

At Louvain-la-Neuve - 180 credits - 3 years - Day schedule - In FrenchDissertation/Graduation Project : **NO** - Internship : **YES**Activities in English: **YES** - Activities in other languages : **NO**Activities on other sites : **NO**Main study domain : **Sciences de l'ingénieur et technologie**Organized by: **Louvain School of Engineering (EPL)**Programme acronym: **FSA1BA** - Francophone Certification Framework: 6**Table of contents**

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FSA1BA - Introduction

Introduction

Introduction

After passing the admission test you will start your cursus with the bachelor's programme in Engineering Sciences [180]. This programme offers a basic science education and a specific training in Engineering sciences.

During the second annual unit, you will opt for two different trainings in specialized Polytechnics. These specialization tracks enable you to get acquainted with two specialties in Engineering Sciences and to prepare you for a specialized master. Seven different specialization tracks are available: Applied Chemistry and Physics, Construction, Electricity, Computer Sciences, Biomedical Engineering, Applied Mathematics and Mechanics.

The student has the possibility to replace one of these tracks by an accessible opening minor.

Your profile

Following a strong math and science education during high school is recommended.

Your future job

All industrial sectors need civil engineers: the chemical industry, pharmaceutical and food industries, electronics and telecommunications industries, metallurgy, aeronautics, construction and engineering, large scale distribution, banking and consulting services, nanotechnologies and medical technologies, etc.

They play a role as researchers and developers, are responsible for production or management and hold jobs in marketing and sales (of advanced technological products).

We find civil engineers in departments of finance, information technology, training or quality control, the public sector, higher education, or in the Ministry of equipment and transportation. (www.fabi.be)

Your programme

The programme offers :

- a strong scientific education in : mathematics, physics, chemistry, computer science, numerical computation, probabilities and statistics, ...
- a problem-based learning in small groups
- a training in concrete problem analyzing, looking for missing items, and developing your own solutions
- engineering projects management, from the conception to completion
- high-level skills: analysis, critical thinking, communication, team working, conception in a multidisciplinary context.

Once bachelor, you will continue your training by one of the following Masters: Biomedical Engineering, Chemical and Materials Engineering, Civil Engineering, Computer science, Data Sciences Engineering, Physical Engineering, Mechanical Engineering, Electrical Engineering, Electro-mechanical Engineering, Mathematical Engineering.

FSA1BA - Teaching profile

Learning outcomes

General objectives

The bachelor's programme in Engineering Sciences : Engineering, leads to the degree of "Bachelor of Engineering Sciences : Engineering" of the French-speaking Community of Belgium. Upon successful completion of this first cycle of studies, the student will have access to one or several titles in Engineering Sciences, awarded by the Faculty of Applied Sciences, by doing one of the corresponding master's programmes.

The general objectives of the bachelor's programme in Engineering Sciences are, therefore, aimed at the acquisition of :

- lasting scientific knowledge : a solid grounding in the sciences as well as the practice and integration of previously acquired knowledge
- a solid basis in specialised studies, entitling access to a master's (either at UCL, within the French-speaking Community or abroad) : progressive orientation, one or two specialisations in Engineering Sciences
- high level competence and skills : analysis, critical spirit, self-evaluation, conception (of models, tools, systems, processes and procedures), sound written and oral communication skills and professional team-work qualities. The programme is designed to integrate the necessary skills within a pluridisciplinary context (including the Human Sciences, Ethics, the Environment and Sustainable Development).

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

Axe 1 : utiliser un corpus de **connaissances en sciences fondamentales et polytechniques**, lui permettant de résoudre des problématiques disciplinaires cadrées.

1.1. Appliquer les concepts, lois, raisonnements à une problématique disciplinaire de complexité cadrée.

1.2. Décrire des outils de modélisation et de calcul adéquats pour résoudre une problématique disciplinaire cadrée.

Axe 2 : analyser, organiser et mener à son terme une **démarche d'ingénierie** appliquée au développement d'un produit (et/ou d'un service) répondant à un besoin ou à une problématique cadrée, à l'analyse d'un phénomène physique donné, un système.

2.1. Décrire et formuler le problème à résoudre ou le besoin fonctionnel sous la forme d'un cahier des charges.

2.2. Se documenter dans le domaine de la problématique posée.

2.3. Poser des hypothèses de travail pour la modélisation d'une problématique cadrée.

2.4. Modéliser un problème et concevoir une ou plusieurs solutions techniques répondant au cahier des charges.

2.5. Implémenter et tester une solution sous la forme d'une maquette, d'un prototype et/ou d'un modèle numérique.

2.6. Synthétiser en vue d'explicitation : les hypothèses, la modélisation et la solution proposée.

2.7. Porter un regard critique sur des hypothèses prises et sur la pertinence des solutions (autoévaluation individuelle).

2.8. Formuler des recommandations pour améliorer la solution étudiée, le système analysé.

Axe 3 : contribuer, en équipe, à la réalisation d'un **projet disciplinaire ou pluridisciplinaire** en respectant une approche cadrée.

3.1. Etablir et s'engager collectivement sur un plan de travail, un échéancier, des fonctions et des rôles, s'y engager, pour mettre en oeuvre des tâches du projet.

3.2. S'autoévaluer de manière critique, continue et collaborative en vue de fonctionner efficacement en équipe.

Axe 4 : **communiquer efficacement oralement et par écrit**, en français et en anglais, les résultats des missions qui lui sont confiées.

4.1. Argumenter et convaincre au sein de l'équipe et vis-à-vis des enseignants et des jurys.

4.2. Communiquer sous forme graphique et schématique ; interpréter un schéma, présenter les résultats d'un travail, structurer des informations.

4.3. Lire, analyser et exploiter des documents techniques (normes, plans, cahier de charge, spécifications, ...).

4.4. Rédiger des documents écrits de synthèse en tenant compte des exigences posées dans le cadre des missions (projets et problèmes).

