

6.0 credits	45.0 h + 15.0 h	2q
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Teacher(s) :	Lauzin Clément ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	<ul style="list-style-type: none"> - Introduction to crystal optics (ellipsoid index, electrooptic tensor,). - Introduction to non linear optics (non linear susceptibility, parametric oscillations, self-phase modulation,). - Description of laser types: gas lasers (He-Ne, CO₂), atomic, molecular lasers ion lasers, semiconductor lasers liquid or dye lasers solid state lasers, including femtosecond lasers and amplified systems fiber laser quantum cascade laser - Characterization of short laser pulses (linear and non linear autocorrelation, FTSI, SPIDER, FROG) - Applications: Fourier-transform spectroscopy, white-light interferometry, optical microscopy,
Aims :	<p>The purpose of this course is to describe the principles of short pulse lasers, including some technical aspects. It is assumed that the student has acquired the laser basics, by following the course PHY2140 "Optique et lasers" or any equivalent course. A survey of the different laser types and linked methods (frequency stabilization, beam and temporal characterization) is presented. A second part of the course is an introduction to non linear optics and crystal optics. Finally the course is illustrated with few applications of optical methods. The choice is made in agreement with the students. Opportunity is given to put the theoretical concepts into practice.</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>
Other infos :	Students must have followed and passed the following exam: PHY2141 " Optique et lasers "
Cycle and year of study :	> Master [120] in Physics > Master [120] in Physical Engineering
Faculty or entity in charge:	PHYS