

Faculty of Applied Sciences



FSA 1BA

Baccalauréat en sciences de l'ingénieur, orientation ingénieur civil (Bachelor of Engineering Sciences,)



Study objectives

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).

Objectives of the foundation studies in the Sciences

The foundation studies in the Sciences aim to equip the students with a certain number of special relative skills, namely:

- with the basics in Mathematics especially in Algebra, Analysis and Applied Mathematics : on the one hand, this entails ensuring that the student acquires the mastery of an ensemble of mathematical tools necessary for undertaking studies in other subjects linked to Engineering Sciences ; on the other hand, and of equal importance, is the objective of training the student in the reasoning, abstraction and critical analysis of the results from their calculations
- in Physics to learn and be able to understand the different facets of the phenomena which govern the real world, with a view to using them, modelling them and manipulating them in connection with technological applications
- in Chemistry and Physical-Chemistry to learn and be able to understand the basic concepts, such as atoms, molecules and chemical reactions, as well as the concepts governing the equilibrium and disequilibrium of Chemical reactions, i.e. the first and second principles of Thermodynamics and the basics of Kinetic Chemistry
- in Computer Studies to critically analyse a given problem, to present one or several alternative solutions to a given problem, to detail the links which exist between concepts and to apply quality criteria to evaluate a given piece of work and its results
- in Numerical Methods to be able to solve problems in physics and mathematics where the analytical solution is not available or is difficult to obtain, and thus develop and acquire a scientific methodology for numerical methods, including the stages that necessitate application of the tools.
- in Probability and Statistics to apply the basic concepts of probability and statistical interference in a variety of situations : to extract the pertinent information from data bases, to adopt a methodological approach in organising experiments and to develop simple probability or empirical models
- in Design to enable the student to draft manual "conception designs" which will subsequently be converted into "communication designs" by means of recourse to computer-assisted designs
- in Human Sciences from a reflective angle and an operational angle, namely initiation in philosophical reasoning and in the comprehension of the place of the sciences and current engineering techniques
- in Economics to enable the student i) to acquire the basic concepts of economics, through a rational and partially formalised presentation on the basic evolutions of this discipline and ii) to be able to use the principal operating tools applied, for example, in companies
- in learning languages, especially with a view to understanding texts with scientific references and techniques, including both written and listening comprehension in English . The objective is that after the 3 years of bachelor studies, the student should have acquired a sufficient level of reading and listening comprehension in English to be able to write a lengthy report in the language and then present it and defend it orally during a technical discussion
- in the work and management of a project in the context of learning through problems, with a view to integrating the

knowledge and skills acquired or still to be acquired. The objectives aimed at are threefold : to become initiated in the creation of a product, thus apprehending one of the important aspects of the engineering profession ; to become familiar with working in a team and with the methodological aspects of project work (report-writing, presentation before a jury, etc.); to contextualise and put into practice the course content covered and the notions worked in the disciplines during the year.

Details of the competence and skills to be attained through these disciplines are accessible by clicking on the corresponding link.

Objectives of the specialised studies

The specialised studies in the context of the major aim to help the student to acquire the basic concepts in the subject area concerned and to entitle him to unconditional access, without any need for complementary studies, to the corresponding master's programme. The subject areas offered are listed below. Their specific study objectives and details of the skills to be acquired are accessible by clicking on the corresponding course title :

- Applied Chemistry and Physics
- Construction,
- Electricity
- Computer Studies
- Applied Mathematics
- Mechanics

Objectives of the basic training in methodology

The training in methodology aims to help the student to acquire the ensemble of capacities, skills and generic attitudes (i.e. the transversal skills linking the different subjects) deemed necessary for succeeding in the studies of Engineering Studies and for undertaking a professional career. This training in methodology is defined on the basis of a list of operational objectives to be developed during the bachelor's programme such as :

- Data-processing
- Communication
- Reasoning
- Creativity
- Self-evaluation
- Personal motivation and commitment
- Cooperative work in groups
- Quality of individual work
- Problem-solving
- Behaviour
- ...

and is carried out in the context of one or several course subjects and projects

Launching week "S0"

So as to prepare the student adequately for the study objectives in methodology from the outset of the programme, the first week of the first year of the bachelor's programme is a launching week, referred to as "S0," which is organised in a special way. The objectives pursued during this week are :

- General Objectives

- Student Welcome to the Faculty
- Discovery of the Faculty environment and the Louvain-la-Neuve campus
- Methodological initiation into certain aspects of studying at university

- Individual course objectives

- The course activity offered must enable the student to exploit supposedly familiar notions, all the while re-working these in new contexts. It must enable the student to gather methodological knowledge on a parallel with working on the integration, deepening and enriching of what has been acquired.