4.5. Faire un exposé oral convaincant en utilisant les techniques modernes de communication.

Axe 5 : faire preuve de rigueur d'esprit critique et d'ouverture dans ses démarches scientifiques et techniques.

5.1 Utiliser des ressources bibliographiques pour réaliser et argumenter un travail, en tenant compte des règles éthiques.

5.2 Intégrer dans une démarche d'ingénierie des préoccupations sociétales, éthiques et environnementales.

Programme structure

The bachelor's programme in Engineering Sciences: Engineering, includes 180 credits spread over 3 years:

- A basic science education of 120 credits,
- Two specializations of 30 credits (one of these specialization tracks can be replaced by an opening minor in another Faculty).

The student opts for two specialized trainings in engineering. The aim of this double specialization track is to enable the student to acquire a basic training in two specialties in Engineering Sciences, thus increasing his technical polyvalence, or to prepare for a master

in Engineering Sciences situated mid-way between these minors. The workload is separated in two parts: 10 credits in the second annual programme and 20 credits in the third annual programme.

The student has the possibility to replace one of the specialization tracks by [an accessible opening minor](#).

The seven different specialization tracks in Engineering Sciences are :

- 1. Biomedical Engineering:** The aim of this track is initiating the students to the multidisciplinary field of biomedical engineering. First, this requires an introduction to the different disciplines of life sciences (biology, anatomy, biochemistry, etc.). Next, a familiarization with fundamental challenges from the different pillars of biomedical engineering will be provided (bioinstrumentation, biomaterials, biomechanics, artificial organs, medical imaging, biological systems modeling, etc.). The students will then be able to deploy these skills in order to solve basic problems in biomedical engineering.
- 2. Civil Engineering:** The aim of this track is initiating the students to the basic concepts of civil engineering. In addition to the theoretical fundamentals about structures, materials, soil mechanics and hydraulics, the students will be immersed in the "civil engineering culture" and will acquire concrete experience by practical and laboratory works, basic projects and site visits.
- 3. Electricity:** The aim of this track is initiating the students to the basic concepts of electrical sciences and providing them the fundamental notions in the scientific and technical fields linked to electricity and its applications. More precisely the students will discover the fundamentals of electromagnetics and physical phenomena forming the basis of electronic devices working ; as well as the basic concepts of electronics, telecommunications, and electrodynamic converters.
- 4. Mechanics:** The aim of this track is to enable the students to increase and broaden their knowledge and skills in different areas of Mechanical Engineering. More specifically, this programme offers the students the opportunity to build a solid background knowledge of continuum mechanics (fluid and solid mechanics) and thermodynamics, both from the theoretical and the applied standpoints. Further, it offers applied but rigorous training in machine design, analysis of machine components and manufacturing. Finally, this programme allows the students to develop a strong expertise in mathematical modelling and methods for numerical simulation.
- 5. Computer science:** The aim of this track is to enable the students to master the basic concepts in the field of computer sciences. More precisely this specialization trains the students to acquire basic fundamentals in computer sciences (algorithmic and data structures, computer languages, informatic systems, databases); and the capacity to analyze and solve algorithmic problems by applying its knowledge in the field of computer and engineering sciences.
- 6. Applied Mathematics:** The aim of this track is to enable the students to increase and improve their knowledge and skills in various fields of applied mathematics and to understand their basic concepts. More precisely this specialization trains the students in the design, analysis and implementation of mathematical models for engineering sciences in the industry, and in the elaboration of effective strategies to optimise their performance.
- 7. Applied Chemical and Physics:** 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 as well 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.).

FSA1BA Detailed programme

General core programme by subject

Year

1 2 3

o **Obligatory Courses (120 credits)**

o **General Courses (120 credits)**

All the students attend all these courses.

o LEPL1101	Algebra	François Glineur Raphaël Jungers Jean-François Remacle Vincent Wertz (coord.)	30h+30h	5 Credits	q1	x			
o LEPL1102	Analyse I	François Glineur Raphaël Jungers Jean-François Remacle (coord.) Vincent Wertz	30h+30h	5 Credits	q1	x			
o LEPL1201	Physique I	Roland Keunings Jean-Didier Legat	30h+30h	5 Credits	q1	x			

							Year		
							1	2	3
○ LEPL1501	Projet 1	Xavier Bollen (compensates) Benoît Raucent Christine Jacqmot (compensates) Benoît Raucent Charles Pecheur Sandra Soares Frazao	30h+30h	5 Credits	q1	x			
○ LEPL1401	Informatique 1	Kim Mens Siegfried Nijssen Charles Pecheur	30h+30h	5 Credits	q1	x			
○ LEPL1103	EDPs et analyse complexe	Philippe Chatelain Julien Hendrickx Grégoire Winckelmans (coord.)	30h+30h	5 Credits	q1		x		
○ LEPL1104	Méthodes numériques	Vincent Legat	30h+30h	5 Credits	q2	x			
○ LEPL1105	Analyse II	François Glineur Roland Keunings	30h+30h	5 Credits	q2	x			
○ LEPL1106	Signaux et systèmes	Luc Vandendorpe Vincent Wertz	30h+30h	5 Credits	q2		x		
○ LEPL1202	Physique II	Paul Fisette Claude Oestges	30h+30h	5 Credits	q2	x			
○ LEPL1203	Physique III	Jean-Christophe Charlier Jérôme Louveaux Claude Oestges (coord.)	30h+30h	5 Credits	q1		x		
○ LEPL1108	Mathématiques discrètes et probabilité	Jean-Charles Delvenne Olivier Pereira	30h+30h	5 Credits	q1		x		
○ LEPL1109	Statistics and data sciences	Donatien Hainaut Laurent Jacques	30h+30h	5 Credits	q1			x	
○ LEPL1110	Eléments finis	Vincent Legat Jean-François Remacle	30h+30h	5 Credits	q2			x	
○ LEPL1502	Projet 2	David Bol Jérôme Louveaux Claude Oestges (coord.)	30h+30h	5 Credits	q2	x			
○ LEPL1503	Projet 3	Olivier Bonaventure (coord.) Axel Legay	30h+30h	5 Credits	q2		x		
○ LEPL1301	Chimie et chimie physique 1	Francesco Contino (compensates) Alain Jonas Sophie Demoustier Bernard Nysten	30h+30h	5 Credits	q2	x			
○ LEPL1302	Chimie et chimie physique 2	Hervé Jeanmart Joris Proost	30h+30h	5 Credits	q1		x		
○ LEPL1402	Informatique 2	Ramin Sadre Pierre Schaus	30h+30h	5 Credits	q1		x		

