

## Two-year master program

Ce master est réalisé en collaboration avec la Faculté des Sciences appliquées

### First Year

#### Compulsory courses

INFO0098-2	<i>Introduction to the modeling of biological systems</i> - Patrick MEYER - [25h Mon. WS]	Q2	25	-	[+]	6
ELEN0062-1	<i>Applied Inductive Learning</i> (english language) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	Q1	30	5	[+]	6
GBIO0009-1	<i>Bioinformatics</i> (english language) - Kristel VAN STEEN	Q1	30	30	-	6

#### Optional courses

Choose one module among the following, according to the student's former training and in agreement of the Jury :

#### Module for the Bachelors in Computer Science

##### Refresher course

BIOL0203-1	<i>Introduction to cell biology</i> - Marc THIRY	Q1	20	-	-	2
CHIM0632-1	<i>Chemistry</i> - André LUXEN		30	30	-	6
BIOC0002-2	<i>Biochemistry</i> - Paulette CHARLIER	Q2	30	40	-	7
CHIM0623-1	<i>Physical chemistry applied to biochemistry</i> - Edwin DE PAUW	Q1	10	10	-	2
GENE0210-3	<i>Genetics and molecular biology</i> - Marc MULLER	Q1	30	40	-	7

##### Specialisation courses

INFO0004-2	<i>Object-oriented programming projects</i> (english language) - Laurent MATHY - [90h Proj.]	Q1	20	-	[+]	6
INFO0063-1	<i>Object-oriented software engineering</i> (english language) - Bernard BOIGELOT - [30h Proj.]	Q1	30	24	[+]	6
INFO0016-1	<i>Introduction to the theory of computation</i> (english language) - Pierre WOLPER	Q1	30	30	-	6

#### Module for the Bachelors in Chemical Sciences

##### Refresher course

INFO0062-1	<i>Object-Oriented Programming</i> - Bernard BOIGELOT - [20h Proj.]	Q2	30	24	[+]	6
INFO0902-1	<i>Data structures and algorithms</i> - Pierre GEURTS - [40h Proj.]	Q2	30	20	[+]	6
INFO0009-1	<i>Database (general organisation)</i> - Pierre WOLPER - [25h Proj.]	Q2	30	25	[+]	6
INFO0016-1	<i>Introduction to the theory of computation</i> (english language) - Pierre WOLPER	Q1	30	30	-	6

##### Specialisation courses

BIOC0719-2	<i>Enzymology</i> - André MATAGNE	Q1	15	25	-	5
BIOC0712-1	<i>Interactions in biological macromolecules</i> - Moreno GALLEN	Q2	20	20	-	5
GENE0001-5	<i>Genetic engineering</i> - Jacques DOMMES	Q1	20	-	-	3
GENE0210-4	<i>Genetics and molecular biology</i> - Marc MULLER	Q1	20	20	-	5

#### Module for the Bachelors in Biological Sciences

##### Refresher course

INFO0062-1	<i>Object-Oriented Programming</i> - Bernard BOIGELOT - [20h Proj.]	Q2	30	24	[+]	6
INFO0902-1	<i>Data structures and algorithms</i> - Pierre GEURTS - [40h Proj.]	Q2	30	20	[+]	6
INFO0009-1	<i>Database (general organisation)</i> - Pierre WOLPER - [25h Proj.]	Q2	30	25	[+]	6
MATH0232-4	<i>Complement of General Mathematics</i> - Françoise BASTIN		25	20	-	6

##### Specialisation courses

BIOC0719-2	<i>Enzymology</i> - André MATAGNE	Q1	15	25	-	5
BIOC0712-1	<i>Interactions in biological macromolecules</i> - Moreno GALLEN	Q2	20	20	-	5

GENE0001-5	<i>Genetic engineering</i> - Jacques DOMMES	Q1	20	-	-	<b>3</b>
GENE0448-2	<i>Phylogenetic methods</i> - Denis BAURAIN - [30h Mon. WS]	Q1	20	-	[+]	<b>5</b>

In accordance with the Jury, any course already taken by students as part of curriculum will be replaced by an equivalent course.