- Methodological objectives

- Initiation in cooperative group work
- Initiation in study management
- Initiation in communication

General presentation of the programme

The bachelor's programme in Engineering Sciences : Engineering, totals 180 credits spread over 3 years. The student will choose one of the six majors on offer (150 credits). Each major comprises a general, common, polyvalent course of 107 credits and a specialised course of 43 credits. There is a range of six specialisations to choose from : Applied Chemistry and Physics, Construction, Electricity, Computer Studies, Applied Mathematics and Mechanics. The student will complete his programme with a minor from a course in Polytechnics, or an opening minor, or an ensemble of options for 30 credits.

The student who opts for a minor in specialised Polytechnics, will choose it in an orientation which is different from the major. The courses which will already have been taken into account in the major will have to be replaced by other options to attain the 30 credits. The aim of this major/minor in Polytechnics is to enable the student, if he so wishes, to acquire a basic training in

two specialities in Engineering Sciences, thus increasing his technical polyvalence, or to prepare for a master's in Engineering Sciences situated mid-way between the basic orientations at the bachelor's level. It is the case, for example, with the major/minor association in "Electricity - Mechanics " or " Mechanics - Electricity" which constitutes the normal access path to the master's in Electromechanics and likewise via the combination " Electricity- Applied Chemistry and Physics " which paves the way for the domain of the Nanotechnologies.

The minors in Polytechnics organised by the FSA for the bachelor's of Engineering Sciences are as follows : Applied Chemistry and Physics, Construction, Electricity, Computer Studies, Applied Mathematics, Mechanics, Biomedical engineering and Architecture. The first six are described below. Contrary to the other minors organised at UCL, the dividing up of the work volumes for the minors in Polytechnics are equivalent to around 10 credits in the second year and around 20 credits in the third year, instead of 15 and then 15 credits respectively.

Minors or available options

Six majors and seven minors are offered in the following domains : Applied Chemistry and Physics, Construction, Electricity, Computing Science, Applied Mathematics, Mechanics and Biomedical Engineering (only offered as a minor). The choice of the major and the minor is made at the end of the 1st quadrimester of the 2nd year of the bachelor's programme. This major/minor system enables the student who so wishes to get a basic grounding in two specialities and thus optimise his preparation for a master's situated somewhere in between his current specialisations (eg. in the domain of Nanotechnologies which are situated between Applied Chemistry and Physics and Electricity). The student may also choose a minor organised outside the FSA or a coherent ensemble of options.

Evaluation

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

Admission to the programme

The conditions and regular admission requirements are specified on the web page :

<http://www.ucl.ac.be/etudes/libres/en/acces.html>

Special admission conditions

Admission to the bachelor's programme in Engineering Sciences : Engineering is subject to passing a special entrance exam. This is a legally required condition throughout the French-speaking Community. This exam is organised in each of the 4 faculties of Applied Sciences within the French-speaking Community and it entitles access to any of these 4 faculties, irrespective of where it was taken. It comprises a section in mathematics and a general section. The mathematical section is comprised of analysis, algebra, trigonometry, numerical calculations, geometry and analytical geometry. The general section consists of written and oral tasks in French, Physics, Chemistry, Biology, Geography, History and a second language chosen by the student from among Dutch, English, German or Latin. Those students who satisfy the general access conditions for the programme of the first cycle are exempt from the subjects other than Mathematics. Details of the programme subjects, as well as the conditions for dispensation from oral testing on "non-mathematical" subjects, can be obtained on request at the reception of the Faculty. The mathematical section helps to evaluate the assimilation of the six-hour a week programme during the previous two years of secondary school. Success in this exam usually necessitates reinforcement in maths studies during the last year of secondary school.

