UCLouvain

lphy1103

2026

Additional physics

4.00 credits	40.0 h + 10.0 h	Q2

Teacher(s)	Dias de Carvalho Junior Gabriel ;Génévriez Matthieu ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	To follow this course, it is necessary to master the knowledge and skills developed in the course LPHY1101
Main themes	• Vibrations and waves • Electricity and magnetism • Optics • Modern physics
Learning outcomes	**At the end of this learning unit, the student is able to :** • Predict the consequences of the laws of wave physics, electromagnetism, optics and modern physics. • Interpret data, diagrams and experiments using the concepts and laws of wave physics, electromagnetism, optics and modern physics. • Solve numerical problems involving wave physics, electromagnetism, optics and modern physics. • Explain the role of electrical and wave phenomena in living beings • Explain the physical concepts behind various medical imaging techniques. • Compare the advantages, disadvantages and limitations of different medical imaging techniques.
Evaluation methods	The assessment consists of a written examination with conceptual/numerical problems, multiple choice questions and/or open questions. No documents are allowed except for a form written by the teachers and provided with the questionnaire.
Teaching methods	• Theoretical lectures (20 x 2 h) : lectures, videos, experimental demonstrations, quizzes. • Face-to-face exercise sessions (4 x 2 h): collective (with the assistant) and individual or small group problem solving. • Quizzes on the Moodle LPHY1103 space to test the understanding of the concepts covered in the theoretical lectures.
Content	The teaching unit aims for the student to acquire a mastery of the fundamental concepts of wave physics, electromagnetism, optics and modern physics (black body model, atomic physics, nuclear physics). The objective is that the student is able to apply these concepts to the qualitative and quantitative study of phenomena to which living beings are subjected. Particular attention is paid to the physical basis of various medical imaging techniques: ultrasound, endoscopy, thermography, radiography, computed tomography, positron emission tomography, magnetic resonance imaging. The aim is for the student to be able to explain how they work and to compare their advantages, disadvantages and limitations. This unit contributes to the following competences and outcomes : BIOL1BA: 1.2, 5.1, 5.3 VETE1BA: 1.1.3, 2.5, 2.6 MINCULTS: 1, 2
Inline resources	Theoretical course slideshows and exercise sheets are available on the Moodle space LPHY1103.
Bibliography	• Delbar, Th. (2001). *Physique générale : Vibrations et ondes*. Syllabus. Université catholique de Louvain. • Delbar, Th. (2002). *Physique générale : Électricité et magnétisme I*. Syllabus. Université catholique de Louvain. • Delbar, Th. (2002). *Physique générale : Électricité et magnétisme II*. Syllabus. Université catholique de Louvain. • Delbar, Th. (2007). *Physique générale : Optique*. Syllabus. Université catholique de Louvain. • Delbar, Th. (2007). *Physique générale : Physique moderne*. Syllabus. Université catholique de Louvain. • Delbar, Th. (2014). *Physique générale : Recueil d'exercices*. Syllabus. Université catholique de Louvain. • Hewitt, P. G. (2015). *Conceptual physics* (12e éd.). Pearson. • Knight, R. D., Jones, B. et Field, S. (2018). *College physics: a strategic approach* (4e éd.). Pearson. • Seret, A. et Hoebeke, M. (2012). *Imagerie médicale : Bases physiques*. Presses Universitaires de Liège.
Faculty or entity in charge	SC

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Bachelor in Veterinary Medicine	VETE1BA	4		🔍
Minor in Scientific Culture	MINCULTS	4		🔍
Bachelor in Biology	BIOL1BA	4		🔍
Master [120] of Education, Section 4 : chemistry	CHIM2M4	4		🔍