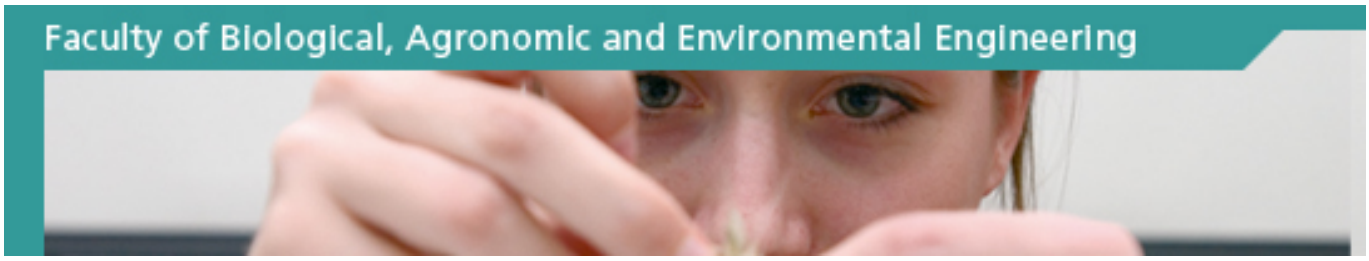

BIR 1BA Baccalauréat en sciences de l'ingénieur, orientation bioingénieur (Bachelor of Engineering Sciences,)

Study objectives

The objective of the bachelor's programme of Bioengineering is, first and foremost, to train the student in the basic disciplines within the domain of Life Sciences and Engineering Techniques which constitute the essential corner-stones of his integrated training as a bioengineer. These disciplines belong to five main domains : "Mathematics, Analysis and Data-Processing", "Sciences and Engineering of Matter and Processes", "Life Sciences," "Earth Sciences and Ecosystems" and "Human Sciences".
The first year of the bachelor's programme of Bioengineering helps the student to set his knowledge within the basic fundamental scientific disciplines of Biology, Chemistry, Mathematics, Physics and Earth Sciences. The student follows basic foundation courses equivalent to those of the students enrolled on a bachelor's programme in the domain of Natural Sciences. During the next two years, while furthering his studies in life sciences, the student will also develop his skills. He will accomplish a one-month practical training in a given professional context and will start to focus his studies by choosing optional courses in one of the three main sectors of bioengineering : Agronomy, Chemistry and the Environment.
This first cycle of studies will also prepare the student to embark, with the necessary basic knowledge and skills, on the master programmes in the Faculty of Bioengineering, Agronomy and Environment, or even on other masters in UCL, other universities in Belgium or abroad.

General presentation of the programme

This programme which leads to the title of "Bachelor of Engineering Sciences : Bioengineering", is composed of three years of studies. The training programme comprises different types of course activities : lectures, practical exercises, group work, individual work, tutorials, work experience and, of course, personal study.

1. Each course title is followed by a number indicating the number of hours the course represents per academic year. This number corresponds to lectures, unless a different teaching method (seminars, exercises) is mentioned in the course title. Where course activities (exercises, laboratory work or practical tasks) accompany one or several lectures, these are characterised by a second volume of hours per year. The course timetable is available at the secretary's office of the Faculty.
2. The number in brackets next to the number of course hours, relates to the total number of credits attributed to the course activity. This unit is a measure of the student's global workload for one year of studies and corresponds to the unit used by the European Credit Transfer System (ECTS). A full study year includes 60 credits. The sign (~) refers to the description of the training activity, available on the web site, when the credits differ for the study years or for the options of the same programme.

Information on credits not indicated on the study programme can be obtained from the secretary's office of the Faculty.

Principal Subjects

- Mathematics, analysis and data-processing
- Sciences and Engineering of Matter and Processes
- Life Sciences
- Earth Sciences and Ecosystems
- Human Sciences

Minors or available options

- "Agronomy" option
- "Chemistry" option
- "Environment" option

Evaluation

Different procedures are followed for the evaluation of the knowledge and skills acquired during the study programme; these are adapted to the nature of each course: ongoing evaluation, particularly in the case of practical tasks and individual and group projects, and global evaluation (in written and/or oral form) during the exam sessions.