Besides its legal aspect, the entrance exam enables the student to evaluate the knowledge acquired from his studies at secondary school. Preparation thereof is often the starting point for reflection on the choice of studies and on the effort needed to undertake the studies envisaged. Complementary information on this exam can be obtained under the heading "Admission" at the Faculty of Applied Sciences, ULC, web-site : (<http://www.fsa.ucl.ac.be>) or via the email address : admission@fsa.ucl.ac.be.

Admission requirements, special rules

Enrolments for the entrance exam are accepted from the Information Day for secondary school leavers, in March, up until 1st June.

Positioning 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 the major followed. In most cases, access to the master's of Engineering, in the orientation corresponding to the minor in Polytechnics, is also direct and without the need for any prerequisites.

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.

UCL offers eight different orientations for these studies : - Engineer in Chemistry and Material Sciences - Engineer in Physics - Engineer in Electricity - Engineer in Electro-mechanics - Engineer in Mechanics - Engineer in Computing - Engineer in Applied Mathematics - Civil Engineer.

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).

Useful contacts

FSA Faculté des sciences appliquées

Programme management

Faculty of Applied Sciences

Secretary's office for the 1st study cycle : Fr. Malcorps

Address : Rue Archimède 1 - 1348 Louvain-la-Neuve

Tel: 010 47 24 63

Fax: 010 47 24 66

BAC@fsa.ucl.ac.be

Study Advisor

Ch. Trullemans, tél: 010 47 25 67

ctrullemans@dice.ucl.ac.be

Exam Jury

President: P. Sobieski

Jury secretary: V. Wertz

Coordinators for the first quadrimesters

First year :

Coordinator B1-Q1 : B. Raucent - tel. 010 47 25 08 - e-mail : raucent@prm.ucl.ac.be

Coordinator B1-Q2 : P. Sobieski - tel. 010 47 23 03 - e-mail : sobieski@tele.ucl.ac.be

Second year :

Coordinator B2-Q1 : V. Legat - tél. 010 47 23 59 - e-mail : vl@mema.ucl.ac.be

Pedagogical advisors

- For Mathematics :

K. Ben-Naoum - e-mail : benaoum@auto.ucl.ac.be

- General pedagogy :

M-N. de Theux - e-mail : detheux@fsa.ucl.ac.be

- Coordinators B2, Q2 et B3 :

Major in Electricity : F. Labrique - e-mail : labrique@lei.ucl.ac.be

Major in Mechanics : F. Dupret - e-mail : fd@mema.ucl.ac.be

Major in Construction : J.F. Thimus - e-mail : thimus@gce.ucl.ac.be

Major in Applied Chemistry and Physics : A. Jonas - e-mail : jonas@poly.ucl.ac.be

Major in Computing Science: P. Dupont - e-mail : pdupont@info.ucl.ac.be

Major in Applied Mathematics : G. Bastin - e-mail : bastin@auto.ucl.ac.be

List of accessible minors

- Minor in Theology
- Minor in Philosophy
- Minor in Law
- Minor in Criminology
- Minor in Information and Communication (*)
- Minor in Political Sciences
- Minor in Sociology and Anthropology
- Minor in Human and Social Sciences
- Minor in Economics

- Minor in Business Studies
- Minor in Linguistics
- Minor in Hispanic Studies (*)
- Minor in Italian Studies (*)
- Minor in French Studies (*)
- Minor in Latin Studies
- Minor in Greek Studies
- Minor in Oriental Studies
- Minor in Literature Studies
- Minor in History
- Minor in Medieval Studies
- Minor in History of Art and Archaeology(*)
- Minor in Musicology
- Minor in Psychology and Education (*)
- Minor in Human Nutrition
- Minor in General Biomedical Sciences
- Minor in Clinical Biomedical Sciences
- Minor in Medication Sciences (*)
- Minor in Physical Activity, Health and Culture of Mouvement (*)
- Minor in Mathematics
- Minor in Physics
- Minor in Geography
- Minor in Statistics
- Minor in Engineering Sciences : Applied Chemistry and Physics
- Minor in Engineering Sciences : Construction
- Minor in Engineering Sciences : Electricity
- Minor in Engineering Sciences : Computing Science
- Minor in Engineering Sciences : Applied Mathematics
- Minor in Engineering Sciences : Mechanics
- Minor in Urban Architecture
- Minor in Bio-engineering
- Minor in Biomedical Engineering
- Minor in Gender Studies
- Minor in Culture and Creation
- Minor in European Studies

(*) *Minor with access criteria.*

Content of programme

General and polyvalent studies common to all the majors (107 credits)

The table summarising the presentation of the general and polyvalent training programme for the ensemble of the bachelor studies divided up per year and per quadrimester is available on the web-page :

http://www.fsa.ucl.ac.be/bac/ade/formation_generale.html .

