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## Introduction

## 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.**

### Detailed programme

#### PROGRAMME BY SUBJECT

○ Mandatory

△ Courses not taught during 2016-2017

⊕ Periodic courses taught during 2016-2017

⊗ Optional

⊙ Periodic courses not taught during 2016-2017

■ Activity with requisites

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

Year

**2 3**

#### ○ Cours obligatoires de la mineure en chimie et physique appliquées (25 crédits)

○ LMAPR1230	<a href="#">Organic chemistry</a>	<a href="#">Sophie.Demoustier</a> <a href="#">Benjamin.Elias</a> <a href="#">Denis.Mignon</a>	45h+15h	5 Credits	2q	x	
○ LMAPR1231	<a href="#">Process in inorganic chemistry</a>	<a href="#">Pascal.Jacques</a> <a href="#">Joris.Proost</a> <a href="#">Joris.Proost</a> (compensates <a href="#">Pascal Jacques</a> )	30h +22.5h	5 Credits	2q		x
○ LMAPR1491	<a href="#">Statistical &amp; quantum physics</a>	<a href="#">Jean-Christophe.Charlier</a> <a href="#">Xavier.Gonze</a> <a href="#">Aurelien.Lherbier</a> <a href="#">Luc.Piriaux</a> <a href="#">Gian-Marco.Rignanese</a> (coord.)	30h+30h	5 Credits	1q		x

							Year	
							2	3
○ LMAPR1492	Materials physics	Jean-Christophe.Charlier Xavier.Gonze Aurelien.Lherbier (compensates Jean-Christophe Charlier) Luc.Piroux Luc.Piroux (compensates Xavier Gonze) Gian-Marco.Rignanese (coord.)	37.5h +22.5h	5 Credits	2q		x	
○ LMAPR1805	Introduction to materials science	Jean-Christophe.Charlier Pascal.Jacques Aurelien.Lherbier (compensates Jean-Christophe Charlier) Bernard.Nysten Thomas.Pardoen (coord.)	45h+15h	5 Credits	2q		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	Physical & Chemical Kinetics	Christian.Bailly Juray.Dewilde (coord.)	30h+30h	5 Credits	1q		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 (compensates Emilie Marchandise) Emilie.Marchandise	30h+30h	5 Credits	1q		x
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## COURSE PREREQUISITES

A document entitled [en-prerequis-2016-min-lfyki100i.pdf](#) specifies the activities (course units - CU) with one or more pre-requisite(s) within the study programme, that is the CU whose learning outcomes must have been certified and for which the credits must have been granted by the jury before the student is authorised to sign up for that activity.

These activities are identified in the study programme: their title is followed by a yellow square.

As the prerequisites are a requirement of enrolment, there are none within a year of a course.

The prerequisites are defined for the CUs for different years and therefore influence the order in which the student can enrol in the programme's CUs.

In addition, when the panel validates a student's individual programme at the beginning of the year, it ensures the consistency of the individual programme:

- It can change a prerequisite into a corequisite within a single year (to allow studies to be continued with an adequate annual load);
- It can require the student to combine enrolment in two separate CUs it considers necessary for educational purposes.

For more information, please consult [regulation of studies and exams](#).

## THE PROGRAMME'S COURSES AND LEARNING OUTCOMES

For each UCL training programme, a [reference framework of learning outcomes](#) specifies the competences expected of every graduate on completion of the programme. You can see the contribution of each teaching unit to the programme's reference framework of learning outcomes in the document "In which teaching units are the competences and learning outcomes in the programme's reference framework developed and mastered by the student?"

The document is available by clicking [this link](#) after being authenticated with UCL account.

## Information

### Liste des bacheliers proposant cette mineure

> [Bachelor in Engineering](#) [en-prog-2016-fsa1ba]

### Admission

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

### 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

Entite de la structure FYKI

Acronyme	<b>FYKI</b>
Dénomination	Commission de programme - Ingénieur civil en chimie et sciences des matériaux et ingénieur civil physicien
Adresse	Place Sainte Barbe, 2 bte L5.02.02 1348 Louvain-la-Neuve Tél 010 47 24 87 - Fax 010 47 40 28
Secteur	Secteur des sciences et technologies ( <b>SST</b> )
Faculté	Ecole Polytechnique de Louvain ( <b>EPL</b> )
Commission de programme	Commission de programme - Ingénieur civil en chimie et sciences des matériaux et ingénieur civil physicien ( <b>FYKI</b> )

**Academic Supervisor :** [Christian BAILLY](#)

### Jury

### Usefull Contacts

## Infos

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