

# Eléments d'optique physique

**Lecturer**

Marc HAELTERMAN (Coordinator)

**Course mnemonic**

PHYS-H302

**ECTS credits**

5 credits

**Language(s) of instruction**

French

**Course period**

Second term

## Course content

Diffraction theory, Fresnel diffraction formula, Fraunhauffer diffraction formula, diffraction grating and other examples of diffraction calculus. Thin lenses theory. Transfer function of thin lenses. Fourier transforms with lenses and their applications: spatial filtering, image treatment, auto-correlators and image recognition techniques. Interferometry: basic interferometers and their applications (nondestructive testing), the Fabry-Perot interferometer and its application to spectroscopy. Principles of holography and its applications. Theory of partial coherence.

## Objectives (and/or specific learning outcomes)

Provide the student with the basics of modern optics. Preparation to advanced courses in laser physics.

## Teaching method and learning activities

Classical courses with powerpoint slides. The practical aspects of the course are illustrated through laboratory experiments.

## References, bibliography and recommended reading

Introduction to Fourier Optics, J. Goodman.

## Other information

### Contact(s)

Bât. C, Niv. 3, Tél : 02 650 44 94 Mail : mhaelter@ulb.ac.be

## Evaluation method(s)

Other

### Evaluation method(s) (additional information)

Oral exam in January.

## Programmes

Programmes proposing this course at the Brussels School of Engineering

BA-IRCI | Bachelor in Engineering Sciences | option Bruxelles/unit 3

Programmes proposing this course at the faculty of Sciences

BA-PHYS | Bachelor in Physics | unit 3 and MA-PHYS | Master in Physics | finalité Research/unit 1 and finalité Teaching/unit 1