FSA 11BA First year of studies

First quadrimester

<u>FSAB1101</u>	Mathematics 1[30h+30h] (6 credits) (in French)	Philippe Delsarte, Michel Verleysen, Vincent Wertz (coord.)
<u>FSAB1201</u>	Physics 1[30h+30h] (6 credits) (in French)	Guy Champion (coord.), Jan Govaerts, Jean-Didier Legat, Charles Trullemans
<u>FSAB1401</u>	Informatique 1[30h+30h] (6 credits) (in French)	Yves Deville, Elie Milgrom (coord.), Charles Pecheur
<u>FSAB1501</u>	project 1[0h+60h] (6 credits) (in French)	Elie Milgrom, Benoît Raucent (coord.), Charles Trullemans, Vincent Wertz
<u>FSAB1601</u>	Engineering drawing[15h+15h] (3 credits) (in French)	David Johnson, Benoît Raucent
<u>FSAB1801</u>	Critical History of Science and Technology[15h+15h] (2 credits) (in French)	Patricia De Grave, David Vanderburgh

Second quadrimester

<u>FSAB1102</u>	Mathematics 2[45h+45h] (9 credits) (in French)	Camille Debiève, François Glineur (supplée Roland Keunings), Roland Keunings, Enrico Vitale (coord.)
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<u>FSAB1202</u>	Physics 2[30h+30h] (6 credits) (in French)	Guy Campion, Jean-Claude Samin, Piotr Sobieski (coord.)
<u>FSAB1301</u>	Chemistry 1[30h+30h] (6 credits) (in French)	Sophie Demoustier, Pierre Godard (coord.), Roger Legras, André Schanck
<u>FSAB1502</u>	Project 2[0h+60h] (5 credits) (in French)	Anne-Marie Anckaert (coord.), Piotr Sobieski
<u>FSAB1802</u>	Philosophy. Introductory Course[15h+15h] (3 credits) (in French)	Jean-Michel Counet
<u>ANGL1871</u>	English : reading comprehension of scientific texts[20h] (2 credits)	N.

For the English course, a dispensatory test is organised in the first quadrimester of the first year (Test1 - Reading Comprehension). If the student passes, he is exempt from doing the corresponding study sessions : he will either take the ANGL1871 exam at the end of the year (2 credits), or he will choose to follow the ANGL1872 course from the first year on (in the 2nd year - 2 credits) or another advanced language course for a minimum of 2 credits in accordance with his competence.

FSA 12BA Second year of studies

First quadrimester

<u>FSAB1103</u>	Mathematics 3[30h+30h] (5 credits) (in French)	Vincent Blondel (coord.), Philippe Delsarte, Philippe Delsarte (coord.), Philippe Delsarte (supplée Vincent Blondel), Jean-François Remacle, Grégoire Winckelmans
<u>FSAB1104</u>	Numericals methods[30h+30h] (5 credits) (in French)	Vincent Legat (coord.), Grégoire Winckelmans
<u>FSAB1203</u>	PHYSICS 3[30h+30h] (5 credits) (in French)	Alain Jonas (coord.), Jean-Pierre Raskin, Jean-Claude Samin, Piotr Sobieski
<u>FSAB1302</u>	Chemistry 2[30h+30h] (5 credits) (in French)	Christian Bailly, Francis Delannay (coord.), Hervé Jeanmart
<u>FSAB1402</u>	Informatique 2[30h+30h] (5 credits) (in French)	Pierre Dupont, Peter Van Roy (coord.)
<u>FSAB1503</u>	Project 3[0h+60h] (5 credits) (in French)	Patrick Bertrand (coord.), Francis Delannay, Jacques Devaux, Vincent Legat

Second quadrimester


<u>FSAB1105</u>	Probability and statistics[30h+30h] (5 credits) (in French)	Isabelle De Macq (supplée Bernadette Govaerts), Bernadette Govaerts, Jean-Marie Rolin (supplée Rainer von Sachs), Rainer von Sachs
<u>FSAB1803</u>	Economy of the firm[30h+30h] (3 credits) (in French)	Jean-Pierre Hansen (coord.), Yves Smeers
<u>ANGL1872</u>	English: Listening Comprehension[20h] (2 credits)	Isabelle Druant, Dominique François, Marie-Aude Lefer, Henri November, Marc Piwnik

As from the second quadrimester of the second year, the student will follow the specialisation course corresponding to the major and the minor he has chosen.

