

#### Block view of the study programme

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#### Block 1

*Notice* : The juries for the Masters in Bioengineering reserve the right not to organise specific classes if they are chosen by fewer than five students.

#### Compulsory courses

##### Periods 3 and 4

##### AGRO1.30 Core curriculum Q2

MANA0004-1	<i>Portfolio (Master)</i> - Yves BECKERS, Hugues CLAESSENS, Gilles COLINET, Aurore DEGRÉ, Dorothée GOFFIN - [24h AUTR]	Q2	-	-	[+]	2
LANG2952-1	<i>Practice of specialized English in agriculture: Part 1 (level B2+)</i> - Sophie DEPOTERRE, Estelle MAYARD - Suppl : Fiona THEWISSEN - [36h AUTR]	TA	-	12	[+]	4

**Corequisite :**  
 VEGE0041-1 - Biologie et écologie des bioagresseurs  
 GEST3019-2 - Food policies and strategies

#### Optional courses

##### Single focus

##### Professional Focus

##### Periods 1 and 2

##### AGRO1.11 Rural economics and European and international policy.

ECON0942-1	<i>Rural economics and farm business management</i> - Philippe BURNY, Thomas DOGOT - [8h FT]	Q1	25	15	[+]	5
GEST3019-2	<i>Food policies and strategies (english language)</i> - Hossein AZADI - [3h FT]	Q1	9	15	[+]	3

**Corequisite :**  
 LANG2952-1 - Pratique de l'anglais de spécialité en sciences agronomiques : partie 1 (niveau B2+)

STAT1213-1	<i>Multivariate analysis I: data exploration and structuring</i> - Yves BROSTAUX	Q1	9	9	-	2
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##### AGRO1.12 General crop husbandry

VEGE0041-1	<i>Pest biology and ecology</i> - <i>Introduction</i> - Caroline DE CLERCK, Frédéric FRANCIS, Eric HAUBRUGE, Sébastien MASSART, François VERHEGGEN - [8h AUTR] - <i>Depth notions</i> - Caroline DE CLERCK, Frédéric FRANCIS, Eric HAUBRUGE, Sébastien MASSART, François VERHEGGEN - [10h AUTR]	Q1	34	6	[+]	5
			-	-	[+]	

**Corequisite :**  
 LANG2952-1 - Pratique de l'anglais de spécialité en sciences agronomiques : partie 1 (niveau B2+)

VEGE0024-1	<i>General and applied phytotechnology in temperate and tropical settings</i> - Nicolas DESOIGNIES, Benjamin DUMONT - [5h FT]	Q1	39	4	[+]	5
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##### AGRO1.13 Livestock systems

ANIM0029-1	<i>Foundations and dynamics of livestock systems</i> - Yves BECKERS, Jérôme BINDELLE, Martine SCHROYEN	Q1	54	-	-	6
ANIM0030-1	<i>Animal recording, breeding and reproduction in modern sustainable animal production system (english language)</i> - Nicolas GENGLER, Martine SCHROYEN - [4h FT]	Q1	22	10	[+]	4

**Corequisite :**

LANG2952-1 - Pratique de l'anglais de spécialité en sciences agronomiques : partie 1 (niveau B2+)

**Choose one module from the courses with options no. 1 (period 3):**

#### AGRO1.32 Livestock systems engineering

ANIM0017-1	<i>Biotechnology aspects of livestock systems</i> - Yves BECKERS, Jérôme BINDELLE, Martine SCHROYEN - [9h FT]	Q2	27	-	[+]	4
ANIM0025-1	<i>Feeding dairy cow</i> - Yves BECKERS	Q2	9	9	-	2

#### AGRO 1.33 Agricultural policy, sociology and rural legislation

SOCI2234-1	<i>Construction of public policies</i> - AnneCatherine DALCQ, Juliette RENARD	Q2	18	-	-	2
ECON2247-1	<i>Agricultural policy</i> - Philippe BURNY - [4h SEM]	Q2	9	5	[+]	2
DROI0967-1	<i>Rural law</i> - Gaëtan GOISSE	Q2	18	-	-	2

