

# UE Instrumental optics - PHY236 -



ECTS  
3 crédits



Composante  
Département  
de la licence  
sciences et  
technologies  
(DLST)



Période de  
l'année  
Printemps (janv.  
à avril/mai)

## Diplômes intégrant cet élément

- Licence Chimie

- Langue(s) d'enseignement: Anglais
- Ouvert aux étudiants en échange: Non
- Code d'export Apogée: PAX2PH96

## Présentation

### Description

This module aims to introduce the use of light as a means of investigating matter, based on useful applications in biology, chemistry and earth sciences. The aim is to apply fundamental principles to predict the behaviour of a system and to acquire the basic notions necessary to understand essential phenomena in many scientific fields. The topics covered include geometric optics and optical phenomena, optical and image acquisition instruments and their limitations, and polarisation.

The theoretical notions taught in the form of lectures and tutorials will be further developed during practical work sessions carried out in pairs.

### Heures d'enseignement

|      |                                   |     |
|------|-----------------------------------|-----|
| CMTD | Cours magistral - Travaux dirigés | 15h |
| TP   | TP                                | 14h |

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## Pré-requis recommandés

Mathematics: basics of scientific numerical calculation (manipulation of fractions, powers of 10, change of units), algebraic quantities, vectors, trigonometry

Physics: basics of geometric optics and measurement

**Période :** Semestre 2

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## Compétences visées

- To know the principles of geometrical optics (refraction, lenses, associations) and wave optics (diffraction, polarisation) and to know how to apply them in practical examples of instruments, in the context of imaging (vision, sensors, microscopes) and polarimetry
- Analyse a concrete situation based on a small number of fundamental principles.
- Deduce precise numerical values or orders of magnitude from a literal calculation or a graphical construction, knowing how to adapt the units to the orders of magnitude and uses, as well as the significant figures to the precision.
- Develop an experimental approach to make a measurement or validate a model
- Carry out an experimental set-up, make measurements and use them, taking into account their accuracy
- Present experimental results in writing (keep a laboratory notebook and write a structured summary report)

## Infos pratiques

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### Lieu(x) ville

➤ Grenoble

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### Campus

➤ Grenoble - Saint-Martin d'Hères