

# UE Optic and magnetic spectroscopies



Niveau d'étude  
Bac +4



ECTS  
3 crédits



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



Période de  
l'année  
Toute l'année

- > **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 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.

### Heures d'enseignement

UE Optic and magnetic spectroscopies - CM-TD

Cours magistral - Travaux dirigés

27h

**Période :** Semestre 7

# Infos pratiques

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## Lieu(x) ville

› Grenoble

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## Campus

› Grenoble - Domaine universitaire