○ Non-disciplinary Courses

○ Cours au choix (3 credits)

Les étudiants choisissent un cours parmi

⊗ LEPL1804	Développement durable et transition	David Bol Hervé Jeanmart Patricia Luis Alconero Xavier Marichal Jean-Pierre Raskin	22.5h +15h	3 Credits	q1			x
⊗ LEPL1805	Gestion des personnes	Bauduin Auquier Philippe Henrotaux Renaud Ronsse	22.5h +15h	3 Credits	q1			x

○ Cours obligatoires (8 credits)

The students attend these two courses

○ LEPL1801	Ethique de l'ingénieur	Alexandre Guay	22.5h +15h	3 Credits	q1	x		
○ LEPL1803	Economie	Jacqueline Boucher Julien Hendrickx	30h+30h	5 Credits	q2	x		

0 3rd annual unit project

The students choose a project (corresponding to one of their specialization tracks) between:

⊗ LEPL1504	Projet 4 (en mécanique) 🟡	Nicolas Docquier Paul Fiset	30h +22.5h	5 Credits	q2			x
⊗ LEPL1505	Projet 4 (en chimie et physique)	Bernard Nysten Thomas Pardoën	30h +22.5h	5 Credits	q2			x
⊗ LEPL1506	Projet 4 (en génie biomédical) 🟡	Philippe Lefèvre	30h +22.5h	5 Credits	q2			x
⊗ LEPL1507	Projet 4 (en mathématiques appliquées)	Julien Hendrickx (coord.) Yurii Nesterov Anthony Papavasiliou	30h +22.5h	5 Credits	q2			x
⊗ LEPL1508	Projet 4 (en électricité) 🟡	Christophe Craeye (coord.) Claude Oestges Luc Vandendorpe	30h +22.5h	5 Credits	q2			x
⊗ LEPL1509	Projet 4 (en informatique) 🟡	Marc Lainez (compensates Yves Deville)	30h +22.5h	5 Credits	q2			x
⊗ LEPL1510	Projet 4 (en construction)	Pierre Latteur	30h +22.5h	5 Credits	q2			x
⊗ LSST1001	IngénieuxSud	Jean-Pierre Raskin	15h+45h	5 Credits	q1+q2			x

0 Language Courses (7 credits)**0 English courses (7 credits)**

A placement test is organized at the beginning of the annual unit 1 and 2. Depending on the obtained mark, the students follow an adapted course. The students with a mark greater or equal to 16/20 keep their mark and could take an additional language course (out of the 180 credits); this additional course will only affect their average mark if credited (mark greater or equal to 10/20)

0 LANGL1171	Anglais pour ingénieurs civils I	Ariane Halleux Marielle Henriët Lucille Meyers Marc Piwnik Nevin Serbest (coord.) Anne-Julie Toubeau (coord.)	12h	2 Credits	q1	x		
0 LANGL1272	Anglais pour ingénieurs civils II	Amandine Dumont Nicholas Gibbs Lucille Meyers Charlotte Peters (coord.) Marc Piwnik (coord.)	30h	3 Credits	q1		x	
0 LANGL1373	Anglais pour ingénieurs civils III	Ahmed Adriouèche (coord.) Nicholas Gibbs Ariane Halleux Mark Theodore Pertuit Charlotte Peters (coord.) Adrien Pham Nevin Serbest Colleen Starrs Françoise Stas Marie Van Reet	30h	2 Credits	q1			x

⊗ Dutch courses

⊗ LNEER1300	General and academic Dutch - intermediate level	Hilde Bufkens (coord.)	30h	2 Credits	q1 or q2	x		
⊗ LNEER1500	Interfaculty teaching unit - General and academic Dutch - upper-intermediate level	Hilde Bufkens (coord.) Valérie Dachy	30h	3 Credits	q1		x	
⊗ LNEER2500	Seminar of Entry to professional life in Dutch - Intermediate level	Isabelle Demeulenaere (coord.) Marie-Laurence Lambrecht	30h	2 Credits	q1 or q2			x

⊗ German courses

⊗ LALLE1100	German - Elementary level	Caroline Klein Ann Rinder (coord.)	90h	2 Credits	q1+q2	x		
⊗ LALLE1300	General German - Upper-intermediate	Virginie Godin (coord.)	90h	3 Credits	q1+q2		x	
⊗ LALLE1500	General German - Advanced	Virginie Godin (coord.)	90h	2 Credits	q1+q2			x

⊗ Spanish Courses

						Year		
						1	2	3
⊗ LESPA1100	Spanish (beginner's level) 0-A2	Maria Del Carmen Calvo Cantero (compensates Carmen Vallejo Villamor) Charlotte Diaz (compensates Maria Del Carmen Calvo Cantero) Begona Garcia Migura	90h	2 Credits	q1+q2	x		
⊗ LESPA1300	spanish middle level	Carmen Vallejo Villamor	90h	3 Credits	q1+q2	x		
⊗ LESPA1500	Spanish Advanced level (B1.2 , B2.1)	Alicia Maria Tirado Fernandez (compensates Carmen Vallejo Villamor)	45h	2 Credits	q1			x
⊗ LESPA1101	Spanish beginner's level 1st part (0-A1)	Maria Del Carmen Calvo Cantero (compensates Carmen Vallejo Villamor) Charlotte Diaz (compensates Maria Del Carmen Calvo Cantero) Begona Garcia Migura Juan Landa Diestro Alicia Maria Tirado Fernandez	45h	2 Credits	q1 or q2			x