For the English course in the second year, the student will take a dispensatory test in the first quadrimester (Test 2 - Listening Comprehension). If the student passes, he is exempt from doing the corresponding study sessions : he will either take the ANGL1872 exam at the end of the second year (2 credits), or he will choose to follow the ANGL1873 course from the second year on (in the 3rd year - 2 credits) or another advanced language course for a minimum of 2 credits in accordance with his competence.

FSA 13BA Third year of studies

First quadrimester

<u>FSAB1106</u>	Applied mathematics : Signals and systems[30h+30h] (5 credits)  (in French)	N.
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Second quadrimester

<u>ANGL1873</u>	English communication skills for engineers[30h] (3 credits)	N.
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In the third year, the student will follow the specialisation course corresponding to the major and the minor he has chosen. For the language course, he will take a dispensatory test in the first quadrimester (Test 3 - Oral Expression). If he passes, he is exempt from following the corresponding course activities : he will either do the ANGL1873 exam at the end of the third year (2 credits), or he will choose to follow another advanced language course for a minimum of 2 credits, depending on his

competence.

The ensemble of subjects covers the 14 weeks of the quadrimester ; the S0 week is spread over the first week of the first year, the projects of the first year and the first quadrimester of the second year are spread over the first 11 weeks of the quadrimester.

By way of information, details of the academic content of the subjects for the first year and a half are accessible via the following links :

Mathematics

Physics

Chemistry and Physical Chemistry

Computing Studies

Numerical Methods

Design







and Projects

Specialised studies (43 credits)








The student will choose one of the six courses relating to the following majors : Chemistry and Applied Physics, Construction, Electricity, Computer Studies, Applied Mathematics and Mechanics.





















The table summarising the presentation of each of the specialised training courses as well as the division of the courses per year and per quadrimester is accessible by clicking on the corresponding titles.

Major in Chemistry and Applied Physics

<u>MAPR1310</u>	Thermodynamics of phase equilibrium[30h+15h] (4 credits) (in French)	Francis Delannay (coord.), Pascal Jacques, Fernand Thyron
<u>MAPR1400</u>	Applied Kinetics[30h+30h] (5 credits)  (in French)	N.
<u>MAPR1230</u>	Complements of organic chemistry[15h+15h] (2 credits) (in French)	Sophie Demoustier, Pierre Godard (coord.)
<u>MAPR1231</u>	Supplements in inorganic chemistry[30h+15h] (4 credits)  (in French)	N.
<u>MAPR1491</u>	Supplements in physics[30h+22.5h] (4 credits)  (in French)	N.
<u>MAPR1492</u>	Materials physics[30h+15h] (4 credits)  (in French)	N.
<u>MAPR1805</u>	Introduction to materials science[45h] (4 credits) (in French)	Jean-Christophe Charlier, Roger Legras (coord.), Thomas Pardoen
<u>ELEC2525A</u>	Introduction à l'électronique digitale A[15h+15h] (2 credits) (in French)	N.
<u>FSAB1221A</u>	Introduction au monde du vivant, partie 1 A[15h] (2 credits) (in French)	Philippe Lefevre (coord.), Yves-Jacques Schneider
<u>MECA1901</u>	Continuum mechanics.[30h+30h] (5 credits)  (in French)	N.
<u>MECA1100A</u>	Mécanique des solides déformables A[15h+15h] (2 credits) (in French)	N.
<u>MECA1321</u>	Fluid mechanics and transfer phenomena.[30h+30h] (5 credits)  (in French)	N.