Positioning of the programme

Positioning of the programme within the University curses

Successful completion of the1st year allows direct access not only to the second year in Bioengineering, but also to the second year of the bachelor's programmes in Biological, Chemical or Geographical Sciences.
Upon successful completion of his bachelor's studies, the student will be entitled access to three master's programmes, in the context of the second cycle of studies of the Faculty of Bioengineering, Agronomy and Environment :
Bioengineering : Agronomical Sciences, Bioengineering : Chemistry and Bio-industries Bioengineering : Sciences and Technologies of the Environment.

Other studies accessible upon completion of the programme

In addition, the student will also be able to access other master's programmes organised in other UCL faculties or in other universities in Belgium or abroad, subject to possible prerequisites specified for the programme in question.

Useful contacts

Programme management

AGRO Faculté d'ingénierie biologique, agronomique et environnementale

Study Advisor

Academic Secretary and Study Advisor : Jacques Mahillon
Year Coordinators :

- 1st year : Bernard Knoops and Yves Dufrêne
- 2nd year : Frédéric Gaspart
- 3rd year : Pierre Bertin

Exam Jury

President : Paul Rouxhet
Secretaries : André Lejeune (1st year); Patrick Bogaert (2nd year); P. Bertin (3rd year)

Deatailed content of standard programme

BIR 11BA First year of studies

Mathematics, analysis and data-processing		
MAT1111	General Mathematics[90h+60h] (13 credits) (in French)	Marielle Cherpion, Camille Debiève, Patrick Habets, Enrico Vitale
Sciences and matter and process engineering		
PHY1113	General Physics 1[75h+90h] (13 credits) (in French)	Thierry Fichefet, Jacques Lega
CHM1111	General chemistry 1[60h+60h] (10 credits)1q (in French)	Michel Devillers, Bernard Tinant
CHM1141	Organic chemistry 1[30h+30h] (5 credits)2q (in French)	Istvan Marko
Life Sciences		
BIO1111	A) Cell biology and introduction to prokaryotes, protists and fungi; B) Plant biology; C) Animal biology[90h+45h] (11 credits) (in French)	André Lejeune, Jean-François Rees, Claude Remacle
Globe and Ecosystems Sciences		
BIR1130	Introduction to Earth sciences[45h+30h] (6 credits)2q (in French)	Joseph Dufey, Philippe Sonnet
Human Sciences		
ANGL1880A	English in bio-engineering, agronomy and environmental sciences[30h] (2 credits)2q	Ahmed Adrioueche, Isabelle Druant, Annick Sonck

WORK EXPERIENCE

The students have to accomplish a period of work experience with the aim of ensuring a practical initiation into and contact with the professional world. The evaluation of the ensuing report is included in the deliberations of the 3rd year. The reglementation with regard to the period of work placement is presented in the student's guide on work experience, available at the secretary's office for work placement. The students are strongly recommended to get informed about the organisation of these apprenticeships as early in the year as possible and they need to be formally registered at the work placement office.
Work Placement Directors : P. BERTIN, J. DUFEY, E. GAIGNEAUX
Work Placement Secretary : V. ROTTIER, Mendel building (bâtiment Mendel), c-131.20. Tel. : 010 473667

BIR 12BA Second year of studies

Mathematics, analysis and data- processing		
BIR1200	General mathematics II[52.5h+37.5h] (6 credits)1q (in French)	Pierre Bieliavsky