⊗ Other language courses

The student could propose a course in another language.

o Religion courses for students in exact sciences (2 credits)

The students select one course between:

⊗ LTECO2100	Sociétés, cultures, religions : Biblical readings	Hans Ausloos	15h	2 Credits	q1	x		
⊗ LTECO2300	Societies, cultures, religions : Ethical questions	Marcela Lobo Bustamante	15h	2 Credits	q1		x	
⊗ LTHEO2840	Science and Christian faith	Benoît Bourguine (coord.) Dominique Lambert	15h	2 Credits	q1		x	
⊗ LTECO2200	Societies-cultures-religions : Human Questions	Régis Burnet Dominique Martens	15h	2 Credits	q1 or q2		x	

o Minor or additional module (30 credits)

List of available minors

The student can choose to replace one of his-her specialization tracks by a non-polytechnic opening minor. The list of accessible minors is below. The choice has to be made before the beginning of the second annual unit.

- > Minor in Law (access) [en-prog-2020-minadroi]
- > Minor in Urban Architecture [en-prog-2020-minarch]
- > Minor in Information and Communication (*) [en-prog-2020-mincomu]
- > Minor in Culture and Creation [en-prog-2020-mincucrea]
- > Minor in Scientific Culture [en-prog-2020-mincults]
- > Minor in Development and Environment [en-prog-2020-mindenv]
- > Minor in Sustainable Development (*) [en-prog-2020-mindd]
- > Minor in Economics [en-prog-2020-minecon]
- > Specialization track in Electricity [en-prog-2020-filelec]
- > Minor in European Studies [en-prog-2020-mineuro]
- > Specialization track in applied Chemistry and Physics [en-prog-2020-filfyki]
- > Specialization track in Biomedical Engineering [en-prog-2020-filgbio]
- > Specialization track in Construction [en-prog-2020-filgce]
- > Minor in Gender Studies [en-prog-2020-mingenre]
- > Minor in Geography [en-prog-2020-mingeog]
- > Minor in Management (basic knowledge) [en-prog-2020-minogest]
- > Minor in Human and Social Sciences [en-prog-2020-minhuso]
- > Specialization track in Computer Science [en-prog-2020-filinfo]
- > Minor in Philosophy [en-prog-2020-minfilo]
- > Minor in Literary Studies [en-prog-2020-minlitt]
- > Specialization track in Applied Mathematics [en-prog-2020-filmap]
- > Minor in Mathematics [en-prog-2020-minmath]
- > Specialization track in Mechanics [en-prog-2020-filmeca]
- > Minor in entrepreneurship (*) [en-prog-2020-minmpme]
- > Minor in Musicology [en-prog-2020-minmusi]
- > Minor in Law (openness) [en-prog-2020-minodroi]
- > Minor in Physics [en-prog-2020-minphys]
- > Minor in Statistics, Actuarial Sciences and Data Sciences [en-prog-2020-minstat]

(*) This programme is the subject of access criteria

Course prerequisites

A document entitled #nom_fichier_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](#).

Prerequisites list

LEPL1103	"EDPs et analyse complexe" has prerequisite(s) LEPL1102 ET LEPL1105 <ul style="list-style-type: none"> • LEPL1102 - Analyse I • LEPL1105 - Analyse II
LEPL1106	"Signaux et systèmes" has prerequisite(s) LEPL1101 ET LEPL1102 ET LEPL1105 <ul style="list-style-type: none"> • LEPL1101 - Algèbre • LEPL1102 - Analyse I • LEPL1105 - Analyse II
LEPL1109	"Statistics and data sciences" has prerequisite(s) LEPL1108 <ul style="list-style-type: none"> • LEPL1108 - Mathématiques discrètes et probabilité
LEPL1110	"Éléments finis" has prerequisite(s) LEPL1104 <ul style="list-style-type: none"> • LEPL1104 - Méthodes numériques
LEPL1203	"Physique III" has prerequisite(s) LEPL1201 ET LEPL1202 <ul style="list-style-type: none"> • LEPL1201 - Physique I • LEPL1202 - Physique II
LEPL1302	"Chimie et chimie physique 2" has prerequisite(s) LEPL1301 <ul style="list-style-type: none"> • LEPL1301 - Chimie et chimie physique 1
LEPL1402	"Informatique 2" has prerequisite(s) LEPL1401 <ul style="list-style-type: none"> • LEPL1401 - Informatique 1
LEPL1402	"Informatique 2" has prerequisite(s) LEPL1401 <ul style="list-style-type: none"> • LEPL1401 - Informatique 1
LEPL1503	"Projet 3" has prerequisite(s) LEPL1401 <ul style="list-style-type: none"> • LEPL1401 - Informatique 1
LEPL1504	"Projet 4 (en mécanique)" has prerequisite(s) LEPL1104 ET LEPL1202 ET LEPL1503 <ul style="list-style-type: none"> • LEPL1104 - Méthodes numériques • LEPL1202 - Physique II • LEPL1503 - Projet 3
LEPL1506	"Projet 4 (en génie biomédical)" has prerequisite(s) LEPL1104 ET LEPL1106 <ul style="list-style-type: none"> • LEPL1104 - Méthodes numériques • LEPL1106 - Signaux et systèmes
LEPL1508	"Projet 4 (en électricité)" has prerequisite(s) LEPL1106 <ul style="list-style-type: none"> • LEPL1106 - Signaux et systèmes
LEPL1509	"Projet 4 (en informatique)" has prerequisite(s) LEPL1402 <ul style="list-style-type: none"> • LEPL1402 - Informatique 2
LEPL1509	"Projet 4 (en informatique)" has prerequisite(s) LEPL1402 <ul style="list-style-type: none"> • LEPL1402 - Informatique 2

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

Programme type

FSA1BA - 1ST ANNUAL UNIT

- Mandatory
- △ Courses not taught during 2020-2021
- ⊕ Periodic courses taught during 2020-2021
- ⊗ Optional
- ⊖ Periodic courses not taught during 2020-2021
- Activity with requisites

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

○ Obligatory Courses

○ General Courses

All the students attend all these courses.

