

## Faculty of Sciences



BIOL2

Licence en sciences biologiques (Diploma of the Second Cycle (Licence) in Biological Sciences )



### Programme management

BIOL Département de biologie

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### Study objectives

Living matter is studied from the perspective of time (evolution) and space (biogeography), in its diversity (from micro-organisms to man), and on its different levels of organisation (from molecular biology to ecology). The training programme takes the form of lectures, seminars, practical tasks, personal pieces of work and periods of field experience. A project involving personal research is carried out in the context of the end of course thesis. Job possibilities are to be found mainly in the form of secondary school teaching and biomedical and biotechnological research within organisations concerned by the preservation and management of the environment.

### Admission conditions

The second cycle of university studies ("licence") in Biology is accessible to holders of the diploma of the first cycle of university studies ("candidature") in Biological Sciences, as well as to "candidats" in Medical or Biomedical Sciences, or another "candidature" diploma recognised as being equivalent, subject to a modified programme. The equivalence is determined by the Academic Secretary of the Faculty of Sciences.

### Admission procedure

The regular conditions and admission procedures are detailed in the "General information" section of the WEB page : <http://www.ucl.ac.be/etudes/programme.html>

### General structure of the programme

The first year of the programme (BIOL21) comprises a core syllabus combining the two orientations : molecular, cellular and human biology (BIOL21a), and the biology of organisms and populations(BIOL21b). In each orientation, the student is encouraged to choose between two courses offered alternatively. The second year comprises a core syllabus, an end of course thesis, menus following five orientations [molecular and cellular biology (BIOL22.1), human biology (BIOL22.2), animal biology (BIOL22.3), vegetal biology (BIOL22.4), ecology (BIOL22.5)], and 60 hours of options (40 hours in BIOL22.1) to be chosen in concertation with the promoter of the thesis. The student will choose the promoter for his thesis in agreement with the Department ; if the promoter is not a member of the BIOL Department or is not approved by the Interfaculty Committee of Human Biology, a member of the BIOL Department will have to act as garantor.

### Programme content

BIOL21 First year

*Reminder : to be eligible for enrolment for the study year, the student must have followed the apprenticeship in Marine Biology (BIOL1200)*

#### Core courses

SC2140 Questions of religious sciences[15h] (1 credits) (in French) José Reding

*This course will be followed in the 1st or 2nd year of the " licence", according to choice.*

ANGL2464 INTEGRATED SEMINARS [VETE 13][25h] (2 credits) Colleen Starrs

*This course is followed by students who have either failed or who have not done the test in oral expression in English.*

BIOL2113 Histology and animal cell biology[30h+18h] (5 credits) (in Bernard Knoops (coord.), Philippe van

