

Table of contents

Introduction	2
Teaching profile	3
Learning outcomes	3
Programme	3
Detailed programme by subject	3
The programme's courses and learning outcomes	4
Information	5
Access Requirements	5
Evaluation	5
Possible trainings at the end of the programme	5
Contacts	5

MINFYKI - Introduction

Introduction

MINFYKI - Teaching profile

Learning outcomes

The main objective of the "polytechnic" minors organized by the Faculté des Sciences Appliquées is for a student taking the engineering science baccalaureate, should s/he so wish, to acquire, via a major/minor polytechnic combination, basic training in two specialist areas of engineering science, and thus to broaden his/her range of technical skills, or to prepare for a master's in engineering science which spans the basic courses offered at baccalaureate level. .

The disciplinary objectives of the minor in applied chemistry and physics are to help the student, as part of a multidisciplinary training program :

- gain a deeper understanding and develop his/her basic skills in chemistry and physics (including thermodynamics), acquainting him/herself with the main application of chemical and environmental engineering, engineering of advanced materials and applied physics;
- get to grips with the mathematical formalisms used in applied physics and in chemical engineering. There are various phases to the course, starting with the atomic dimensions of the course and leading on to the macroscopic and industrial areas, and it provides an insight into the areas in which a chemical engineer or physicist works (biotechnology, nanotechnology, electronics, optics, advanced materials (polymers, ceramics, metals, composites) sensors and transducers, reactors, etc).

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

- D'approfondir les connaissances et compétences de base en chimie et physique (y compris la thermodynamique), ouvrant aux principaux domaines d'application du génie chimique et environnemental, de l'ingénierie des matériaux avancés, et de la physique appliquée.
- De développer une connaissance approfondie des formalismes mathématiques utilisés pour modéliser la structure et les propriétés physiques et chimiques des matériaux, ainsi que pour modéliser et concevoir les procédés du génie chimique et environnemental ou les opérations de mise en oeuvre et de transformation des matériaux. Cette connaissance s'exprime pour des échelles allant des dimensions atomiques aux dimensions macroscopiques et industrielles.
- D'acquérir une première ouverture vers des domaines intimement liés au métier de l'ingénieur chimiste ou physicien, comme la biotechnologie, les nanotechnologies, l'électronique, l'optique, les matériaux avancés (polymères, céramiques, métaux, composites), les capteurs et transducteurs, etc.

Programme

DETAILED PROGRAMME BY SUBJECT

- Mandatory
- ⊗ Optional
- △ Not offered in 2021-2022
- Not offered in 2021-2022 but offered the following year
- ⊕ Offered in 2021-2022 but not the following year
- △ ⊕ Not offered in 2021-2022 or the following year
- Activity with requisites
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

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

30 crédits

Year
2 3

o Content:

o Cours obligatoires de la mineure en chimie et physique appliquées (25 credits)

● LMAPR1230	Organic chemistry	Sophie Demoustier Charles-André Fustin	[FR] [q1] [30h+30h] [5 Credits]	X	
● LMAPR2231	Metallurgical and electrochemical processes	Joris Proost	[EN] [q2] [30h+22.5h] [5 Credits]		X
● LMAPR1491	Statistical & quantum physics	Jean-Christophe Charlier Xavier Gonze (coord.) Luc Piraux Gian-Marco Rignanese	[FR] [q1] [30h+30h] [5 Credits]		X

				Year	
				2	3
○ LMAPR1492	Materials physics	Jean-Christophe Charlier Xavier Gonze (coord.) Luc Piraux Gian-Marco Rignanese	FR [q2] [37.5h+22.5h] [5 Credits]		x
○ LMAPR1805	Introduction to materials science	Jean-Christophe Charlier Pascal Jacques Bernard Nysten Thomas Pardoën (coord.)	FR [q2] [30h+30h] [5 Credits]	x	

⊗ Variante générale de la mineure en chimie et physique appliquées (5 credits)

Les étudiants autres que ceux inscrits en majeure en électricité ou informatique complètent leur programme avec le cours suivant

○ LMAPR1400	Kinetics and thermodynamics	Juray De Wilde Denis Mignon	FR [q2] [30h+30h] [5 Credits]		x
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⊗ Variante pour les étudiants inscrits en majeure en électricité ou informatique (5 credits)

Les étudiants inscrits en majeure en électricité ou informatique complètent leur programme avec le cours suivant

○ LMECA1901	Continuum mechanics.	Philippe Chatelain Issam Doghri	FR [q2] [30h+30h] [5 Credits]		x
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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.

MINFYKI - Information

Access Requirements

This polytechnic minor is mainly intended for students enrolled on the baccalaureate in engineering science (civil engineering and architectural civil engineering). Each baccalaureate student taking the engineering science (civil engineering and architectural civil engineering) program therefore has access to the course, apart from the course which has the same title as the major s/he has chosen, of course.

Furthermore, the minor may be taken by students enrolled on other baccalaureate programs (sciences).

The polytechnic minor in applied chemistry and physics is accessible to students enrolled on a baccalaureate in physical science, mathematical science, geographical science or chemical science as well as to bachelors in biological science, on the file.

Minor activities must be taken in an order that respects the following requirements:

- MAPR1491 must come before MAPR1492
- MECA1901 must come before MECA1100A

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

Polytechnic minors provide students who have performed well and acquired a bachelor's qualification in engineering science-civil engineering, as part of a program which includes one of these minors, with unconditional access without further training to the master's in civil engineering which corresponds to this minor.

- For the minor in applied chemistry and physics: the master's in civil engineering in chemistry and material science and the master's in physicist-civil engineering.
- For the minor in construction: the master's in civil engineering in construction
- For the minor in electricity: the master's in electrician civil engineer
- For the minor in IT: the master's in IT civil engineer
- For the minor in mechanics: the master's in mechanic-civil engineer
- For the minor in applied mathematics: the master's in civil engineer in applied mathematics
- For a program which combines a major in electricity/minor in mechanics or major in mechanics/minor in electricity: the master's in electromechanical/civil engineering.

Contacts

Curriculum Management

Entity

Structure entity

Denomination

Faculty

Sector

Acronym

Postal address

SST/EPL/FYKI

(FYKI)

Louvain School of Engineering (EPL)

Sciences and Technology (SST)

FYKI

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