UCLouvain

linge1213

2021

Physics

4.00 credits	30.0 h + 30.0 h	Q1

Teacher(s)	Boucher Vincent ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	*The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.*
Main themes	The course is divided into two parts. The first part is a week-by-week presentation of the basic laws of electromagnetism, and their applications. It begins with an introduction to the laws of electrostatics in a vacuum, drawing on concepts studied in Physics 1. Students are shown how these laws are adapted to the study of dielectric and conducting materials. This is followed by lectures on aspects of the theory of circuits and magnetic fields in a vacuum and in matter. This part of the course ends with a study of magnetic induction phenomena and the development of an integrated approach towards the phenomenon of electromagnetism. The second part expands the concept of waves introduced in Physics 1 to the study of electromagnetic waves and ends with an introduction to optics. The experimental approach adopted in Physics 1, focused on determining the orders of magnitude in circuits and simple mechanical systems, is pursued in this course.
Learning outcomes	**At the end of this learning unit, the student is able to :** 1 General introduction to electromagnetism and electromagnetic waves
Evaluation methods	Evaluation based on a written exam, including questions on both theoretical and practical concepts covered in the course. Standard questions such as those asked in this final exam will be presented in class to prepare students for this assessment. The exam consists of "Multiple Choice Questions" (MCQ) of ***N*** questions, for each of them only one correct answer is expected. The minimum threshold of the learning outcomes (corresponding to a grade of 10/20) for this exam is given by the following formula for the "minimum pass level" ***c*** (you have to have correctly to (***c*** x 100)% des ***N*** questions to reach the grade of 10/20): ***c*** = **sum** over the questions *i=1,...,N* of [***(ni+1)/2ni * wi***] where • ***N*** is the number of questions, • ***ni*** is the number of answer options of the question ***i*** (e.g., ***n10*** = 4 means 4 answer options for the question ***i*** =10), • ***wi*** is the weight of question ***i*** .
Teaching methods	Lectures backed up by demonstrations and electromagnetic experiments in auditorium. Exercise-centred learning.
Content	Electrostatics in a vacuum - Electrostatics in matter - Ohm's and Kirchhoff's Laws - Aspects of electric circuits - source, resistance, capacity concepts - Electric potential and energy - Magnetostatics in a vacuum - Magnetostatics in matter - Phenomena of magnetic induction - Aspects of electromagnetic waves and optics
Inline resources	https://moodleucl.uclouvain.be/course/view.php?id=7467
Bibliography	Tout est déposé sur le Moodle du cours, à l'exception du livre de référence
Other infos	Course entry requirements: Students should have completed Physics 1 (or equivalent) and Mathematics 1 (or equivalent).
Faculty or entity in charge	ESPO

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Bachelor : Business Engineering	INGE1BA	4	LINGE1114	🔍