BIR1201	Integrated exercises in mathematics and computer science[15h] (2 credits)2q (in French)	Patrick Bogaert, Philippe Sonnet, Marnik Vanclooster (coord.)
BIR1202	Applied computer science[22.5h+7.5h] (3 credits)1q (in French)	Philippe Sonnet
BIR1203	Probabilities and statistics (I)[30h+15h] (4 credits)1q (in French)	Patrick Bogaert
Sciences and matter and process engineering		
BIR1210	General physics II[60h+60h] (9 credits)2q (in French)	René Prieels
CHM1211	General Chemistry 2[30h+54h] (6 credits) (in French)	Michel Devillers (coord.), Bernard Tinant
CHM1241A	Chimie organique 2[30h+15h] (4 credits) (in French)	Istvan Marko, Olivier Riant
Life Sciences		
BIR1220	Biochemistry I[30h+15h] (3.5 credits)2q (in French)	Michel Ghislain, Yvan Larondelle
BIO1241A	Compléments de biologie végétale[22.5h+15h] (3 credits)1q (in French)	Jean-Marie Kinet, Stanley Lutts
BIOL2180D	A préciser (in French)	
BIO1231A	Compléments de biologie animale[37.5h+30h] (5 credits) (in French)	Thierry Hance, Bernard Knoops, Claude Remacle, Hans Van Dyck
Globe and Ecosystems Sciences		
BIR1230	Introduction to biosphere engineering[45h+15h] (5 credits)1+2q (in French)	Philippe Baret (coord.), Pierre Defourny, Bruno Delvaux, Joseph Dufey, Alain Peeters
Human Sciences		
BIR1240	Introduction to philosophy[30h] (2 credits)1q (in French)	Bernard Feltz
ANGL1880B	English in bio-engineering, agronomy and environmental sciences[30h] (2 credits)	Isabelle Druant, Annick Sonck
BIR1241	Political and social economy[30h] (2.5 credits)1q (in French)	Jean-François Sneessens

WORK EXPERIENCE

The students have to accomplish a period of work experience with the aim of ensuring a practical initiation into and contact with the professional world. The evaluation of the ensuing report is included in the deliberations of the 3rd year. The reglementation with regard to the period of work placement is presented in the student's guide on work experience, available at the secretary's office for work placement. The students are strongly recommended to get informed about the organisation of these apprenticeships as early in the year as possible and they need to be formally registered at the work placement office.
Work Placement Directors : P. BERTIN, J. DUFEY, E. GAIGNEAUX, M. MESTDAGH
Work Placement Secretary : V. ROTTIER, Mendel building (bâtiment Mendel), c-131.20. Tel. : 010473667

BIR 13BA Third year of studies

Courses common to all options

Mathematics, analysis and data-processing		
BIR1304	Probability and statistics (II)[22.5h+15h] (3 credits)1q (in French)	Patrick Bogaert
BIR1305	Introduction to systems analysis[10h+20h] (2.5 credits)1q (in French)	Philippe Baret (coord.), Pierre Defourny, Marnik Vanclooster
Sciences and matter and process engineering		
BIR1310	Transfer phenomena[45h+15h] (4.5 credits)1q (in French)	Mathieu Javaux, Marnik Vanclooster
Life Sciences		
BIR1321	Biochemistry II : metabolic pathways and their regulation[30h+15h] (3.5 credits)1q (in French)	Françoise Foury, Michel Ghislain (coord.), Yvan Larondelle
BIR1323	Microbiology[30h+15h] (3.5 credits)2q (in French)	Jacques Mahillon
BIR1322	General genetics[45h+15h] (5 credits)2q (in French)	Philippe Baret, Pierre Bertin
Part of this course will be followed by the students who have chosen the option in Chemistry		
BIR1322A	Génétique générale[30h+15h] (3.5 credits)2q (in French)	Philippe Baret, Pierre Bertin
Life Sciences		
BIR1344	Operation and management of enterprises[30h+7.5h] (2.5 credits)2q (in French)	André Nsabimana
ANGL2480	English Communication skills for engineers[30h] (2 credits)2q	Ahmed Adrioueche, Isabelle Druant, Annick Sonck
BIR1345	Report on the work experience training[60h] (4 credits)2q (in French)	Pierre Bertin, Joseph Dufey (coord.), Eric Gaigneaux, Richard Lambert

Options

60 hours or 5 credits for the students who have registered for the options in Agronomy and the Environment

30 hours or 2 credits for the students who have registered for the option in Chemistry

Specific Courses for the different options

BIR13A : option"Agronomy"

Sciences and matter and process engineering

BIR1312	Introduction to analytical chemistry[30h] (2.5 credits)2q (in French)	Joseph Dufey, Yves Dufrêne, Yves Dufrêne
BIR1313	Integrated exercises in soil and water chemistry[30h] (2.5 credits)2q (in French)	Bruno Delvaux, Joseph Dufey, Yves Dufrêne

