UCLouvain

UCL Study programme 2023 - 2024

Minor in Physics

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MINPHYS - Introduction

Introduction

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The minor in physics offers additional training in physics that facilitates access to the Master [120] in Physics and the Master [60] in Physics

MINPHYS - Teaching profile

Learning outcomes

At the end of this programme, the student will have acquired a basic knowledge of the fundamental laws of physics and the basic concepts of mathematics necessary for the study of physics. He.she will be able to solve physics problems using mathematical and numerical tools, to analyze physical phenomena using experimental techniques, to model simple physical systems, to apply a scientific approach and to argument with rigor. He.she will have developed skills in self-reliance, communication and teamwork.

On successful completion of this programme, each student is able to :

1. Demonstrate a thorough knowledge of the fundamental laws of physics and master and use the basic concepts of mathematics.

1.1 Explain the basic concepts of general physics, microscopic physics, statistical physics, macroscopic physics, theoretical and mathematical physics, experimental physics, and numerical simulation in physics.
1.2 Use the basic tools of mathematical analysis, algebra, geometry and statistics.
1.3 Recognize the fundamental concepts of scientific theories.
1.4 Apply physical and mathematical theories to solve a problem.
1.5 Adequately employ the basic principles of experimental physics: measurements and their uncertainties, measuring instruments, basic data processing by computer tools.
1.6 Explain a measurement method.
1.7 Model simple systems and predict their evolution using numerical methods, including computer simulations.
1.8 Reconstitute the historical evolution of the basic concepts of physics.

2. Demonstrate methodological, technical, and practical skills for problem solving in physics.

2.1 Justify the choice of methods and tools used to solve known problems in physics.
2.2 Properly use instruments to perform a measurement or study a physical system.
2.3 Correctly handle computer tools to help solve problems in physics.
2.4 Apply basic tools to model simple physical systems and solve known problems in the fundamental areas of physics.

3. Describe and evaluate a scientific approach and reasoning.

3.1 Evaluate the simplicity, clarity and rigor of a scientific reasoning.
3.2 Build physical reasoning and formalize it.
3.3 Argue the validity of a scientific result.
3.4 Calculate the orders of magnitude of a problem in physics.
3.5 Recognize the analogies between different problems in physics.
3.6 Judge the relevance of a scientific approach and the interest of a physical theory.

Programme

DETAILED PROGRAMME BY SUBJECT

- O Mandatory
- ⊠ Optional
- △ Not offered in 2023-2024
- ⊘ Not offered in 2023-2024 but offered the following year
- ⊕ Offered in 2023-2024 but not the following year
- △ ⊕ Not offered in 2023-2024 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

30 crédits

The student chooses 30 credits among :

				Year 2	Year 3
O *Content:*					
⊠ LCHM1112	General Chemistry	Yaroslav Filinchuk	[FR] [q1] [30h+22.5h] [5 Credits]	x	
⊠ LPHYS1113	Mechanics 2	Vincent Lemaitre	[FR] [q2] [30h+25h] [5 Credits]	x	

				Year 2	3
LPHYS1114	Thermodynamics	Thierry Fichefet	FR [q2] [22.5h+20h] [5 Credits]	x	
LPHYS1213	Physics of fluids	Eric Deleersnijder Vincent Legat	FR [q2] [37.5h+30h] [5 Credits]	x	
LPHYS1214	Astronomy and geophysics	Gwenhaël de Wasseige Véronique Dehant	FR [q2] [22.5h+15h] [5 Credits]	x	
LPHYS1221	Electromagnetism 1	Gwenhaël de Wasseige Vincent Lemaitre	FR [q1] [52.5h+52.5h] [10 Credits]	x	
LPHYS1221A	Electromagnetism 1	Gwenhaël de Wasseige Vincent Lemaitre	FR [q1] [40h+40h] [7 Credits]	x	
LPHYS1231	Special Relativity	Marco Drewes	FR [q2] [30h+15h] [5 Credits]	x	
LPHYS1241	Quantum Physics 1	Marco Drewes	FR [q2] [30h+30h] [5 Credits]	x	
LPHYS1303	Numerical Simulation in Physics	Francesco Ragone	FR [q2] [22.5h+30h] [4 Credits] > *English-friendly*		x
LPHYS2211	Group theory	Philippe Ruelle	FR [q2] [22.5h+22.5h] [5 Credits] > *French-friendly*		x
LPHYS1322	Electromagnetism 2	Céline Degrande	FR [q1] [37.5h+22.5h] [5 Credits] > *English-friendly*		x
LPHYS1332	General Relativity	Christophe Ringeval	FR [q1] [30h+22.5h] [4 Credits] > *English-friendly*		x
LPHYS1342	Quantum Physics 2	Christophe Ringeval	FR [q1] [45h+22.5h] [5 Credits] > *English-friendly*		x
LPHYS1343	Statistical physics	Christian Walmsley Hagendorf	FR [q2] [45h+30h] [6 Credits] > *English-friendly*		x
LPHYS1344A	Subatomic, atomic and molecular physics - Subatomic physics	Christophe Delaere Matthieu Génévriez Clément Lauzin	FR [q2] [21h+15h] [3 Credits]		x
LPHYS1344B	Subatomic, atomic and molecular physics - Atomic and molecular physics	Christophe Delaere Matthieu Génévriez Clément Lauzin	FR [q2] [25h+30h] [3 Credits]		x
LPHYS1345	Solid state physics	Eduardo Cortina Gil	FR [q2] [30h+22.5h] [4 Credits] > *English-friendly*		x

THE PROGRAMME'S COURSES AND LEARNING OUTCOMES

For each UCLouvain training programme, a reference framework of learning outcomes specifies the the skills expected of every graduate on completion of the programme. Course unit descriptions specify targeted learning outcomes, as well as the unit's contribution to reference framework of learning outcomes.

The registration for the teaching units of a minor is done at the same time as the registration to the teaching units of the major. The same goes for exam registration.

Timetable of courses and examinations

https://uclouvain.be/fr/facultes/sc/horaires-ti.html (https://uclouvain.be/fr/facultes/sc/horaires-ti.html)