

# UE Geometrical optics - PHY134 -



ECTS  
3 crédits



Composante  
Département  
de la licence  
sciences et  
technologies  
(DLST)



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

- > **Langue(s) d'enseignement:** Anglais
- > **Ouvert aux étudiants en échange:** Oui

## Présentation

### Description

This first year 3 ECTS course is the equivalent of PHY104 taught in English. It gives the basis of geometrical optics (Snell-Descartes laws, formation of images, lenses and optical systems with one or several lenses). It is taught with a problem-based learning (PBL) approach. The objectives are the following:

**Analyze:** understand how an optical system operates; know the conditions for total reflection; design an optical system from a specification; be able to search for information in an educational document and design an experimental protocol to verify hypotheses.

**Perform:** Apply Snell-Descartes' laws and conjugation relations, conduct a literal calculation; trace the light rays in an optical system that can contain one or more lenses, a prism, a mirror, a change of medium; Experimentally measure an optical index and a focal length; experimentally form images; measure the characteristics of an optical instrument (lateral and angular magnification).

**Validate:** Check the properties of the image through an optical system, by plotting light rays and experience; know the expected orders of magnitude of the parameters used; determine measurement uncertainties and use them to validate or invalidate a model.

**Communicate:** work as a team, write a constructed and synthetic report.

# Infos pratiques

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## Campus

› Grenoble - Domaine universitaire