	French)	den Bosch Sanchez de Aguilar
<u>BIOL2121</u>	Physiologie générale[60h+30h] (5 credits) (in French)	Patrick Gilon, Jean-François Rees
<i>partim : [45h-15h]</i>		
<u>CHIM2190</u>	Metabolic biochemistry B[22.5h+15h] (4.5 credits) (in French)	Yves-Jacques Schneider
<u>BIOL2137</u>	Molecular genetics[30h+15h] (3.5 credits) (in French)	Jean Delcour, Bernard Hallet
<i>The students who have chosen the "biology of organisms and populations" orientation will not do the practical exercises.</i>		
<u>BIOL2150</u>	Biometrics[30h+30h] (5 credits) (in French)	Eric Le Boulengé
<u>BIOL2180</u>	Plant physiology[45h+15h] (5 credits) (in French)	Jean-Marie Kinet, Jean-François Ledent
<u>VETE1300</u>	Integrated Seminars[25h] (2 credits) (in English)	Jean Delcour, Philippe Denis, André Moens, René Rezsóhazy (coord.), Yves-Jacques Schneider, Colleen Starrs, Renate Wesselingh
<b>a) Molecular, Cellular and Human Biology</b>		
<u>BIOL2131A</u>	Microbiologie[45h+15h] (6 credits) (in French)	Claude Bragard, Jacques Mahillon
<u>BIOL2133</u>	Animal embryology[30h+15h] (3.5 credits) (in French)	René Rezsóhazy
<u>BIOL2161A</u>	Immunologie[30h+15h] (3 credits) (in French)	Jean-Paul Dehoux
<u>BIOL2134</u>	Animal physiological biochemistry[15h] (2.5 credits) (in French)	Yves-Jacques Schneider
<u>BIOL2138</u>	Integrated seminar in molecular genetics[45h] (3.5 credits) (in French)	Jean Delcour
<u>BIOL2139</u>	Mammal physiology and morphology[75h+60h] (10.5 credits) (in French)	Jean Lebacqz, Jean-François Rees, Claude Remacle, Philippe van den Bosch Sanchez de Aguilar
<b>b) Biology of Organisms and Populations</b>		
<u>BIOL2131B</u>	Microbiologie[30h+15h] (4 credits) (in French)	Claude Bragard, Jacques Mahillon
<u>BIOL2141</u>	Systematics A) Principles and methods B) Plant biodiversity[22.5h+22.5h] (3 credits) (in French)	Michel Baguette, Thierry Hance (coord.), Anne-Laure Jacquemart, Eric Le Boulengé, Renate Wesselingh
<u>BIOL2191</u>	Individuals and populations ecology[45h] (3.5 credits) (in French)	Michel Baguette, Thierry Hance, Anne-Laure Jacquemart (coord.), Eric Le Boulengé, Olivier Raspé (supplée Anne-Laure Jacquemart), Hans Van Dyck, Renate Wesselingh
<u>GEOG2160</u>	Biogeography[45h+24h] (5 credits) (in French)	Michel Baguette, Renate Wesselingh
<i>partim : (30 hours)</i>		
<u>BIOL2193</u>	Practical work in ecology and biogeography[0h+82.5h] (7.5 credits) (in French)	Michel Baguette, Thierry Hance, Anne-Laure Jacquemart, Eric Le Boulengé, Renate Wesselingh (coord.)
<u>BIOL2183</u>	Plant morphogenesis[45h+37.5h] (7.5 credits) (in French)	Jean-Marie Kinet, André Lejeune
<i>or</i>		
<u>BIOL2181</u>	Animal morphology and physiology[45h+37.5h] (7.5 credits) (in French)	Jean-François Rees, Claude Remacle, Philippe van den Bosch Sanchez de Aguilar
<u>BIOL2142</u>	Mycetes morphology and physiology[15h+15h] (2 credits) (in French)	Anne-Marie Corbisier
<u>BRAI2101</u>	Population and quantitative genetics[52.5h+0h] (4 credits) (in French)	Philippe Baret, Xavier Draye
<i>[partim : 15 hours]</i>		
<b>Special programme for the candidates in Medical Sciences</b>		
<b>Orientation a) (Molecular, Cellular and Human Biology)</b>		
<u>BIR1130</u>	Introduction to Earth sciences[45h+30h] (6 credits) (in French)	Joseph Dufey, Philippe Sonnet
<i>[partim : 30 hours]</i>		
<u>BIO1231</u>	Complements of animal biology[75h+70h] (12 credits) (in French)	Thierry Hance, Bernard Knoops, Claude Remacle (coord.), Philippe van den Bosch Sanchez de Aguilar, Hans Van Dyck
<i>[partim : A) Invertebrates 30 hours]</i>		
<u>BIO1312</u>	Field work[0h+60h] (4 credits) (in French)	N.
<u>BIO1241</u>	Complements of plant biology[55h+30h] (7 credits) (in French)	Jean-Marie Kinet, Stanley Lutts

