




5.0 credits	30.0 h + 10.0 h	1q
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Teacher(s) :	Lauzin Clément ; Cornet Alain ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	For this lecture, it is assumed that the students have already acquired the basic concepts taught in LPHY 2141.
Aims :	<p>a. Contribution of the course to the program objectives; Axis N°1: 1.1, 1.2, 1.3, 1.4, 1.5 Axis N°2: 2.2 Axis N°3: 3.1, 3.2 Axis N°4: 4.2 Axis N°5: 5.2, 5.3</p> <p>b. Specific learning outcomes of the course</p> <p>At the end of this course the student will be able to :</p> <ol style="list-style-type: none"> Understand basic principles of optics used for example in beamsplitters, multilayered mirrors or filters, gratings, interferometers, optical devices' Use Fourier optics to solve problems of diffraction Measure temporal or spatial coherence of light sources Calculate the propagation of Gaussian laser beams <p>Understand the basic principles of lasers</p> <p><i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i></p>
Evaluation methods :	Written : problems to solve and questions about the theory
Teaching methods :	Ex-cathedra and 5 experimental laboratories
Content :	<p>The course is structured as follow:</p> <ol style="list-style-type: none"> General optics : decomposition in plane waves, polarization, linear interaction with matter, refraction, Fresnel laws, geometrical optics, imaging systems, Jones matrices, interferences, diffraction, temporal and spatial coherence, Fourier optics Lasers physics and basic properties of lasers : amplifying medium, laser cavity, Q-Switch, propagation of Gaussian beams
Bibliography :	E. Hecht, Optics, Addison-Wesley (2016) ISBN-10: 0133977226
Faculty or entity in charge:	PHYS

Programmes / formations proposant cette unité d'enseignement (UE)				
Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Master [120] in Electrical Engineering	ELEC2M	5	-	
Master [120] in Physical Engineering	FYAP2M	5	-	
Master [120] in Physics	PHYS2M	5	-	
Master [60] in Physics	PHYS2M1	5	-	