#### AGRO 1.34 Tropical agroecology

VEGE0036-1	<i>Tropical agroecology</i>	Q2				6
	- <i>Introduction</i> - Ludivine LASSOIS - Suppl : N... - [20h FT]		-	-	[+]	
	- <i>Depth notions: part 1</i> - Ludivine LASSOIS - Suppl : Nicolas DESOIGNIES, N...		8	11	-	
	- <i>Depth notions: part 2</i> - Ludivine LASSOIS - Suppl : Nicolas DESOIGNIES, N...		8	10	-	

**Choose one module from the courses with options no. 2 (period 3):**

#### AGRO 1.35 Biochemistry and animal pathology

ANIM0012-1	<i>Farm animal immunology and pathology</i> (english language) - Martine SCHROYEN	Q2	18	-	-	2
	<b>Corequisite :</b> LANG2952-1 - Pratique de l'anglais de spécialité en sciences agronomiques : partie 1 (niveau B2+)					
ANIM0005-1	<i>Functional biochemistry in health and disease</i> (english language) - Martine SCHROYEN	Q2	9	9	-	2
	<b>Corequisite :</b> LANG2952-1 - Pratique de l'anglais de spécialité en sciences agronomiques : partie 1 (niveau B2+)					
ANIM0016-1	<i>Milk technology</i> - Mohamed AYADI - [2h FT]	Q2	15	3	[+]	2

#### AGRO 1.36 Economics of development

ECON2246-2	<i>Economics of developing countries</i> (english language) - Hossein AZADI - [16h SEM]	Q2	8	-	[+]	2
	<b>Corequisite :</b> LANG2952-1 - Pratique de l'anglais de spécialité en sciences agronomiques : partie 1 (niveau B2+)					
ECON2254-2	<i>Tropical markets</i> (english language) - Hossein AZADI	Q2	9	9	-	2
	<b>Corequisite :</b> LANG2952-1 - Pratique de l'anglais de spécialité en sciences agronomiques : partie 1 (niveau B2+)					
ECON2253-2	<i>Economics of development Seminar</i> - Hossein AZADI, Thomas DOGOT - [18h SEM]	Q2	-	-	[+]	2

#### AGRO 1.37 Innovative systems of plant production

VEGE0037-1	<i>Innovative system of plant production</i>	Q2				6
	- <i>Urban agriculture</i> - Haïssam JIAKLI		13	13	-	
	- <i>Developmental physiology applied to plant productions</i> - Pierre DELAPLACE - [6h FT]		12	-	[+]	
	- <i>Physical parameters control of plant productions in controlled conditions</i> - Vincent LEEMANS		9	-	-	

**Choisir 1 module parmi les cours à option n° 3 (période 4) :**

#### AGRO 1.41 Human - animal - society

ANIM0024-1	<i>Breeding system for agroecology</i> - Yves BECKERS, Jérôme BINDELLE - [3h FT]	Q2	9	6	[+]	2
ANIM0011-3	<i>Welfare and ethics in animal productions</i> (english language) - Nicolas GENGLER - [3h FT] <b>Corequisite :</b> LANG2952-1 - Pratique de l'anglais de spécialité en sciences agronomiques : partie 1 (niveau B2+)	Q2	9	6	[+]	2
ENVT3061-1	<i>Agrobiodiversity, ecosystemic and landscape services, Introduction</i> - Marc DUFRÈNE, Kevin MARÉCHAL - [8h AUTR]	Q2	16	-	[+]	2

#### AGRO 1.42 Systemic approach to plant production in temperate regions

VEGE0027-1	<i>Systematic approach to plant production in temperate regions</i> - <i>Plant sciences and different field crop and production species</i> - Benjamin DUMONT - [6h Ex.] - <i>Implementation of technical pathways under real conditions</i> - Benjamin DUMONT - [3h FT] - <i>Evaluation and optimisation of production systems</i> - Benjamin DUMONT	Q2	28	-	[+]	6
	<b>Corequisite :</b> VEGE0024-1 - Phytotechnie générale et appliquée en milieux tempérés et tropicaux					

#### Choose 1 optional module n°4 (period 4):

##### AGRO 1.43 Economic decision support

ECON2299-1	<i>Assistance in economic decision-making</i> - Yves BROSTAUX, Catherine CHARLES, Thomas DOGOT - [6h AUTR]	Q2	30	24	[+]	6
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##### AGRO1.44 Bromatology and the cultivation of animal fodder