Major in Construction







<u>MAPR1310A</u>	Thermodynamique - équilibres entre phases A[22.5h+7.5h] (2.5 credits) (in French)	Francis Delannay
<u>MECA1901</u>	Continuum mechanics.[30h+30h] (5 credits)  (in French)	N.
<u>MECA1100</u>	Deformable solid mechanics.[30h+30h] (5 credits)  (in French)	N.
<u>AUCE1801</u>	Construction [30h][30h] (3 credits) (in French)	Nicolas Van Oost
<u>AUCE1901A</u>	Confort et Physique du bâtiment (thermique, acoustique et éclairage) A[20h] (2 credits)  (in French)	N.
<u>AUCE1111</u>	Project of structure I[15h+45h] (4 credits) (in French)	Jean-François Remacle, Jean-François Thimus
<u>AUCE1151</u>	Statistical hydrology[10h+15h] (2 credits)  (in French)	N.
<u>AUCE1152</u>	Hydraulic[30h+30h] (5 credits)  (in French)	N.
<u>AUCE1171</u>	Geology and mineralogy[25h+15h] (3 credits) (in French)	Christian Schroeder, Philippe Sonnet
<u>AUCE1172</u>	Soil mechanics[25h+22.5h] (4 credits)  (in French)	N.
<u>AUCE1173</u>	Applied soil mechanics[30h+22.5h] (4.5 credits)  (in French)	N.
<u>AUCE1031</u>	STRUCTURAL MATERIALS[15h+15h] (2.5 credits) (in	Jean-François Cap

	French)	
Major in Electricity		
<u>ELEC1101</u>	Project in Electricity 1 : Electrical circuits[0h+60h] (5 credits) (in French)	Francis Labrique, Charles Trullemans
<u>ELEC1102</u>	PROJECT IN ELECTRICITY 2 : PHYSICS OF ELECTRICITY[0h+45h] (3 credits)  (in French)	N.
<u>ELEC1370</u>	Measurements and electrical circuits[30h+30h] (5 credits) (in French)	Francis Labrique, Charles Trullemans
<u>ELEC1330</u>	Physics of electronics[30h+30h] (5 credits)  (in French)	N.
<u>ELEC1350</u>	ELECTROMAGNETICS[30h+30h] (5 credits)  (in French)	N.
<u>ELEC1530</u>	Electronics I : Basic amplifiers circuits[30h+30h] (5 credits)  (in French)	N.
<u>ELEC1360</u>	TELECOMMUNICATIONS 1 : CHANNELS AND SIGNALS[30h+30h] (5 credits)  (in French)	N.
<u>ELEC1310</u>	ELECTROMECHANICAL CONVERTERS[30h+30h] (5 credits)  (in French)	N.
<u>ELEC1510</u>	Linear Automatic[30h+37.5h] (5 credits)  (in French)	N.
Major in Computing studies		
<u>INGI1101</u>	Discrete mathematics: logical foundations of computing science[30h+30h] (4 credits)  (in French)	N.
<u>SINF1121</u>	Algorithmics and data structures[30h+30h] (5 credits)  (in French)	N.
<u>INGI1122</u>	Program conception methods[30h+30h] (5 credits)  (in French)	N.
<u>INGI1131</u>	Computer language concepts[30h+30h] (5 credits)  (in French)	N.
<u>INGI1123</u>	computability and complexity[30h+30h] (4 credits)  (in French)	N.
<u>SINF1252</u>	Introduction to computer systems[30h+30h] (5 credits) (in French)	Marc Lobelle
<u>INGI1113</u>	Operating systems 1[30h+30h] (5 credits)  (in French)	N.
<u>INGI1271</u>	Files and databases[30h+30h] (5 credits)  (in French)	N.
<u>SINF1124</u>	Programming project[0h+60h] (5 credits) (in French)	Yves Deville, Pierre Dupont, Baudouin Le Charlier, Kim Mens (coord.)
Major in Applied Mathematics		
<u>INMA1375</u>	Project in applied mathematics[0h+45h] (5 credits)  (in French)	N.
<u>INMA1380</u>	Matrix theory[30h+22.5h] (5 credits)  (in French)	N.
<u>INMA1702</u>	Applied mathematics : Optimization[30h+22.5h] (5 credits)  (in French)	N.
<u>INMA1691</u>	Discrete mathematics - Graph theory and algorithms[30h+22.5h] (5 credits) (in French)	Vincent Blondel, Laurence Wolsey, Laurence Wolsey (supplée Vincent Blondel)
<u>INMA1731</u>	Stochastic processes : Estimation and prediction[30h+30h] (5 credits)  (in French)	N.
<u>INMA1170</u>	Numerical analysis[22.5h+30h] (5 credits) (in French)	Paul Van Dooren
<u>MECA1901</u>	Continuum mechanics.[30h+30h] (5 credits)  (in French)	N.
<u>INMA1375</u>	Project in applied mathematics[0h+45h] (5 credits)  (in French)	N.

