



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

FSA1BA - Teaching profile

Learning outcomes

General objectives

The bachelor's programme in Engineering Sciences : Engineering, leads to the degree of "Bachelor of Engineering Sciences :

The student has the possibility of choosing two courses in engineering sciences, each in a different orientation. The purpose of this dual track system is to enable students who so wish to have basic training in two engineering science specialities, increasing their technical versatility, or preparing for a master's degree in civil engineering in a field relating to several of the basic orientations offered at the level of the bachelor's program. The distribution of volumes for polytechnic courses is 10 credits in the second annual block and 20 credits in the third annual block.

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 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.).

FSA1BA Programme

Detailed programme by subject

- Mandatory
- ✘ Optional
- △ Not offered in 2024-2025
- ⊙ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 or the following year
- Activity with requisites
- 🌐 Open to incoming exchange students
- 🚫 Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

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

Year



o **Minor or additional module**

Maximum 2 element(s)

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.

- > Specialization track in applied Chemistry and Physics [en-prog-2024-filfyki]
- > Specialization track in Construction [en-prog-2024-filgce]
- > Specialization track in Electricity [en-prog-2024-filelec]
- > Specialization track in Biomedical Engineering [en-prog-2024-filgbio]
- > Specialization track in Computer Science [en-prog-2024-fillinfo]
- > Specialization track in Applied Mathematics [en-prog-2024-filmap]
- > Specialization track in Mechanics [en-prog-2024-filmeca]
- > Minor in Scientific Culture [en-prog-2024-mincults]
- > Minor in Geography [en-prog-2024-mingeog]
- > Minor in Mathematics 9878 161.98899841 42.27.588 44 Cog 1 0 0 -1 205.47099304 123.TTf 015108 162.322899841 42.27.588 4427.588 44 Cog 1 0 0 -1

Course prerequisites

The **table** below lists the activities (course units, or CUs) for which there are one or more prerequisites within the programme, i.e. the programme CU for which the learning outcomes must be certified and the corresponding credits awarded by the jury before registering for that CU.

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

Prerequisites and student's annual programme

As the prerequisite is for CU registration purposes only, there are no prerequisites within a programme year. Prerequisites are defined between CUs of different years and therefore influence the order in which the student will be able to register for the programme's CUs.

In addition, when the jury validates a student's individual programme at the beginning of the year, it ensures its coherence, meaning that it may:

- require the student to combine registration in two separate CUs which it considers necessary from a pedagogical point of view.
- transform a prerequisite into a corequisite if the student is in the final year of a degree course.

For more information, please consult the [Academic Regulations and Procedures](#).

Prerequisites list

LANGL1272 "Anglais pour ingénieurs civils II" has prerequisite(s) LANGL1171

- LANGL1171 - [Anglais pour ingénieurs civils I](#)

LEPL1402 "Informatique 2" has prerequisite(s) LEPL1401

- LEPL1401 - [Informatics 1](#)

The programme's courses and learning outcomes

For each UCLouvain training programme, a [reference framework of learning outcomes](#) specifies the skills expected of every graduate on completion of the programme. Course unit descriptions specify targeted learning outcomes, as well as the unit's contribution to reference framework of learning outcomes.

○ LEPL1201	Physics I	Laurent Francis Dimitri Lederer Vincent Legat Thomas Pardoën	FB [q1] [30h +30h] [5 Credits]
○ LEPL1501	Project 1	Xavier Bollen (compensates Benoît Raucent) Charles Pecheur Benoît Raucent Renaud Ronsse Sandra Soares Frazao (coord.)	FB [q1] [30h +30h] [5 Credits]
○ LEPL1401	Informatics 1	Kim Mens Siegfried Nijssen Charles Pecheur	FB [q1] [30h +30h] [5 Credits]
○ LEPL1104	Numerical methods	Vincent Legat	FB [q2] [30h +30h] [5 Credits]
○ LEPL1105	Analysis II	François Glineur Laurent Jacques	FB [q2] [30h +30h] [5 Credits]
○ LEPL1202	Physics II	Paul Fiset Claude Oestges	FB [q2] [30h +30h] [5 Credits]
○ LEPL1502	Project 2	David Bol Jérôme Louveaux Claude Oestges (coord.)	FB [q2] [30h +30h] [5 Credits]
○ LEPL1301	Chemistry and Physical chemistry 1	Sophie Demoustier Alain Jonas (compensates Francesco Contino) Bernard Nysten	FB [q2] [30h +30h] [5 Credits]

