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## Introduction

### Introduction

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## Teaching profile

### Learning outcomes

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 mechanics are to allow the student to acquire the basic concepts of theoretical and applied mechanics. For precisely, s/he will need to: Master this discipline via project and laboratory-based learning. Develop a deeper grasp of continuum mechanics (solids and fluid mechanics), in order to master the techniques of scale model studies and mathematical modeling required by these disciplines. Develop a deeper understanding of thermodynamics, both from a theoretical point of view (a deep understanding of thermodynamics, both from a theoretical point of view (understanding macroscopic concepts starting with kinetic theory of gases) as well as an applied point of view (technical and energetic thermodynamics). Acquire specialized training in machine design.

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

- **Acquérir une formation polyvalente permettant de s'orienter sans difficultés dans les multiples technologies associées à l'activité de l'ingénieur mécanicien.**
- **Développer une connaissance approfondie de la mécanique des milieux continus (mécanique des solides et des fluides), pour maîtriser les techniques de modélisation physique et mathématique requises par ces disciplines.**
- **Développer une connaissance approfondie de la thermodynamique, tant du point de vue théorique (appréhension des concepts macroscopiques à partir de la théorie cinétique des gaz) que du point de vue appliqué (thermodynamique technique et énergétique).**
- **Acquérir une expertise en modélisation mathématique et en simulation numérique.**
- **Accroître ses compétences en conception des machines et fabrication mécanique.**

### 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

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#### ⊗ Variante pour les étudiants inscrits en majeure ingénieur civil biomédical (30 credits)

○ LMECA1210	Description et analyse des mécanismes	Paul.Fisette Benoit.Herman (compensates Benoît Raucent) Herve.Jeanmart Benoit.Raucent	30h+30h	5 Credits	2q	x	
○ LMECA1120	Introduction to finite element methods.	Vincent.Legat	30h+30h	5 Credits	2q	x	
○ LMECA1855	Thermodynamics and energetics.	Yann.Bartosiewicz Miltiadis.Papalexandris	30h+30h	5 Credits	1q		x
○ LMECA1451	Mechanical manufacturing.	Laurent.Delannay Aude.Simar	30h+30h	5 Credits	1q		x
○ LMECA1100	Deformable solid mechanics.	Issam.Doghri	30h+30h	5 Credits	2q		x
○ LMECA1321	Fluid mechanics and transfer phenomena.	Vincent.Legat Gregoire.Winckelmans	30h+30h	5 Credits	2q		x

⌘ Variante pour les étudiants inscrits en majeure ingénieur civil en chimie et physique appliquées. (30 credits)

○ LMECA1210	Description et analyse des mécanismes	Paul.Fisette Benoit.Herman (compensates Benoît Raucent) Herve.Jeanmart Benoit.Raucent	30h+30h	5 Credits	2q	X	
○ LMECA1120	Introduction to finite element methods.	Vincent.Legat	30h+30h	5 Credits	2q	X	
○ LMECA1855	Thermodynamics and energetics.	Yann.Bartosiewicz Miltiadis.Papalexandris	30h+30h	5 Credits	1q		X
○ LMECA1100	Deformable solid mechanics.	Issam.Doghri	30h+30h	5 Credits	2q		X
○ LMECA1451	Mechanical manufacturing.	Laurent.Delannay Aude.Simar	30h+30h	5 Credits	1q		X
○ LINMA1510	Linear Control	Denis.Dochain	30h+30h	5 Credits	2q		X

⌘ Variante pour les étudiants inscrits en majeure ingénieur civil des constructions (30 credits)

○ LMECA1210	Description et analyse des mécanismes	Paul.Fisette Benoit.Herman (compensates Benoît Raucent) Herve.Jeanmart Benoit.Raucent	30h+30h	5 Credits	2q	X	
○ LMECA1855	Thermodynamics and energetics.	Yann.Bartosiewicz Miltiadis.Papalexandris	30h+30h	5 Credits	1q		X
○ LMECA1451	Mechanical manufacturing.	Laurent.Delannay Aude.Simar	30h+30h	5 Credits	1q		X
○ LINMA1510	Linear Control	Denis.Dochain	30h+30h	5 Credits	2q		X
○ LMECA1321	Fluid mechanics and transfer phenomena.	Vincent.Legat Gregoire.Winckelmans	30h+30h	5 Credits	2q		X
○ LMECA1100	Deformable solid mechanics.	Issam.Doghri	30h+30h	5 Credits	2q		X

⌘ Variante pour les étudiants inscrits en majeure ingénieur civil en mathématiques appliquées (30 credits)