In this major, the student will choose, among others, an option of at least 3 credits from the minors accessible to the students enrolled on the bachelor of Engineering programme. The choice will be subject to the approval of the bachelor Committee.

Major in Mechanics

<u>MECA1901</u>	Continuum mechanics.[30h+30h] (5 credits)  (in French)	N.
<u>MAPR1310A</u>	Thermodynamique - équilibres entre phases A[22.5h+7.5h] (2.5 credits) (in French)	Francis Delannay

<u>MECA1855</u>	Thermodynamics and energetics.[30h+30h] (5 credits)  (in French)	N.
<u>MAPR1805A</u>	Introduction à la science des matériaux A[22.5h] (2 credits) (in French)	N.
<u>MECA1821</u>	Machine design.[30h+30h] (5 credits) (in French)	Bruno de Meester de Betzenbroeck, Benoît Raucent
<u>MECA1200</u>	Mechanical construction project I A.[10h+25h] (2.5 credits) (in French)	David Johnson, Benoît Raucent
<u>MECA1201</u>	Projet en modélisation et simulation (nouveau cours)[10h+20h] (2 credits)  (in French)	N.
<u>MECA1321</u>	Fluid mechanics and transfer phenomena.[30h+30h] (5 credits)  (in French)	N.
<u>MECA1100</u>	Deformable solid mechanics.[30h+30h] (5 credits)  (in French)	N.
<u>MECA1510</u>	Dynamics of elastic systems.[30h+30h] (5 credits)  (in French)	N.
<u>MECA1451</u>	Mechanical manufacturing.[30h+30h] (4 credits)  (in French)	N.

Option : minor or options

To comple his programme, the student will constitute a minor for himself, worth 30 credits, in accordance with one of the three possibilities described below :

1. Either a minor in Polytechnic studies

The description of each of the polytechnic minors offered by the Faculty of Applied Sciences as well as the distribution of the courses per year and per quadrimester are accessible by clicking on the corresponding course title. The student may choose one of them, different from that of the major followed in the context of his bachelor programme of Engineering Sciences - Civil Engineering.

Minor in Chemistry and Applied Physics (31 credits)

Minor in Construction (31 credits)

Minor in Electricity (30 credits)

Minor in Computer studies (30 credits)

Minor in Applied Mathematics (30 credits)

Minor in Mechanics (30 credits)

2. Or, an opening minor

The student may choose a minor (30 credits) from another faculty or institute of the University, even an inter-faculty minor, as listed. Some of these minors will enable course re-orientation with access to the corresponding masters. (list)

The student interested in this minor, will take into account that the nominal division of the minors at UCL is around 15 credits in the second year and 15 credits in the third year. In order to make the study-load compatible, the student who chooses this path has the possibility, if he so wishes and as long as the timetable and prerequisites permit, to postpone the volume of a course equal to 5 credits from the second to the third year so that each year of this programme manages to attain the 60 credits. Any programme so constituted must be approved by the bachelor Committee of the FSA.

3. Or, options

The student may also choose courses from the programme of the Faculty (in-depth course) or from the University (opening course).

If the constitution of his programme so permits, the student may follow the FSA2300, Questions on Religious Sciences course as one of his options (2 credits). In the case of the latter, he will no longer need to follow this course during his studies in "master of Engineering Sciences - Civil Engineering ".

The student will make his choices in relation with the specialisation of his major and of a minor at the end of the 1st quadrimester of the 2nd year of the bachelor programme. In order to help him do so, information sessions with regard to the different possibilities are organised during the first quadrimester of the second year. The student may also seek advice from the Study Advisor.

The constituted programme will have to be accepted by the bachelor Committee of the FSA.