


5 credits

30.0 h + 30.0 h

Q2

Teacher(s)	Bertrand Bruno ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	LPHY1113B Physique gén I LPHY1113C Physique gén 1 (2) <i>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.</i>
Main themes	The first aim is to discover the beauty of the coherent explanation of the variety of electromagnetic manifestations through the Maxwell equations. The demonstration of the electromagnetic nature of light will follow. Modern Physics completes this unification with the special theory of relativity where energy and time is grouped in one four-dimension world, where energy and masse are equal. It follows in a common vision of the quantification of matter and light and of the four fundamental interactions interpreted through a propagator concept for each of them. Nuclear physics resumes the lectures describing the chart of nuclei, the decays, the energy balance in fission and fusion processes, and the numerous applications. This unified view of the physics world should sharpen the student curiosity and improve their skills and critics for the following years, in their study as well as in their professional carrier.
Aims	<p>To understand the time dependent electric and magnetic phenomenon. To be able to explain them thanks to the Maxwell equations. To show that the Maxwell equations also describe light as an electromagnetic wave. To compute voltages and currents in electric circuits powered with an alternate power supply. To explain and solve waves problems: interference, standing waves, polarisation, reflection, refraction, and diffraction. To use graphical method and compute mirror and lens problems. To debate and compute space-time properties in the special relativity framework, as well as the concept of mass-energy with the related relations. Be able to explain the quantification of matter. To comment the variety of nuclei, the disintegration modes, and the various applications. To compute nuclear masses, their binding energy and their radioactivity evolution.</p> <p>1</p> <p>-----</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>
Bibliography	Manuels : - Physique - Volume 2 - Électricité et magnétisme Harris Benson , Editions de Boeck - Physique - Volume 3 ' Ondes, optique et physique moderne, Harris Benson , Editions de Boeck Diapositives support de cours Syllabus d'exercices et de laboratoires
Faculty or entity in charge	AGRO

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Bachelor in Geography : General	GEOG1BA	5	LPHY1121 AND LPHY1122	
Additional module in Chemistry	LCHIM100P	5		