UCL Study programme

2016 - 2017

Minor in Engineering Sciences: Applied Mathematics

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The primary objective of the " polytechnic " minors organized by the Faculté des Sciences Appliquées is to allow students taking a baccalaureate in engineering science, if they so wish, to acquire, through a polytechnic major/minor, basic training in two specialist areas of engineering science, and thus to broaden their technical range of skills, or prepare for a master's in engineering science in a domain which spans the various basic courses offered at baccalaureate level. The disciplinary objectives of the minor in applied mathematics are to allow the student to acquire training in the basic concepts of the discipline, and, more specifically, to: Acquire basic skills in and knowledge of the fundamental disciplines in applied mathematics (optimization and operational research, algorithm and discrete mathematics, differential equations and dynamic systems, numerical analysis, statistics and probability) Gain an introduction into how mathematical models for engineering are designed, analyzed implemented in industry and organizations as well as drawing up effective strategies to improve the way such models work

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

- **Acquérir les connaissances et les compétences de base dans les disciplines fondamentales des mathématiques appliquées (optimisation et recherche opérationnelle, algorithmique et mathématiques discrètes, équations différentielles et systèmes dynamiques, analyse numérique, statistiques et probabilités).**

- **S'initier à la conception, l'analyse et la mise en Œuvre de modèles mathématiques pour l'ingénierie dans le monde industriel ou organisationnel et pour l'élaboration de stratégies efficace d'optimisation de leur performance.**

Detailled programme

PROGRAMME BY SUBJECT

O Mandatory	⊠ Optional
△ Courses not taught during 2016-2017	⊘ Periodic courses not taught during 2016-2017
⊕ Periodic courses taught during 2016-2017	Activity with requisites

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

O *Cours obligatoires de la mineure en mathématiques appliquées. (30 credits)*

Students having LMECA1120 in their MECA major replace it by LMAT1223. Students having LINMA1510 in their major (ELEC, GBIO, MECA) replace it by LINMA1315. Students having LMECA1120 in their GC major take this course in annual block 2 and complete their programme with LINMA1315 in annual block 3.

					Year 2	Year 3
O LINMA1170	Numerical analysis	Paul.Vandooren	30h +22.5h	5 Credits	1q		x
O LINMA1691	Discrete mathematics - Graph theory and algorithms	Vincent.Blondel Jean-Charles.Delvenne	30h +22.5h	5 Credits	1q		x
O LINMA1702	Applied mathematics : Optimization I	Francois.Glineur	30h +22.5h	5 Credits	2q	x	
O LINMA1510	Linear Control	Denis.Dochain	30h+30h	5 Credits	2q		x
O LINMA1731	Stochastic processes : Estimation and prediction	Pa.Absil Luc.Vandendorpe (coord.)	30h+30h	5 Credits	2q		x
O LMECA1120	Introduction to finite element methods.	Vincent.Legat	30h+30h	5 Credits	2q	x	

COURSE PREREQUISITES

A document entitled en-prerequis-2016-min-lmap100i.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]*
> Bachelor in Mathematics *[en-prog-2016-math1ba]*

Admission

This polytechnic minor is intended chiefly for students enrolled on the baccalaureate in engineering science (civil engineer and civil engineer architect). The minor in applied mathematics is accessible to students who are enrolled on a baccalaureate in mathematical science, physical science or IT science.All of the minor courses are accessible provided the student undertakes basic training in mathematics, the content of which is equivalent to that of mathematics courses over the three first quadrimesters of the baccalaureate civil engineer. For the course INMA1731, basic training in probability and statistics is also required

Possible trainings at the end of the programme

Majors-minors leading directly to a master's course(s) : For students who have performed well and obtained a bachelor's qualification in engineering science - civil engineering, the polytechnic minors guarantee them, as part of a program which includes one of these minors, unconditional access, without additional training, to the civil engineering master's which corresponds to this minor. For the minor in applied chemistry and physics: the civil engineering master's in chemistry and material science and the civil engineering master's physicist For the minor in construction : the civil engineering master's in construction For the minor in electricity: the civil engineering master's electrician For the minor in IT: the civil engineering master's in IT For the minor in mechanics: the civil engineering master's mechanic For the minor in applied mathematics: the civil engineering master's in applied mathematics For a program which combines the major in electricity/minor in mechanics, or major in mechanics/minor in electricity: the civil engineering master's electromechanic.

Contacts

Curriculum Managment

Entite de la structure MAP

Acronyme	**MAP**
Dénomination	Commission de programme - Ingénieur civil en mathématiques appliquées
Adresse	Avenue Georges Lemaître, 4-6 bte L4.05.01
	1348 Louvain-la-Neuve
	Tél 010 47 25 97 - Fax 010 47 21 80
Secteur	Secteur des sciences et technologies (SST)
Faculté	Ecole Polytechnique de Louvain (EPL)
Commission de programme	Commission de programme - Ingénieur civil en mathématiques appliquées (MAP)

Academic Supervisor : Pierre-Antoine ABSIL

Jury

Usefull Contacts

Secrétariat : Nathalie PONET

Infos