UCLouvain

UCLouvain Study programme 2019 - 2020

Minor in Applied Chemistry and Physics

Table of contents

Introduction

Introduction

Introduction

The aim of this track is to enable the students to build a broad knowledge skills base in applied chemistry and physics (including thermodynamics and kinetics) opening avenues to the main fields of chemical and environmental engineering, advanced materials engineering, as well as physical engineering. The acquired skills cover a wide range of physical scales, from atomic to macroscopic and industrial dimensions, and prepare to the professions of the engineering master in chemistry and materials science swell as the master in physical engineering (chemical and environmental engineering, sustainable chemistry and energy, nanotechnology, (nano)electronics, optics, advanced materials including biomaterials, sensors and transducers, etc.).

Teaching profile

Learning outcomes

Detailled programme

PROGRAMME BY SUBJECT

O Mandatory	⊠ Optional
△ Courses not taught during 2019-2020	⊘ Periodic courses not taught during 2019-2020
⊕ Periodic courses taught during 2019-2020	Activity with requisites

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

Les étudiants qui choisissent les filières FYKI et MECA (qui comprennent toutes les deux le cours LMECA1901) complètent leur programme en sélectionnant un cours au choix d'une autre filière EPL (les prérequis doivent être satisfaits et la compatibilité d'horaire ne peut être garantie).

O Contenu:

					Year 2	Year 3
O LMAPR1805	Introduction to materials science	Jean-Christophe Charlier Pascal Jacques Bernard Nysten Thomas Pardoen (coord.)	30h+30h	5 Credits	2q	x
O LMECA1901	Continuum mechanics.	Philippe Chatelain Issam Doghri Olivier Lamberts (compensates Issam Doghri)	30h+30h	5 Credits		x
O LMAPR1491	Statistical & quantum physics	Jean-Christophe Charlier Xavier Gonze (coord.) Luc Piraux Gian-Marco Rignanese	30h+30h	5 Credits	1q	x
O LMAPR1230	Organic chemistry	Sophie Demoustier Benjamin Elias Charles-André Fustin (compensates Benjamin Elias) Denis Mignon	45h+15h	5 Credits	2q △	x
O LMAPR1400	Cinétique et thermodynamique	Juray De Wilde (coord.) Denis Mignon	30h+30h	5 Credits	1q	x
O LMAPR1492	Materials physics	Jean-Christophe Charlier Xavier Gonze (coord.) Luc Piraux Gian-Marco Rignanese	37.5h +22.5h	5 Credits	2q	x

COURSE PREREQUISITES

A document entitled (nb: not available for this programme lfsa131i) 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 (https://uclouvain.be/fr/decouvrir/rgee.html).

THE PROGRAMME'S COURSES AND LEARNING OUTCOMES

For each UCLouvain 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 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.

Information

Liste des bacheliers proposant cette mineure

> Bachelor in Physics *[en-prog-2019-phys1ba]*

Admission

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".

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

Attention, you are currently reading an archived page: below contact informations were for program study 2019-2020 only. To get current contact informations please got to current program study site.

Curriculum Management

Entity

Structure entity	SST/EPL/FYKI
Denomination	(FYKI) (https://uclouvain.be/repertoires/entites/fyki)
Faculty	Louvain School of Engineering (EPL) (https://uclouvain.be/repertoires/entites/epl)
Sector	Sciences and Technology (SST) (https://uclouvain.be/repertoires/entites/sst)
Acronym	FYKI
Postal address	Place Sainte Barbe 2 - bte L5.02.02 1348 Louvain-la-Neuve Tel: +32 (0) 10 47 24 87 - Fax: +32 (0) 10 47 40 28

Academic supervisor: Pascal Jacques

Attention, you are currently reading an archived page: below contact informations were for program study 2019-2020 only. To get current contact informations please got to current program study site.