## Second year

### Compulsory courses

STAT1750-1	<i>Multivariate statistical analysis (english language)</i> - Adelin ALBERT, Nadia DARDENNE	Q1	10	10	-	<b>2</b>
CHIM0624-1	<i>Structure of biological macromolecules (general experimental aspects) : part a</i> - Paulette CHARLIER, Christian DAMBLON, Edwin DE PAUW	Q1	20	10	-	<b>3</b>
GBIO0015-1	<i>A tour in genetic epidemiology (english language)</i> - Kristel VAN STEEN	Q2	15	15	-	<b>3</b>
GBIO0017-1	<i>Parametric identification of biological models</i> - Dominique TOYE	Q1	10	10	-	<b>2</b>
SMEM0023-1	<i>Final thesis</i> - COLLÉGIALITÉ	-	-	-	-	<b>20</b>

### Research Focus

#### Compulsory courses

CHIM0625-1	<i>Molecular mechanics and molecular dynamics</i> - Eric SAUVAGE	Q1	10	10	-	<b>2</b>
GENE0442-1	<i>Genomics</i> - Michel GEORGES		10	10	-	<b>2</b>
GBIO0007-1	<i>Gene sequencing and protein analysis : part a</i> - Bernard JORIS	Q1	10	10	-	<b>2</b>
INFO0114-1	<i>Programming project</i> - Pierre GEURTS	TA	-	50	-	<b>5</b>
STRA0014-1	<i>Documentation and seminars</i> - Eric SAUVAGE, Louis WEHENKEL	TA	-	-	-	<b>3</b>

#### Optional courses

#### Choose one module from :

##### Structural Biology Module

CHIM0627-1	<i>Structure of biological macromolecules (experimental aspects) : part b1 (RX, NMR)</i> - Paulette CHARLIER, Christian DAMBLON	Q1	15	10	-	<b>3</b>
CHIM0628-1	<i>Structure of biological macromolecules (experimental aspects) part b2 (mass spectrometry)</i> - Edwin DE PAUW	TA	15	10	-	<b>3</b>
CHIM0629-1	<i>Structure of biological macromolecules (experimental aspects) : part b3 (AFM)</i> - AnneSophie DUWEZ	Q1	10	10	-	<b>2</b>

Choose courses totalling 8 ECTS from the following :

- [...] the courses of the Systemic Biology module
- [...] the courses on the Modelisation of macroscopic ensembles module
- [...] List of complementary courses

##### Systemic Biology Module

GBIO0016-1	<i>Introduction to systems and synthetic biology (english language)</i> - Eric BULLINGER, Bernard JORIS	Q2	30	30	-	<b>5</b>
GBIO0021-2	<i>Laboratory project</i> - Thomas DESAIVE, Liesbet GERIS	Q2	-	40	-	<b>3</b>

Choose courses totalling 8 ECTS from the following :

- [...] the courses of the Structural Biology module.
- [...] the courses on the Modelisation of macroscopic ensembles module
- [...] List of complementary courses

##### Modelling of Macroscopic Systems Module

SYST0019-1	<i>Modelling of chemical systems</i> - Dominique TOYE	Q2	10	10	-	<b>2</b>
OCEA0073-1	<i>Numerical methods in geophysics, Part 1</i> - JeanMarie BECKERS	Q2	15	30	-	<b>4</b>
GENE0446-2	<i>Population genetics</i> - Johan MICHAUX, Claire REMACLE	Q1	25	15	-	<b>4</b>

Choose courses totalling 7 ECTS from the following :

- [...] the courses of the Structural Biology module.  
[...] the courses of the Systemic Biology module  
[...] List of complementary courses

#### Complementary courses

CHIM0630-1	<i>Proteomics</i> - Edwin DE PAUW	TA	10	10	-	<b>2</b>
GBIO0011-1	<i>Modeling of biological systems</i> - Pierre DAUBY, Liesbet GERIS	Q2	30	30	-	<b>5</b>
BIOC0714-1	<i>Production of recombinant proteins in eukaryotic systems</i> - Jacques DOMMES	Q2	15	-	-	<b>2</b>
GBIO0019-1	<i>Introduction to synthetic biology (english language)</i> - Frank DELVIGNE, Bernard JORIS	Q2	10	20	-	<b>3</b>
[...]	A course worth a maximum of 5 credits, chosen in agreement with Jury, from the programme of courses of the Faculty of Science, the Faculty of Applied Sciences, the Faculty of Medicine and the Faculty of Veterinary Medicine at ULg, or from the programme of courses for the second year of the Masters in Bioinformatics and Modelling organised in another university belonging to the French-speaking community in Belgium (ULB)					

In accordance with the Jury, any course already taken by students as part of curriculum will be replaced by an equivalent course.