○ LEPL1101	Algebra	François Glineur Raphaël Jungers Jean-François Remacle Vincent Wertz (coord.)	30h+30h	5 Credits	q1
○ LEPL1102	Analyse I	François Glineur Raphaël Jungers Jean-François Remacle (coord.) Vincent Wertz	30h+30h	5 Credits	q1
○ LEPL1201	Physique I	Roland Keunings Jean-Didier Legat	30h+30h	5 Credits	q1
○ LEPL1501	Projet 1	Xavier Bollen (compensates) Benoit Raucent Christine Jacqmot (compensates) Benoit Raucent Charles Pecheur Sandra Soares Frazao	30h+30h	5 Credits	q1
○ LEPL1401	Informatique 1	Kim Mens Siegfried Nijssen Charles Pecheur	30h+30h	5 Credits	q1
○ LEPL1104	Méthodes numériques	Vincent Legat	30h+30h	5 Credits	q2
○ LEPL1105	Analyse II	François Glineur Roland Keunings	30h+30h	5 Credits	q2
○ LEPL1202	Physique II	Paul Fiset Claude Oestges	30h+30h	5 Credits	q2
○ LEPL1502	Projet 2	David Bol Jérôme Louveaux Claude Oestges (coord.)	30h+30h	5 Credits	q2
○ LEPL1301	Chimie et chimie physique 1	Francesco Contino (compensates) Alain Jonas Sophie Demoustier Bernard Nysten	30h+30h	5 Credits	q2

○ Non-disciplinary Courses

○ Cours obligatoires

The students attend these two courses

○ LEPL1801	Ethique de l'ingénieur	Alexandre Guay	22.5h +15h	3 Credits	q1
○ LEPL1803	Economie	Jacqueline Boucher Julien Hendrickx	30h+30h	5 Credits	q2

○ Language Courses

○ English courses

A placement test is organized at the beginning of the annual unit 1 and 2. Depending on the obtained mark, the students follow an adapted course. The students with a mark greater or equal to 16/20 keep their mark and could take an additional language course (out of the 180 credits); this additional course will only affect their average mark if credited (mark greater or equal to 10/20)

○ LANGL1171	Anglais pour ingénieurs civils I	Ariane Halleux Marielle Henriet Lucille Meyers Marc Piwnik Nevin Serbest (coord.) Anne-Julie Toubeau (coord.)	12h	2 Credits	q1
⊗ Dutch courses					
⊗ LNEER1300	General and academic Dutch - intermediate level	Hilde Bufkens (coord.)	30h	2 Credits	q1 or q2
⊗ German courses					
⊗ LALLE1100	German - Elementary level	Caroline Klein Ann Rinder (coord.)	90h	2 Credits	q1+q2
⊗ Spanish Courses					
⊗ LESPA1100	Spanish (beginner's level) 0-A2	Maria Del Carmen Calvo Cantero (compensates Carmen Vallejo Villamor) Charlotte Diaz (compensates Maria Del Carmen Calvo Cantero) Begona Garcia Migura	90h	2 Credits	q1+q2

FSA1BA - 2ND ANNUAL UNIT

○ Mandatory

△ Courses not taught during 2020-2021

⊕ Periodic courses taught during 2020-2021

⊗ Optional

⊖ Periodic courses not taught during 2020-2021

■ Activity with requisites

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

○ Obligatory Courses

○ General Courses

All the students attend all these courses.

○ LEPL1103	EDPs et analyse complexe ■	Philippe Chatelain Julien Hendrickx Grégoire Winckelmans (coord.)	30h+30h	5 Credits	q1
○ LEPL1106	Signaux et systèmes ■	Luc Vandendorpe Vincent Wertz	30h+30h	5 Credits	q2
○ LEPL1203	Physique III ■	Jean-Christophe Charlier Jérôme Louveaux Claude Oestges (coord.)	30h+30h	5 Credits	q1
○ LEPL1108	Mathématiques discrètes et probabilité	Jean-Charles Delvenne Olivier Pereira	30h+30h	5 Credits	q1
○ LEPL1503	Projet 3 ■	Olivier Bonaventure (coord.) Axel Legay	30h+30h	5 Credits	q2
○ LEPL1302	Chimie et chimie physique 2 ■	Hervé Jeanmart Joris Proost	30h+30h	5 Credits	q1
○ LEPL1402	Informatique 2 ■	Ramin Sadre Pierre Schaus	30h+30h	5 Credits	q1

○ Language Courses

○ English courses

A placement test is organized at the beginning of the annual unit 1 and 2. Depending on the obtained mark, the students follow an adapted course. The students with a mark greater or equal to 16/20 keep their mark and could take an additional language course (out of the 180 credits); this additional course will only affect their average mark if credited (mark greater or equal to 10/20)

○ LANGL1272	Anglais pour ingénieurs civils II	Amandine Dumont Nicholas Gibbs Lucille Meyers Charlotte Peters (coord.) Marc Pivnik (coord.)	30h	3 Credits	q1
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⊗ Dutch courses

⊗ LNEER1500	Interfaculty teaching unit - General and academic Dutch - upper-intermediate level	Hilde Bufkens (coord.) Valérie Dachy	30h	3 Credits	q1
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⊗ German courses

⊗ LALLE1300	General German - Upper-intermediate	Virginie Godin (coord.)	90h	3 Credits	q1+q2
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⊗ Spanish Courses

⊗ LESPA1300	spanish middle level	Carmen Vallejo Villamor	90h	3 Credits	q1+q2
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○ Religion courses for students in exact sciences