Life Sciences

BIR1324	Animal physiology[30h+7.5h] (3 credits)1q (in French)	Cathy Debier, Isabelle Donnay
BIR1325	Physiologie du développement et systématique des plantes d'intérêt agronomique[30h+7.5h] (3 credits)2q (in French)	Pierre Bertin (coord.), Jean-François Ledent, Stanley Lutts

Globe and Ecosystems Sciences

BIR1331	Applied ecology[30h+7.5h] (3 credits)1q (in French)	Alain Peeters
BIR1332	Soil sciences[30h+7.5h] (3 credits)1q (in French)	Bruno Delvaux, Joseph Dufey
BIR1333	Bioclimatology[15h+7.5h] (2 credits)1q (in French)	Thierry Fichefet, Guy Schayes (supplée Jean-Pascal van Ypersele de Strihou), Jean-Pascal van Ypersele de Strihou
BIR1335	Field excursions in pedology, agricultural ecology and forestry[22.5h] (2 credits)1+2q (in French)	Bruno Delvaux, Joseph Dufey, Alain Peeters

Human Sciences

BIR1342	Rural economy[30h+15h] (3.5 credits)2q (in French)	Bruno Henry de Frahan

BIR13C : option in "Chemistry"

Sciences and matter and process engineering

BIR1311	Thermodynamics[30h+15h] (3.5 credits)2q (in French)	Yann Bartosiewicz
BIR1314	Physical chemistry I[30h+30h] (4.5 credits)2q (in French)	Eric Gaigneaux, Daniel Peeters
CHIM2151	A préciser (in French)	
BIR1315	Practical exercises and seminars in analytical chemistry I[30h+30h] (4 credits)1q (in French)	Christine Dupont (coord.), Yann Garcia
BIR1316	Integrated exercices in chemical analysis[45h] (3 credits)1q (in French)	Yann Garcia, Paul Rouxhet (coord.)
BIR1317	Chimie organique (3è partie)[30h+15h] (3 credits)1q (in French)	Jacqueline Marchand
BIR1318	Organic analysis I : separation techniques[30h+60h] (5.5 credits)2q (in French)	Sonia Collin, Jacqueline Marchand
BIR1319	Colloïdal and surface chemistry[30h] (2.5 credits)2q (in French)	Christine Dupont, Paul Rouxhet

BIR13E : option in "Environment"

Sciences and matter and process engineering

BIR1312	Introduction to analytical chemistry[30h] (2.5 credits)2q (in French)	Joseph Dufey, Yves Dufrêne, Yves Dufrêne
BIR1313	Integrated exercises in soil and water chemistry[30h] (2.5 credits)2q (in French)	Bruno Delvaux, Joseph Dufey, Yves Dufrêne

Life Sciences

BIR1325	Physiologie du développement et systématique des plantes d'intérêt agronomique[30h+7.5h] (3 credits)2q (in French)	Pierre Bertin (coord.), Jean-François Ledent, Stanley Lutts

Globe and Ecosystems Sciences

BIR1331	Applied ecology[30h+7.5h] (3 credits)1q (in French)	Alain Peeters
BIR1332	Soil sciences[30h+7.5h] (3 credits)1q (in French)	Bruno Delvaux, Joseph Dufey
BIR1333	Bioclimatology[15h+7.5h] (2 credits)1q (in French)	Thierry Fichefet, Guy Schayes (supplée Jean-Pascal van Ypersele de Strihou), Jean-Pascal van Ypersele de Strihou
BIR1334	Introduction to forestry sciences[30h+7.5h] (3 credits)2q (in French)	Quentin Ponette
BIR1335	Field excursions in pedology, agricultural ecology and forestry[22.5h] (2 credits)1+2q (in French)	Bruno Delvaux, Joseph Dufey, Alain Peeters

Human Sciences

BIR1343	Economy of natural resources and the environment[37.5h+7.5h] (3.5 credits)2q (in French)	Frédéric Gaspart