### Second year - Adjusted programme for the holders of a Master's degree in biochemistry and molecular and cell biology, professional focus in bioinformatics and medelling

#### Compulsory courses

MATH0232-4	<i>Complement of General Mathematics</i> - Françoise BASTIN		25	20	-	<b>6</b>
CHIM0625-1	<i>Molecular mechanics and molecular dynamics</i> - Eric SAUVAGE	Q1	10	10	-	<b>2</b>
ELEN0062-1	<i>Applied Inductive Learning (english language)</i> - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	Q1	30	5	[+]	<b>6</b>
INFO0062-1	<i>Object-Oriented Programming</i> - Bernard BOIGELOT - [20h Proj.]	Q2	30	24	[+]	<b>6</b>
INFO0902-1	<i>Data structures and algorithms</i> - Pierre GEURTS - [40h Proj.]	Q2	30	20	[+]	<b>6</b>
STAT1750-1	<i>Multivariate statistical analysis (english language)</i> - Adelin ALBERT, Nadia DARDENNE	Q1	10	10	-	<b>2</b>
SMEM0023-1	<i>Final thesis</i> - COLLÉGIALITÉ		-	-	-	<b>20</b>

#### Optional courses

Choose one module from :

##### Structural Biology Module

CHIM0627-1	<i>Structure of biological macromolecules (experimental aspects) : part b1 (RX, NMR)</i> - Paulette CHARLIER, Christian DAMBLON	Q1	15	10	-	<b>3</b>
CHIM0628-1	<i>Structure of biological macromolecules (experimental aspects) part b2 (mass spectrometry)</i> - Edwin DE PAUW	TA	15	10	-	<b>3</b>
CHIM0629-1	<i>Structure of biological macromolecules (experimental aspects) : part b3 (AFM)</i> - AnneSophie DUWEZ	Q1	10	10	-	<b>2</b>

Choose courses totalling 4 ECTS from the following :

- [...] the courses of the Systemic Biology module  
[...] the courses of the Module modeling of macroscopic ensembles  
[...] List of complementary courses

##### Systemic Biology Module

GBIO0021-2	<i>Laboratory project</i> - Thomas DESAIVE, Liesbet GERIS	Q2	-	40	-	<b>3</b>
GBIO0016-1	<i>Introduction to systems and synthetic biology (english language)</i> - Eric BULLINGER, Bernard JORIS	Q2	30	30	-	<b>5</b>

Choose courses totalling 4 ECTS from the following :

- [...] the courses of the Structural Biology module.

[...] the courses on the Modelisation of macroscopic ensembles module  
 [...] List of complementary courses

**Modelling of Macroscopic Systems Module**

SYST0019-1	<i>Modelling of chemical systems</i> - Dominique TOYE	Q2	10	10	-	<b>2</b>
OCEA0073-1	<i>Numerical methods in geophysics, Part 1</i> - JeanMarie BECKERS	Q2	15	30	-	<b>4</b>
GENE0446-2	<i>Population genetics</i> - Johan MICHAUX, Claire REMACLE	Q1	25	15	-	<b>4</b>

Choose courses totalling 2 ECTS from the following :

[...] the courses of the Structural Biology module.  
 [...] the courses of the Systemic Biology module  
 [...] List of complementary courses

**Complementary courses**

CHIM0630-1	<i>Proteomics</i> - Edwin DE PAUW	TA	10	10	-	<b>2</b>
GBIO0011-1	<i>Modeling of biological systems</i> - Pierre DAUBY, Liesbet GERIS	Q2	30	30	-	<b>5</b>
BIOC0714-1	<i>Production of recombinant proteins in eukaryotic systems</i> - Jacques DOMMES	Q2	15	-	-	<b>2</b>
GBIO0019-1	<i>Introduction to synthetic biology</i> (english language) - Frank DELVIGNE, Bernard JORIS	Q2	10	20	-	<b>3</b>

[...] A course worth a maximum of 5 credits, chosen in agreement with Jury,  
 from the programme of courses of the Faculty of Science, the Faculty of  
 Applied Sciences, the Faculty of Medicine and the Faculty of Veterinary  
 Medicine at ULg, or from the programme of courses for the second year of  
 the Masters in Bioinformatics and Modelling organised in another  
 university belonging to the French-speaking community in Belgium (ULB)

In accordance with the Jury, any course already taken by students as part of curriculum will be replaced by an equivalent course.