The students select one course between:

⊗ LTECO2100	Sociétés, cultures, religions : Biblical readings	Hans Ausloos	15h	2 Credits	q1
⊗ LTECO2300	Societies, cultures, religions : Ethical questions	Marcela Lobo Bustamante	15h	2 Credits	q1
⊗ LTSEO2840	Science and Christian faith	Benoît Bourguine (coord.) Dominique Lambert	15h	2 Credits	q1
⊗ LTECO2200	Societies-cultures-religions : Human Questions	Régis Burnet Dominique Martens	15h	2 Credits	q1 or q2

○ Minor or additional module

FSA1BA - 3RD ANNUAL UNIT

○ Mandatory

△ Courses not taught during 2020-2021

⊕ Periodic courses taught during 2020-2021

⊗ Optional

⊖ Periodic courses not taught during 2020-2021

■ Activity with requisites

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

○ Obligatory Courses

○ General Courses

All the students attend all these courses.

○ LEPL1109	Statistics and data sciences ■	Donatien Hainaut Laurent Jacques	30h+30h	5 Credits	q1
○ LEPL1110	Eléments finis ■	Vincent Legat Jean-François Remacle	30h+30h	5 Credits	q2

○ Non-disciplinary Courses

○ Cours au choix

Les étudiants choisissent un cours parmi

⊗ LEPL1804	Développement durable et transition	David Bol Hervé Jeanmart Patricia Luis Alconero Xavier Marichal Jean-Pierre Raskin	22.5h +15h	3 Credits	q1
⊗ LEPL1805	Gestion des personnes	Bauduin Auquier Philippe Henrotaux Renaud Ronsse	22.5h +15h	3 Credits	q1

○ 3rd annual unit project

The students choose a project (corresponding to one of their specialization tracks) between:

⊗ LEPL1504	Projet 4 (en mécanique) ■	Nicolas Docquier Paul Fisette	30h +22.5h	5 Credits	q2
⊗ LEPL1505	Projet 4 (en chimie et physique)	Bernard Nysten Thomas Pardoën	30h +22.5h	5 Credits	q2
⊗ LEPL1506	Projet 4 (en génie biomédical) ■	Philippe Lefèvre	30h +22.5h	5 Credits	q2
⊗ LEPL1507	Projet 4 (en mathématiques appliquées)	Julien Hendrickx (coord.) Yurii Nesterov Anthony Papavasiliou	30h +22.5h	5 Credits	q2
⊗ LEPL1508	Projet 4 (en électricité) ■	Christophe Craeye (coord.) Claude Oestges Luc Vandendorpe	30h +22.5h	5 Credits	q2
⊗ LEPL1509	Projet 4 (en informatique) ■	Marc Lainez (compensates Yves Deville)	30h +22.5h	5 Credits	q2
⊗ LEPL1510	Projet 4 (en construction)	Pierre Latteur	30h +22.5h	5 Credits	q2
⊗ LSST1001	IngénieursSud	Jean-Pierre Raskin	15h+45h	5 Credits	q1+q2

○ Language Courses

○ English courses

A placement test is organized at the beginning of the annual unit 1 and 2. Depending on the obtained mark, the students follow an adapted course. The students with a mark greater or equal to 16/20 keep their mark and could take an additional language course (out of the 180 credits); this additional course will only affect their average mark if credited (mark greater or equal to 10/20)

○ LANGL1373	Anglais pour ingénieurs civils III	Ahmed Adriouche (coord.) Nicholas Gibbs Ariane Halleux Mark Theodore Pertuit Charlotte Peters (coord.) Adrien Pham Nevin Serbest Colleen Starrs Françoise Stas Marie Van Reet	30h	2 Credits	q1
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⊗ Dutch courses

⌘ LNEER2500	Seminar of Entry to professional life in Dutch - Intermediate level	Isabelle Demeulenaere (coord.) Marie-Laurence Lambrecht	30h	2 Credits	q1 or q2
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⌘ **German courses**

⌘ LALLE1500	General German - Advanced	Virginie Godin (coord.)	90h	2 Credits	q1+q2
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⌘ **Spanish Courses**

⌘ LESP1500	Spanish Advanced level (B1.2 , B2.1)	Alicia Maria Tirado Fernandez (compensates Carmen Vallejo Villamor)	45h	2 Credits	q1
⌘ LESP1101	Spanish beginner's level 1st part (0-A1)	Maria Del Carmen Calvo Cantero (compensates Carmen Vallejo Villamor) Charlotte Diaz (compensates Maria Del Carmen Calvo Cantero) Begona Garcia Migura Juan Landa Diestro Alicia Maria Tirado Fernandez	45h	2 Credits	q1 or q2

o **Minor or additional module**

FSA1BA - Information

Admission

Decree of 7 November 2013 defining the landscape of higher education and the academic organization of studies.

The admission requirements must be met prior to enrolment in the University.

In the event of the divergence between the different linguistic versions of the present conditions, the French version shall prevail.

SUMMARY

- [General requirements](#)
- [Specific requirement](#)
- [Special requirements](#)

General requirements

Except as otherwise provided by other specific legal provisions, admission to undergraduate courses leading to the award of a Bachelor's degree will be granted to students with one of the following qualifications :