○ LMECA1210	Description et analyse des mécanismes	Paul.Fisette Benoit.Herman (compensates Benoît Raucent) Herve.Jeanmart Benoit.Raucent	30h+30h	5 Credits	2q	X	
○ LMAT1223	Differential equations	Jean.Vanschafingen	30h+15h	5 Credits	2q	X	
○ LMECA1855	Thermodynamics and energetics.	Yann.Bartosiewicz Miltiadis.Papalexandris	30h+30h	5 Credits	1q		X
○ LMECA1451	Mechanical manufacturing.	Laurent.Delannay Aude.Simar	30h+30h	5 Credits	1q		X
○ LMECA1100	Deformable solid mechanics.	Issam.Doghri	30h+30h	5 Credits	2q		X
○ LMECA1321	Fluid mechanics and transfer phenomena.	Vincent.Legat Gregoire.Winckelmans	30h+30h	5 Credits	2q		X

⌘ Variante pour les étudiants inscrits en majeure ingénieur civil électricien (30 credits)

○ LMECA1210	Description et analyse des mécanismes	Paul.Fisette Benoit.Herman (compensates Benoît Raucent) Herve.Jeanmart Benoit.Raucent	30h+30h	5 Credits	2q	X	
○ LMECA1120	Introduction to finite element methods.	Vincent.Legat	30h+30h	5 Credits	2q	X	

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○ LMECA1901	Continuum mechanics.	Philippe.Chatelain Issam.Doghri (compensates Emilie Marchandise) Emilie.Marchandise	30h+30h	5 Credits	1q		x	
○ LMECA1855	Thermodynamics and energetics.	Yann.Bartosiewicz Miltiadis.Papalexandris	30h+30h	5 Credits	1q		x	
○ LMECA1100	Deformable solid mechanics.	Issam.Doghri	30h+30h	5 Credits	2q		x	
○ LMECA1321	Fluid mechanics and transfer phenomena.	Vincent.Legat Gregoire.Winckelmans	30h+30h	5 Credits	2q		x	

⌘ Variante pour les étudiants inscrits en majeure ingénieur civil en informatique (30 credits)

○ LMECA1210	Description et analyse des mécanismes	Paul.Fisette Benoit.Herman (compensates Benoit Raucent) Herve.Jeanmart Benoit.Raucent	30h+30h	5 Credits	2q	x	
○ LMECA1120	Introduction to finite element methods.	Vincent.Legat	30h+30h	5 Credits	2q	x	
○ LMECA1901	Continuum mechanics.	Philippe.Chatelain Issam.Doghri (compensates Emilie Marchandise) Emilie.Marchandise	30h+30h	5 Credits	1q		x
○ LMECA1855	Thermodynamics and energetics.	Yann.Bartosiewicz Miltiadis.Papalexandris	30h+30h	5 Credits	1q		x
○ LMECA1100	Deformable solid mechanics.	Issam.Doghri	30h+30h	5 Credits	2q		x
○ LMECA1321	Fluid mechanics and transfer phenomena.	Vincent.Legat Gregoire.Winckelmans	30h+30h	5 Credits	2q		x

⌘ Variante pour les étudiants inscrits dans un autre programme que FSA1BA (30 credits)

○ LMECA1210	Description et analyse des mécanismes	Paul.Fisette Benoit.Herman (compensates Benoit Raucent) Herve.Jeanmart Benoit.Raucent	30h+30h	5 Credits	2q	x	
○ LMECA1120	Introduction to finite element methods.	Vincent.Legat	30h+30h	5 Credits	2q	x	
○ LMECA1901	Continuum mechanics.	Philippe.Chatelain Issam.Doghri (compensates Emilie Marchandise) Emilie.Marchandise	30h+30h	5 Credits	1q		x
○ LMECA1855	Thermodynamics and energetics.	Yann.Bartosiewicz Miltiadis.Papalexandris	30h+30h	5 Credits	1q		x
○ LMECA1100	Deformable solid mechanics.	Issam.Doghri	30h+30h	5 Credits	2q		x
○ LMECA1321	Fluid mechanics and transfer phenomena.	Vincent.Legat Gregoire.Winckelmans	30h+30h	5 Credits	2q		x

## COURSE PREREQUISITES

A document entitled [en-prerequis-2016-min-lmecca100i.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 mainly intended for students enrolled on baccalaureates in engineering science (civil engineer and civil engineer architect). The minor is also accessible to students enrolled on baccalaureates in mathematical or physical science. Minor activities must be followed in an order which respects the following requirements: - MECA1901 must come before MECA1321 and MECA1100

- When students must enroll on the course MECA1510 as a replacement for a course that they are following in their major, as is required by some programs, they must also take it after MECA1901. This rule also applies to non-FSA students who find themselves in the same situation.

### 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 Management

Entite de la structure MECA

Acronyme	<b>MECA</b>
Dénomination	Commission de programme - Ingénieur civil mécanicien
Adresse	Place du Levant, 2 bte L5.04.03 1348 Louvain-la-Neuve Tél 010 47 22 00 - Fax 010 45 26 92
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 mécanicien ( <b>MECA</b> )

**Academic Supervisor** : [Vincent LEGAT](#)

### Jury

### Usefull Contacts

Secrétariat : [Isabelle HENNAU](#)

## Infos

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