magnetic resonance (NMR) and electron paramagnetic resonance (EPR), and their use for structure determination, for chemical kinetics and thermodynamics, as well as for molecular dynamics characterization in solution and in the solid state of organic and inorganic molecules and nanomaterials. Assessments takes place as two written exams of 1 hour each for each part of the course.

Course parts

UE Optic and magnetic spectroscopies - CMTD

Lectures (CM) & Teaching Unit (UE)

27h

Period : Semester 7

Useful info

Campus

- › Grenoble - Saint-Martin d'Hères
- › Grenoble - University campus