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MINPHYS - Introduction

Introduction

Introduction

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

- 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 3

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 Fichet | 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.

MINPHYS - Information

Access Requirements

The minor in physics is offered to Bachelor's students in mathematics, geography, general orientation, and engineering, civil engineering orientation. It is also accessible, on the advice of the study advisor, to students who have received sufficient training in physics and mathematics.

Evaluation

*The evaluation methods comply with the **regulations concerning studies and exams** (<https://uclouvain.be/fr/decouvrir/rgee.html>). More detailed explanation of the modalities specific to each learning unit are available on their description sheets under the heading "Learning outcomes evaluation method".*

Possible trainings at the end of the programme

Bachelor's students in mathematics, geography, general orientation, and engineering, civil engineering orientation, who have followed this minor will be admitted to the Master [120] in physics and the Master [60] in physics. Their programme will usually include some of the teaching units of the Bachelor in physics that they have not followed. The same rule applies to other students who have followed this minor, with possible restrictions depending on their training. However, the student wishing to make such a change is invited to contact as soon as possible the study advisors of his school and the School of Physics.

Contacts

Curriculum Management

Entity

Structure entity

Denomination

Faculty

Sector

Acronym

Postal address

SST/SC/PHYS

(PHYS)

Faculty of Science (SC)

Sciences and Technology (SST)

PHYS

Chemin du Cyclotron 2 - bte L7.01.04

1348 Louvain-la-Neuve

Tel: +32 (0) 10 47 32 94 - Fax: +32 (0) 10 47 30 68

<https://uclouvain.be/fr/facultes/sc/phys>

Website

Academic supervisor: Vincent Lemaitre

Useful Contact(s)

- Clément Lauzin
- Nathalie Micha
- Catherine De Roy

Practical informations

Registration for the minor

A registration for the 2nd annual unit via the web allows you to register for a minor (the student who wishes to change his/her choice of additional module or minor must contact the secretariat of his/her faculty). The student may defer his/her registration to a minor and proceed with this operation when he/she registers on line for the teaching units of his/her major.

When the student re-enrolls via the web the following year, he/she is automatically re-enrolled in the same minor as the previous year. At this stage, any request for change is subject to the approval of the study advisor.

Registration for the teaching units of the minor

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>)

