

4.00 credits

37.5 h







Q1 and Q2



**This learning unit is not open to incoming exchange students!**

Teacher(s)	Dias de Carvalho Junior Gabriel ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	<ul style="list-style-type: none"> <li>• The course LSCI2320 taught in Q1 (S1 to S4) must have been taken.</li> <li>• The knowledge of the discipline(s) to be taught, i.e., the knowledge of physics related to the 2nd and 3rd grades of secondary education in general science.</li> <li>• Clear and correct communication in the language of instruction both orally and in writing.</li> <li>• The interpersonal skills and professional postures normally expected of a teacher.</li> </ul>
Main themes	<ol style="list-style-type: none"> <li>1. The didactic specificities of a teaching sequence in physics at the 2nd level (D2) and the 3rd level (D3)</li> <li>2. Experimentation, the scientific approach and the investigative approach in D2 and D3</li> <li>3. Problematization and modeling in D2 and D3</li> <li>4. The importance of epistemology; the major epistemological currents</li> <li>5. Evaluation</li> <li>6. Difficult concepts to teach in physics at D2 and D3</li> </ol>
Learning outcomes	<p><b>At the end of this learning unit, the student is able to :</b></p> <p><b>Contribution of the teaching unit to the AA reference framework of the program</b></p> <p>With regard to the competency framework of the physics program, this teaching unit contributes to the development and acquisition of the following competencies: AA1.1 / AA2.2 / AA2.3 / AA2.4 / AA2.6 / AA2.7 / AA2.8 / AA3.1 / AA3.2 / AA3.3</p> <p><b>Learning outcomes at the end of the course</b></p> <ol style="list-style-type: none"> <li>1. <ul style="list-style-type: none"> <li>• Exploit disciplinary didactics and epistemology that guide pedagogical action in D2 and D3 physics courses,</li> <li>• Transpose scholarly knowledge into academic knowledge in physics at D2 and D3,</li> <li>• Design and plan teaching-learning (TL) situations in physics according to the cognitive abilities of the students and the intentions pursued,</li> <li>• Identify difficult concepts to learn in physics and remove these barriers to learning,</li> <li>• Evaluate student learning in terms of knowledge and skills,</li> <li>• Demonstrate mastery of new disciplinary and interdisciplinary knowledge to be taught in D2 and D3,</li> <li>• Explore new disciplinary, interdisciplinary and technological pedagogical approaches and tools,</li> <li>• Design, conduct and evaluate an experimental sequence, an investigative approach,</li> <li>• Adopt a reflective attitude on one's teaching practices based on didactic and pedagogical principles as well as on educational research,</li> <li>• Encourage students to take a critical look at the construction of science (via, for example, the construction of models and problematization).</li> </ul> </li> </ol>

Evaluation methods	Students enrolled in the entire teaching unit (LPHYS2471C and LPHYS2471D) are assessed as follows: Activity 1: Written test (October) on the fundamental concepts to be taught at D2 level in physics: 10% of the total grade Activity 2: Physics laboratory-related activities: 20% of the total grade Activity 3: Individual written assessment (January) on the topics covered in didactics and epistemology of physics at D2 level: 20% of the total grade Activity 4: Written test (February) on the fundamental concepts to be taught at D3 level in physics: 5% of the total grade Activity 5: Preparation and presentation of an activity for the Spring Science Fair: 5% of the total grade Activity 6: Individual or paired oral assessment (June) on the transfer, concepts in didactics and epistemology of physics (design and presentation of a physics learning sequence at D3 level and personal reflective work): 40% of the total grade To ensure success in June, the student must obtain a grade higher than 50% in each of the assessment activities. If not, the student must sit for the September examination as per the professor's instructions. Attendance in this course is mandatory. In accordance with Article 72 of the General Regulations for Studies and Examinations, the course coordinator may recommend to the board to reject the enrollment of a student who has not attended at least 80% of the classes, whether during the January, June, or September session.
Teaching methods	The teaching activities are those recommended in secondary education: group work, lectures, flipped classrooms, practical work, laboratory sessions, etc. The didactic approach emphasizes co-construction with the students.
Content	This teaching unit aims to 'equip' students to become future physics teachers at levels D2 and D3. This involves not only presenting didactic elements related to physics education at D2 and D3 levels but also ensuring the transfer and adoption of these tools by future teachers through course preparations.
Inline resources	On MoodleUCL, acronym LPHYS2471. The site contains the documents presented and used during the courses and allows the deposit of the students' productions.
Bibliography	Des ouvrages en relation avec les disciplines enseignées et avec la didactique seront présentés lors des cours. ----- Works and scientific publications related to the disciplines taught and to didactics will be presented during the courses.
Other infos	LPHYS2471 C + D is a compulsory didactics course for students taking the aggregation in physics, and an optional course for students taking the aggregation in chemistry, biology, geography or mathematics. It can only be taken if LSCI2320 has been taken beforehand. LPHYS2471 C is an optional course for students taking the aggregation in chemistry, biology, geography or mathematics. It can only be taken if LSCI2320 has been taken beforehand. LPHYS2471 C is given in Q1 during S8 to 14 for 2 hours a week (15 hours equivalent to 2 credits). LPHYS2471 D is given in Q2 for 2 hours a week (22.5 hours equivalent to 2 credits).
Faculty or entity in charge	CAFC

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Teacher Training Certificate (upper secondary education) - Physics	PHYS2A	4		
Master [120] in Biology of Organisms and Ecology	BOE2M	4		
Master [120] in Biochemistry and Molecular and Cell Biology	BBMC2M	4		
Teacher Training Certificate (upper secondary education) - Biology	BIOL2A	4		
Master [120] in Chemistry	CHIM2M	4		
Master [120] in Physics	PHYS2M	4		
Teacher Training Certificate (upper secondary education) - Chemistry	CHIM2A	4		