



In view of the health context linked to the spread of the coronavirus, the methods of organisation and evaluation of the learning units could be adapted in different situations; these possible new methods have been - or will be - communicated by the teachers to the students.

5 credits

22.5 h + 7.5 h

Q2

Teacher(s)	Lauzin Clément ;
Language :	English
Place of the course	Louvain-la-Neuve
Main themes	Reminder on light-matter interaction, homogeneous and inhomogeneous broadening, gas lasers, dye lasers, solid state lasers, pulsed lasers and applications.
Aims	<p>a. Contribution of the teaching unit to the learning outcomes of the programme (PHYS2M and LPHYS2M1) AA 1.3, AA1.4, AA 1.6, AA 2.1, AA 2.2, AA 5.3, AA 6.3, AA7.1, AA 7.2, AA7.5, AA7.6, AA 8.1</p> <p>b. Specific learning outcomes of the teaching unit At the end of this teaching unit, the student will be able to:</p> <p>1. recognize the most used lasers and their basic principles ;</p> <p>2. have in mind the orders of magnitude of important properties of several important lasers ;</p> <p>3. conceive a basic laser layout and being able to spot strength and bottleneck of this set-up ;</p> <p>4. explain few applications of lasers in fundamental and applied physics ;</p> <p>5. conceive different set-up to test the basic properties of a laser ;</p> <p>6. build an interferometer.</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	<p>Due to the COVID-19 crisis, the information in this section is particularly likely to change. The student will be evaluated based on a written report concerning an experimental or theoretical project on lasers. The evaluation will also be based on the defense of this project and an oral examination.</p>
Teaching methods	<p>Due to the COVID-19 crisis, the information in this section is particularly likely to change. Lectures, laboratories and experimental demonstrations, applied projects</p>
Content	Reminder on light-matter interaction Homogeneous and inhomogeneous broadening Gas lasers Dye lasers Solid state lasers UV, XUV lasers Fiber lasers Frequency control of a laser Applications : spectroscopic and distance measurements Introduction to mode-locked lasers
Bibliography	S. Hooker and C. Webb « Laser Physics » Oxford master series in Physics, 2010
Faculty or entity in charge	PHYS

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Master [120] in Physical Engineering	FYAP2M	5		
Master [60] in Physics	PHYS2M1	5		
Master [120] in Physics	PHYS2M	5		