1. A Certificate of Upper Secondary Education issued during or after the 1993-1994 academic year by an establishment offering full-time secondary education or an adult education centre in the French Community of Belgium and, as the case may be, approved if it was issued by an educational institution before 1 January 2008 or affixed with the seal of the French Community if it was issued after this date, or an equivalent certificate awarded by the Examination Board of the French Community during or after 1994;
2. A Certificate of Upper Secondary Education issued no later than the end of the 1992-1993 academic year, along with official documentation attesting to the student's ability to pursue higher education for students applying for a full-length undergraduate degree programme;
3. A diploma awarded by a higher education institution within the French Community that confers an academic degree issued under the above-mentioned Decree, or a diploma awarded by a university or institution dispensing full-time higher education in accordance with earlier legislation;
4. A higher education certificate or diploma awarded by an adult education centre;
5. A pass certificate for one of the [entrance examinations](#) organized by higher education institutions or by an examination board of the French Community; this document gives admission to studies in the sectors, fields or programmes indicated therein;
6. A diploma, certificate of studies or other qualification similar to those mentioned above, issued by the Flemish Community of Belgium, the German Community of Belgium or the Royal Military Academy;
7. A diploma, certificate of studies or other qualification obtained abroad and deemed equivalent to the first four mentioned above by virtue of a law, decree, European directive or international convention;

Note:

Requests for equivalence must be submitted to the Equivalence department ([Service des équivalences](#)) of the Ministry of Higher Education and Scientific Research of the French Community of Belgium in compliance of the official deadline.

The following two qualifications are automatically deemed equivalent to the Certificate of Upper Secondary Education (Certificat d'enseignement secondaire supérieur – CESS):

- European Baccalaureate issued by the Board of Governors of a European School,
- International Baccalaureate issued by the International Baccalaureate Office in Geneva.

8. Official documentation attesting to a student's ability to pursue higher education (diplôme d'aptitude à accéder à l'enseignement supérieur - DAES), issued by the Examination Board of the French Community.

Specific requirement

Admission to undergraduate studies on the basis of accreditation of knowledge and skills obtained through professional or personal experience (Accreditation of Prior Experience)

Subject to the general requirements laid down by the authorities of the higher education institution, with the aim of admission to the undergraduate programme, the examination boards accredit the knowledge and skills that students have obtained through their professional or personal experience.

This experience must correspond to at least five years of documented activity, with years spent in higher education being partially taken into account: 60 credits are deemed equivalent to one year of experience, with a maximum of two years being counted. At the end of an assessment procedure organized by the authorities of the higher education institution, the Examination Board will decide whether a student has sufficient skills and knowledge to successfully pursue undergraduate studies.

After this assessment, the Examination Board will determine the additional courses and possible exemptions constituting the supplementary requirements for the student's admission.

Special requirements

- Admission to **undergraduate studies in engineering: civil engineering and architect**

Pass certificate for the [special entrance examination for undergraduate studies in engineering: civil engineering and architect](#).

Admission to these courses is always subject to students passing the special entrance examination. Contact the faculty office for the programme content and the examination arrangements.

- Admission to **undergraduate studies in veterinary medicine**

[Admission to undergraduate studies in veterinary medicine is governed by the Decree of 16 June 2006 regulating the number of students in certain higher education undergraduate courses \(non-residents\)](#).

- Admission to **undergraduate studies in physiotherapy and rehabilitation**

[Admission to undergraduate studies in physiotherapy and rehabilitation is governed by the Decree of 16 June 2006 regulating the number of students in certain higher education undergraduate courses \(non-residents\)](#).

- Admission to **undergraduate studies in psychology and education: speech and language therapy**

[Admission to undergraduate studies in psychology and education: speech and language therapy is governed by the Decree of 16 June 2006 regulating the number of students in certain higher education undergraduate courses \(non-residents\)](#).

- Admission to **undergraduate studies in medicine and dental science**

[Admission to undergraduate studies in medicine and dental science is governed by the Decree of 16 June 2006 regulating the number of students in certain higher education undergraduate courses \(non-residents\)](#).

Note: students wishing to enrol for a **Bachelor's degree in Medicine** or a **Bachelor's degree in dental science** must first sit [an aptitude test \(fr\)](#).

Teaching method

Les étudiant-e-s bacheliers ingénieur civil se voient proposer un programme basé sur la "pédagogie active" qui les amène à prendre une part active dans la gestion de leur formation. Des dispositifs pédagogiques variés sont mis en place chaque année de manière collégiale par les titulaires de cours et en collaboration avec la cellule de coordination pédagogique, et comportent des cours magistraux, des APP (apprentissage par problèmes et par projets), des séances d'exercices, des travaux individuels et de groupe.

Ces dispositifs placent les étudiant-e-s au centre de leurs apprentissages et visent à leur faire acquérir l'ensemble des compétences, des attitudes génériques (c'est-à-dire transversales aux champs disciplinaires) nécessaires pour mener à bien les études d'ingénieur civil et pour entreprendre une carrière professionnelle. Cette méthodologie est définie en cohérence avec les acquis d'apprentissage visés du programme de bachelier.

Les activités proposées au sein des enseignements permettent aux étudiant-e-s de découvrir ou d'exploiter des notions connues mais retravaillées dans un contexte neuf, d'engranger des acquis méthodologiques allant de pair avec un travail d'intégration, d'approfondissement et d'enrichissement des connaissances. Les étudiant-e-s sont initié-e-s au travail coopératif en groupe, à la gestion de leurs apprentissages, à la communication orale et écrite,...

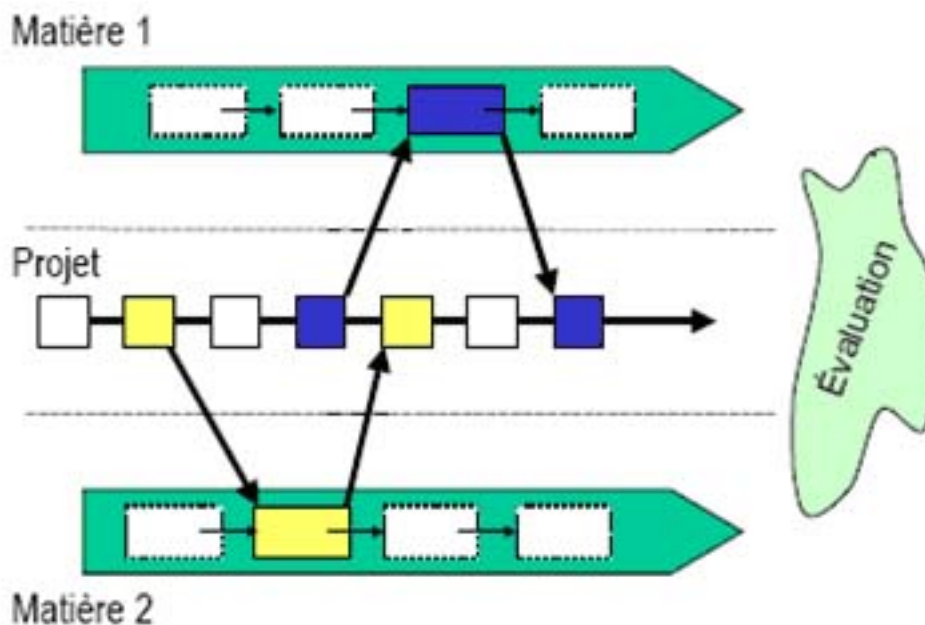
Semaine de lancement S0 (P0)