○ Non-disciplinary Courses

○ Cours obligatoires

The students attend these two courses

○ LEPL1801	Engineering ethics	Alexandre Guay	FB [q1] [22.5h +15h] [3 Credits]
○ LEPL1803	Economy	Olivier Daxhelet Julien Hendrickx	FB [q2] [30h +30h] [5 Credits]

○ Language Courses

○ English courses

○ LANGL1171	Anglais pour ingénieurs civils I <i>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)</i>	Charline Coduti (compensates Anne- Julie Toubeau) Hila Peer Marc Piwnik Nevin Serbest (coord.)	FB [q1] [12h] [2 Credits]
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⊗ Dutch courses

⊗ LNEER1300	General and academic Dutch - intermediate level	Hilde Bufkens (coord.)	NL [q2] [30h] [2 Credits]
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⊗ German courses

⊗ LALLE1101	German beginner's level 1st part (0-A1)	Fanny Desterbecq (compensates Ann Rinder)	DE [q1 or q2] [45h] [2 Credits]
⊗ LALLE1102	German beginner's level 2nd part (A1 - A2)	Caroline Klein (coord.)	DE [q2] [45h] [2 Credits]

FSA1BA - 2ND ANNUAL UNIT

- Mandatory
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⌘ LESPA1301	Spanish intermediate level, 1st part (A2-B1.1)	Begona Garcia Migura (coord.)	ES [q1 or q2] [45h] [3 Credits]
⌘ LESPA1302	Spanish intermediate level, 2nd part (B1.1-B1.2)	Alicia Maria Tirado Fernandez (coord.)	ES [q2] [45h] [3 Credits]

o Religion courses for students in exact sciences

The students select one course between:

⌘ LTECO2100	Sociétés, cultures, religions : Biblical readings	Hans Ausloos	FR [q1] [15h] [2 Credits]
⌘ LTECO2300	Societies, cultures, religions : Ethical questions	Marcela Lobo Bustamante	FR [q1] [15h] [2 Credits]
⌘ LTHEO2840	Science and Christian faith	Benoit Bourguine Paulo Jorge Dos Santos Rodrigues	FR [q1] [15h] [2 Credits]
⌘ LTECO2200	Societies-cultures-religions : Human Questions	Pedro Dusabamahoro Valinho Gomes	FR [q1] [15h] [2 Credits]

o Minor or additional module

Maximum 2 element(s)

FSA1BA - 3RD ANNUAL UNIT

- Mandatory
- ⊗ Optional
- △ Not offered in 2024-2025
- ⊖ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 or the following year
- Activity with requisites
- 🌐 Open to incoming exchange students
- 🚫🌐 Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

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

o Obligatory Courses**o General Courses**

All the students attend all these courses.

○ LEPL1109	Statistics and data sciences	Donatien Hainaut Laurent Jacques	[FR] [q1] [30h +30h] [5 Credits] 🌐
○ LEPL1110	Finished elements	Vincent Legat Jean-François Remacle	[FR] [q2] [30h +30h] [5 Credits] 🌐

o Non-disciplinary Courses**o Cours au choix**

Les étudiants choisissent un cours parmi

⊗ LEPL1804	Sustainable development and transition	David Bol David Bol (compensates Hervé Jeanmart) Patricia Luis Alconero Patricia Luis Alconero (compensates Hervé Jeanmart) Xavier Marichal Xavier Marichal (compensates Hervé Jeanmart) Jean-Pierre Raskin Jean-Pierre Raskin (compensates Hervé Jeanmart)	[FR] [q1] [22.5h +15h] [3 Credits] 🌐
⊗ LEPL1805	People management	Credits	

FSA1BA - Information

Access Requirements

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

- For any secondary school diploma **from a European Union country**, the admission request must contain the equivalence of your diploma or, at the very least, proof of the filing of the equivalence request with the Wallonia-Brussels Federation (French Community of Belgium). For any information relating to obtaining an equivalence, please refer to [the following site](#).
- For any secondary school diploma **from a country outside the European Union**, the admission application must contain the [equivalence of your diploma](#) issued by the Wallonia-Brussels Federation (French Community of Belgium). If you have a restrictive equivalence for the programme of your choice, in addition of it, you **must** have either the [DAES](#) or a certificate of successful completion of the [examination giving access to 1st cycle studies](#) when you submit your application

Access based on validation of professional experience

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 to access some programmes

- 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](#)

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

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.

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 theses 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](#)
- [Master \[120\] in Energy 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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Academic supervisor: [Vincent Legat](#)

Jury

- Président du Jury: [Claude Oestges](#)
- Secrétaire du Jury: [Paul Fisette](#)

Useful Contact(s)

- Secrétariat: [Catherine Peeters](#)
- Academic advisor: [Isabelle Poty](#)
- Academic advisor: [Paul Fisette](#)

