UCL Université catholique de Louvain

LINGE1122

2015-2016

Physics 1

5.0 credits	40.0 h + 20.0 h	2q

Teacher(s) :	Bruno Giacomo ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	The course is divided into three parts. The first covers the mechanics of points and simple systems. After an initial kinematic study of movements, Newtonian principles are introduced, the basic concepts of impulsion, quantity of movement, work, energy and power, and the principle of energy conservation. Within a systems dynamics framework, collisions and rotations of rigid bodies are investigated, introducing the concepts of moment of force and kinetic moment. These various concepts will be applied to the study of oscillating motion, simple oscillating systems and harmonic oscillation, the simple pendulum and gravitation. This part ends in an introduction to fluid mechanics and the laws of gases. The second part introduces wave physics (mechanical and sound waves) and demonstrates some specific properties like the Doppler effect, interference and diffraction. The last part deals with modern Physics, highlighting the contribution of restricted relativity and quantum Physics to our understanding of the structure of matter and basic interactions, and of the birth and development of the universe. The course also introduces students to experimentation in Physics, focused on determining the orders of magnitude in simple mechanical systems
Aims :	Introductory course on Mechanics, the physics of waves and aspects of modern Physics. *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".*
Content :	Part 1: Mechanics Introduction - basic concepts - measures and measure error Vectors Kinematics Dynamics of the material point Dynamics of material systems Oscillating motion Gravitation Fluid statics and dynamics Heat, temperature and laws of gases Part 2: Introduction to wave physics General characteristics of waves - stationary and progressive waves Sound waves - Doppler effect Interference and diffraction Part 3: Introduction to modern physics Restricted relativity Basic quantum physics Structure of matter and basic interactions Methods: Lectures backed up by demonstrations and accompanied with practical exercises. Certain aspects of the subject-matter will be studied wholly or in more detail in the labs.
Other infos :	Course materials: BENSON Harris, Physics. Mechanical Volume 1 and Volume 3 Waves-Optical and modern Physics, French Translation, De Boeck Université. Students wishing to improve their English would do well to use the English version of this work.
Faculty or entity in charge:	ESPO

Programmes / formations proposant cette unité d'enseignement (UE)				
Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Bachelor in Business Engineering	INGE1BA	5	-	
Minor in Scientific Culture	LCUSC100I	5	-	