*partim : A [22.5 hours-15 hours] and C [22.5 hours-15 hours]*

<u>MAT1275</u>	Statistics in the natural sciences[30h+30h] (5 credits) (in French)	Eric Le Boulengé
<i>or</i>		
<u>VETE1262</u>	Biostatistics[45h+45h] (7 credits) (in French)	Philippe Lambert
<u>MAT1111</u>	General Mathematics[90h+60h] (13 credits) (in French)	Marielle Cherpion, Camille Debiève, Patrick Habets, Enrico Vitale
<u>BIO1251</u>	Introductory ecology[60h+15h] (6 credits) (in French)	Michel Baguette (coord.), Thierry Hance, Anne-Laure Jacquemart, Eric Le Boulengé, Hans Van Dyck, Renate Wesselingh
<u>BIOL2150</u>	Biometrics[30h+30h] (5 credits) (in French)	Eric Le Boulengé
<i>This course will not be followed by the students who have chosen the VETE1362 course.</i>		
<u>BIOL2180</u>	Plant physiology[45h+15h] (5 credits) (in French)	Jean-Marie Kinet, Jean-François Ledent
<u>BIOL2137</u>	Molecular genetics[30h+15h] (3.5 credits) (in French)	Jean Delcour, Bernard Hallet
<u>BIOL2138</u>	Integrated seminar in molecular genetics[45h] (3.5 credits) (in French)	Jean Delcour
<u>VETE1300</u>	Integrated Seminars[25h] (2 credits) (in English)	Jean Delcour, Philippe Denis, André Moens, René Rezsóhazy (coord.), Yves-Jacques Schneider, Colleen Starrs, Renate Wesselingh
<u>ANGL2464</u>	INTEGRATED SEMINARS [VETE 13][25h] (2 credits)	Colleen Starrs
<i>This course is followed by the students who have failed or who have not done the oral expression test in English.</i>		

## BIOL22 Second year

### Core courses

<u>SC2001</u>	Introduction to contemporary philosophy[30h] (2 credits) (in French)	Laurent de Brier
<i>or</i>		
<u>SC2220</u>	Philosophy of science[30h] (2 credits) (in French)	Michel Ghins
<i>or</i>		
<u>FILO2003</u>	Ethics in the Natural Sciences[15h+15h] (2 credits) (in French)	Philippe Baret, Bernard Feltz, Thierry Hance
<u>BIOL2201</u>	Biological evolution[30h] (2 credits) (in French)	Anne-Marie Corbisier, Thierry Hance
<u>BIOL2998</u>	Thesis tutorial[30h] (2 credits) (in English)	Jean Delcour, Stanley Lutts, Annick Sonck
<u>SC2140</u>	Questions of religious sciences[15h] (1 credits) (in French)	José Reding
<i>This course will be followed in the 1st or 2nd year of the "licence," according to choice.</i>		

### 1. Molecular and Cellular Biology

*The students will choose a minimum of 200 hours from the courses listed below, completed by 40 hours of options, in concertation with their thesis promoter.*

<u>BIOL2211</u>	Microbial genetics[30h+15h] (3.5 credits) (in English)	Anne-Marie Corbisier, Bernard Hallet
<u>BIOL2212</u>	Development genetics[30h+15h] (3.5 credits) (in French)	René Rezsóhazy
<u>BIOL2222</u>	Cytophysiologie[30h+30h] (4 credits) (in French)	Claude Remacle, Yves-Jacques Schneider
<u>BRMC2101</u>	Genetic engineering[22.5h+15h] (3 credits) (in French)	Marc Boutry
<u>BIOL2223</u>	Neurobiology[30h] (3 credits) (in French)	Bernard Knoops, Jean-Noël Octave, Philippe van den Bosch Sanchez de Aguilar
<u>BIOL2226</u>	Cellular pharmacology[30h] (3 credits) (in French)	Yves-Jacques Schneider
<u>BIOL2283</u>	Plant molecular and cellular biology[30h+15h] (3.5 credits) (in French)	François Chaumont, François Chaumont
<u>BIOL2284</u>	Animal molecular and cellular biology[30h+15h] (3.5 credits) (in French)	Bernard Knoops, René Rezsóhazy
<u>BIOL2285</u>	Bacterial molecular and cellular biology[30h+15h] (3.5 credits) (in French)	Bernard Hallet, Pascal Hols
<u>BIOL2286</u>	Genomics[45h+30h] (3 credits) (in French)	François Chaumont, Françoise Foury, Pascal Hols, Bernard Knoops, René Rezsóhazy
<u>BIOL2272</u>	Parasitology[15h+15h] (2.5 credits) (in French)	Frederik Opperdoes
<u>CHIM2382</u>	Enzymology and biotechnology I[22.5h] (2.5 credits) (in French)	Robert Crichton, Jacques Fastrez

