

5.0 credits	40.0 h + 20.0 h	2q
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Teacher(s) :	Bruno Giacomo ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	<p>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.</p> <p>The second part introduces wave physics (mechanical and sound waves) and demonstrates some specific properties like the Doppler effect, interference and diffraction.</p> <p>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.</p> <p>The course also introduces students to experimentation in Physics, focused on determining the orders of magnitude in simple mechanical systems</p>
Aims :	<p>Introductory course on Mechanics, the physics of waves and aspects of modern Physics.</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>
Content :	<p>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</p> <p>Part 2: Introduction to wave physics                      General characteristics of waves - stationary and progressive waves                      Sound waves - Doppler effect                      Interference and diffraction</p> <p>Part 3: Introduction to modern physics                      Restricted relativity                      Basic quantum physics                      Structure of matter and basic interactions</p> <p>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.</p>
Other infos :	<p>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.</p>

<p>Cycle and year of study :</p>	<ul style="list-style-type: none"> <li>&gt; <a href="#">Bachelor in Business Engineering</a></li> <li>&gt; <a href="#">Bachelor in Psychology and Education: General</a></li> <li>&gt; <a href="#">Bachelor in Information and Communication</a></li> <li>&gt; <a href="#">Bachelor in Philosophy</a></li> <li>&gt; <a href="#">Bachelor in Economics and Management</a></li> <li>&gt; <a href="#">Bachelor in Motor skills : General</a></li> <li>&gt; <a href="#">Bachelor in Human and Social Sciences</a></li> <li>&gt; <a href="#">Bachelor in Sociology and Anthropology</a></li> <li>&gt; <a href="#">Bachelor in Political Sciences: General</a></li> <li>&gt; <a href="#">Bachelor in History of Art and Archaeology : General</a></li> <li>&gt; <a href="#">Bachelor in Mathematics</a></li> <li>&gt; <a href="#">Bachelor in History</a></li> <li>&gt; <a href="#">Bachelor in Biomedicine</a></li> <li>&gt; <a href="#">Bachelor in Pharmacy</a></li> <li>&gt; <a href="#">Bachelor in Religious Studies</a></li> </ul>
<p>Faculty or entity in charge:</p>	<p>ESPO</p>