UE Optic and magnetic spectroscopies

Niveau d'étude
Bac +4

ECTS
3 crédits

Composante
UFR Physique, Ingénierie, Terre, Environnement, Mécanique (PhITEM)

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

Diplômes intégrant cet élément

- Master Nanosciences et nanotechnologies

Langue(s) d'enseignement: Anglais

Ouvert aux étudiants en échange: Oui

Code d'export Apogée: PAX7NCAB

Présentation

Description

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 exercice 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 occurence 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.

Informations non contractuelles.
Dernière mise à jour le 30 juin 2026

Heures d'enseignement

CMTD	Cours magistral - Travaux dirigés	27h

Période : Semestre 7

Infos pratiques

Lieu(x) ville

Grenoble

Campus

Grenoble - Domaine universitaire

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