French)

**2. Human Biology**

General Pathology [60 h]

*The courses which are grouped together under this heading will be the object of a common exam.**Courses situated at UCL- Bruxelles*

<u>MED1300</u>	Basic pathology and introduction to medical semeiology[30h] (3 credits) (in French)	Pierre Courtoy
<u>FARM2290</u>	General pathophysiology[30h] (3 credits) (in French)	Olivier Feron, Michel Lambert (coord.)

**Pharmacology and General Toxicology (30h)***The courses which are grouped together under this heading will be the object of a common exam**Courses taught at UCL-Bruxelles*

<u>PHAR2161</u>	Pharmacologie générale[15h] (1.5 credits) (in French)	Emmanuel Hermans
<i>or</i>		
<u>PHAR1230</u>	General pharmacology[25h] (3 credits) (in French)	Jean-Marie Maloteaux
<u>FARM2272</u>	Toxicology[30h] (3 credits) (in French)	Pedro Buc Calderon

*[partim : 15 hours]**or**Courses taught in Louvain-la-Neuve*

<u>BRTE2201</u>	Human and animal toxicology[22.5h] (2 credits) (in French)	Alfred Bernard
<u>VIDE1234</u>	A préciser (in French)	

**Biochemical and Cellular Regulations and their Pathologies***(90 hours, according to choice; certain subjects may be the object of a common exam)**Courses taught at UCL-Bruxelles*

<u>BCMM2140</u>	Molecular cell biology of hormonal regulation[30h] (3 credits) (in French)	Stefan Constantinescu, Frédéric Lemaigre
<u>BCHM2120</u>	Supplementary Biochemistry[30h] (2 credits) (in French)	Luc Bertrand, Mark Rider
<u>BCMM2130</u>	Biochemistry of Metabolic Diseases[30h] (2 credits) (in French)	Marie-Cécile Nassogne, Marie-Françoise Vincent
<u>MIGE3140</u>	Advanced Immunology[30h] (3 credits) (in French)	Pierre Coulie (coord.), Jean-Paul Coutelier, Dominique Latinne, Jean-Christophe Renault, Benoît Van den Eynde, Pierre van der Bruggen

*Courses taught in Louvain-la-Neuve*

<u>BIOL2226</u>	Cellular pharmacology[30h] (3 credits) (in French)	Yves-Jacques Schneider
<u>BRTE2201</u>	Human and animal toxicology[22.5h] (2 credits) (in French)	Alfred Bernard
<u>BIOL2222</u>	Cytophysiology[30h+30h] (4 credits) (in French)	Claude Remacle, Yves-Jacques Schneider
<u>BIOL2284</u>	Animal molecular and cellular biology[30h+15h] (3.5 credits) (in French)	Bernard Knoop, René Rezsöhazi
<u>CHIM2381</u>	Complements of biochemistry II[22.5h] (2.5 credits) (in French)	Robert Crichton (coord.), Pierre De Meyts, Louis Hue

**3. Animal Biology**

<u>BIOL2161</u>	Immunology[45h+15h] (in French)	Jean-Paul Dehoux
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*[partim : 30 hours-15 hours]*

<u>BIOL2133</u>	Animal embryology[30h+15h] (3.5 credits) (in French)	René Rezsöhazi
<u>BIOL2287</u>	Comparative animal physiology and morphology[60h+45h] (11 credits) (in French)	Jérôme Mallefet, Claude Remacle