Pour aborder les objectifs de formation méthodologique dès le début des études, la première semaine du premier bloc annuel du programme de bachelier est une semaine de lancement dénommée P0 présentant une organisation particulière. Les objectifs poursuivis durant cette semaine sont :

- Accueil des étudiant-e-s dans la Faculté ;
- Découverte de l'environnement universitaire et facultaire du site de Louvain-la-Neuve ;
- Initiation méthodologique à certains aspects du travail en équipe, de l'apprentissage par problèmes et par projets (APP).

Apprentissage par projets

Les projets du programme de bachelier visent à intégrer différentes matières du quadrimestre dans une même réalisation. Il ne s'agit donc pas de projets d'application des connaissances acquises précédemment, mais de projets d'apprentissage en interaction permanente avec les disciplines enseignées en parallèle suivant le modèle ci-après :



Apprentissage par problèmes

Au sein des différentes disciplines, des projets motivantes, actuels et interpellants sont proposées aux étudiant-e-s qui ne possèdent cependant pas toujours les compétences nécessaires pour y répondre. Ils nécessitent et amènent donc l'étudiant-e à travailler en groupe, à collaborer et à effectuer des recherches scientifiques, à planifier son travail et à s'organiser.

Ces deux types de situations problèmes coexistent et se complètent : le problème (disciplinaire et de courte durée) et le projet (pluridisciplinaire et se déroulant sur un quadrimestre).

Evaluation

The evaluation methods comply with the regulations concerning studies and exams. 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 course activities are evaluated in accordance with the prevailing rules of the University (c.f. exam regulations).

In the context of the projects and certain other subject activities, the student will be closely followed in his studies throughout the whole process, in an effort to situate himself appropriately with respect to his individual work and group work and make any necessary readjustments. On the other hand, he will be evaluated during the course of the quadrimester (ongoing evaluation) and again at the end of the quadrimester for each of the subjects taken, to ascertain whether he fulfils the demands of the programme and has completed the modules concerned successfully. These evaluations are both written and oral. The specific details and procedures for the ongoing evaluation are explained at the beginning of each period of the study programme.

Mobility and/or Internationalisation outlook

International Mobility

Mobility in the Faculty of Applied Sciences is equally a major attraction in the context of these studies. This usually takes place during the 4th or 5th year, i.e. during the master's studies. The students are therefore strongly encouraged to do everything possible to widen their communication skills and their knowledge of languages.

In fact, after being awarded the degree title " Bachelor in Engineering Sciences : Engineering " by UCL, the student will also have access to the existing master's (i.e. from the 4th and 5th years on) within the CLUSTER network - Consortium Linking Universities of Science and Technology for Education and Research, of which the Faculty is a member. Furthermore, UCL students benefit from the same access conditions as the bachelor students from these institutions. This European network groups together : UPC - Barcelona / TU-Darmstadt / TU-Eindhoven / INPG-Grenoble / Uni-Karlsruhe / EPFL-Lausanne / Imperial College London / KTH-Stockholm / Politecnico di Torino / UCL-FSA-Louvain-la-Neuve.

In the context of the master's studies in Engineering Sciences at UCL, the student is also entitled access to the ensemble of the Erasmus/Socrates exchange programmes which UCL has subscribed to together with universities from numerous European or extra-European countries, as well as the Catholic University of Leuven (KUL).

Possible trainings at the end of the programme

Access to the master's of Engineering Sciences - Engineering

The bachelor's programme in Engineering entitles direct access to the master's programme in Engineering, in the orientation corresponding to one of the specialization tracks followed (otherwise prerequisites could be required)

After having accumulated 120 credits spread over 2 years, the student will obtain the title of Master of Engineering Sciences, which is conferred jointly with the professional title of Engineer.

The Ecole Polytechnique de Louvain offers ten different orientations for these studies :

- [Master \[120\] in Civil Engineering](#)
- [Master \[120\] in Chemical and Materials Engineering](#)
- [Master \[120\] in Physical Engineering](#)
- [Master \[120\] in Electrical Engineering](#)
- [Master \[120\] in Electro-mechanical Engineering](#)
- [Master \[120\] in Mechanical Engineering](#)
- [Master \[120\] in Computer Science and Engineering](#)
- [Master \[120\] in Mathematical Engineering](#)
- [Master \[120\] in Biomedical Engineering](#)
- [Master \[120\] in Data Science Engineering](#)

Contacts

Curriculum Management

Entity

Structure entity

Denomination

Faculty

Sector

Acronym

Postal address

SST/EPL/BTCI

(BTCI)

Louvain School of Engineering (EPL)

Sciences and Technology (SST)

BTCI

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1348 Louvain-la-Neuve

Academic supervisor: [Vincent Legat](#)

Jury

- Président du Jury: [Jean-Didier Legat](#)
- Secrétaire du Jury: [Paul Fisette](#)

Useful Contact(s)

- Secrétariat: [Catherine Peeters](#)