**4. Vegetal Biology**

<u>BIOL2252</u>	Plant biotechnology[20h+10h] (3 credits) (in French)	Stanley Lutts
<u>BIOL2281</u>	Plant's interaction with environment[30h+15h] (3.5 credits) (in French)	Henri Batoko, Stanley Lutts
<u>BIOL2283</u>	Plant molecular and cellular biology[30h+15h] (3.5 credits) (in French)	François Chaumont, François Chaumont
<u>BIOL2282</u>	Biologie du développement végétal[45h+30h] (6 credits) (in French)	Henri Batoko, Jean-Marie Kinet, Stanley Lutts
<u>BRMC2101</u>	Genetic engineering[22.5h+15h] (3 credits) (in French)	Marc Boutry

**5. Ecology**

<u>BIOL2261</u>	Evolutionary ecology[30h] (3 credits) (in French)	Renate Wesselingh
<u>BIOL2262</u>	Synecology[30h+30h] (4.5 credits) (in French)	Thierry Hance, Anne-Laure Jacquemart, Renate Wesselingh (supplée Anne-Laure Jacquemart)
<u>BIOL2263</u>	Biomes et biosphère[30h+40h] (5.5 credits) (in French)	Michel Baguette, Thierry Hance,

<u>BREF2105</u>	Phytosociology[15h+30h] (3.5 credits) (in French)	Anne-Laure Jacquemart, Eric Le Boulengé, Hans Van Dyck, Renate Wesselingh (coord.) Freddy Devillez, Freddy Devillez (supplée Anne-Laure Jacquemart), Anne-Laure Jacquemart Michel Baguette, Eric Le Boulengé
<u>BIOL2265</u>	experimental ecology[40h] (3 credits) (in French)	
<b>Options</b>		
<u>VETE1230</u>	Domestics Animals Ethology[30h+15h] (5 credits) (in French)	René Zayan
<u>BIOL2275</u>	Marine biology[30h] (2.5 credits) (in French)	Jérôme Mallefet
<u>BRTE2201</u>	Human and animal toxicology[22.5h] (2 credits) (in French)	Alfred Bernard
<u>BIOL2276</u>	Complements of marine biology[22.5h] (2 credits) (in French)	Jean-François Rees
<u>BRPP2102</u>	Entomology applied to agriculture[45h+15h] (5 credits) (in French)	Claude Bragard, Thierry Hance, Henri Maraite, Hans Van Dyck
<u>BIOL2290</u>	Plant physiological biochemistry[15h+15h] (2.5 credits) (in French)	Stanley Lutts

### Special Programme for the candidates in Medical Sciences

#### Human Biology

*The students will follow the normal programme but will be dispensed from taking the following courses which will be replaced by a volume of credits equivalent to the options :*

<u>MED1300</u>	Basic pathology and introduction to medical semeiology[30h] (3 credits) (in French)	Pierre Courtoy
<u>FARM2290</u>	General pathophysiology[30h] (3 credits) (in French)	Olivier Feron, Michel Lambert (coord.)
<u>FARM2272</u>	Toxicology[30h] (3 credits) (in French)	Pedro Buc Calderon
<u>BRTE2201</u>	Human and animal toxicology[22.5h] (2 credits) (in French)	Alfred Bernard
<u>PHAR1230</u>	General pharmacology[25h] (3 credits) (in French)	Jean-Marie Maloteaux

#### Evaluation

The courses are the object of a written or oral exam, or the presentation of a personal project, depending on the case. The periods of apprenticeship and the project will be subject to a report of which the evaluation will count in the final exam mark. The end of course thesis will be presented and defended before a jury and count for half of the average of the marks in the deliberation.

#### Positioning of the degree within the University cursus

The university graduates in Biology may complete their studies with a higher study diploma in Sciences (DEA). They are also entitled access to the PhD in Sciences, as well as to other complementary studies (Administration and Management, Environment Studies,...).