ANIM0018-1	<i>Bromatology and grazing management</i> - Yves BECKERS, Jérôme BINDELLE - [7h FT]	Q2	37	13	[+]	6
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##### AGRO 1.45 Plant protection methods

VEGE0028-1	<i>Methods for managing plant health</i> - Frédéric FRANCIS, Olivier GUELTON, Eric HAUBRUGE, Haissam JIJAKLI, Ludivine LASSOIS, Sébastien MASSART, François VERHEGGEN	Q2	42	15	-	6
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#### Optional activities

RSTG0011-1	<i>Additional internship</i> - Aurore DEGRÉ	TA	-	-	-	5
HULG9547-1	<i>French course for IN mobility students (S1)</i> - N...	Q1	-	-	-	3
HULG9548-1	<i>French course for IN mobility students (S2)</i> - N...	Q2	-	-	-	3
HULG9546-1	<i>Erasmus: integration weeks</i> - N...	Q1	-	-	-	3

#### Block 2

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#### Compulsory courses

##### Periods 1 and 2

##### AGRO2.10 Group project

AGRO0020-1	<i>Group project</i> - Yves BECKERS - [36h AUTR]	Q1	-	-	[+]	4
GEST3020-1	<i>Conceiving and economics assessment of projects</i> (english language) - Hossein AZADI - [9h SEM]	Q1	9	-	[+]	2

##### Periods 3 and 4

##### AGRO2.31 Final dissertation, training programme and English

RTFE2007-1	<i>Thesis in agronomic sciences</i> - Yves BECKERS	Q2	-	-	-	<b>24</b>
RSTG0001-1	<i>Internship and professional relations</i> - Catherine COLAUX, Thomas DOGOT, Hélène SOYEURT, Didier VAN CAILLIE	TA	12	-	-	<b>8</b>

#### Optional courses

##### Periods 1 and 2

Choose 3 modules from the 4 modules options :

##### Option 1 of modules:

##### AGRO 2.11 Physiology, plant breeding and multiplication of cultivated plants

VEGE0026-1	<i>Physiology, plant breeding and multiplication of cultivated plants</i>	Q1				<b>6</b>
	- <i>Physiology</i> - Pierre DELAPLACE		7	5	-	
	- <i>Plant breeding</i> - Hervé VANDERSCHUREN		9	5	-	
	- <i>Diversity of plant genetic resources</i> - Hervé VANDERSCHUREN - [7h FT]		7	1	[+]	
	- <i>Multiplication of cultivated plants</i> - Hervé VANDERSCHUREN - [2h FT]		9	5	[+]	

##### Prerequisite :

VEGE0024-1 - Phytotechnie générale et appliquée en milieux tempérés et tropicaux  
VEGE0041-1 - Biologie et écologie des bioagresseurs

##### AGRO 2.12 Data mining & Machine learning

INFO8008-1	<i>Multivariate analysis 2: data mining and machine learning</i> (english language) - Yves BROSTAUX, Juan Antonio FERNANDEZ PIERNA, Hélène SOYEURT	Q1	12	26	-	<b>4</b>
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##### Prerequisite :

STAT1213-1 - Analyse multivariée 1 : exploration et structuration de données

INFO8009-1	<i>Bioinformatics</i> - Sébastien MASSART, Martine SCHROYEN	Q1	9	9	-	<b>2</b>
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##### Module option 2 :

##### AGRO 2.13 Market and supply analysis

ECON2251-3	<i>Food value chains analysis, Introduction</i> (english language) - Hossein AZADI	Q1	18	-	-	<b>2</b>
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ECON2252-2	<i>Marketing and consumer market research</i> - Alain DECROP	Q1	36	-	-	<b>4</b>
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##### AGRO 2.14 Plant biotechnology

VEGE0032-1	<i>Plant biotechnology</i>	Q1				<b>6</b>
	- <i>Molecular plant biotechnology</i> - Hervé VANDERSCHUREN		9	5	-	
	- <i>Exercise of plant biotechnology</i> - Hervé VANDERSCHUREN		-	14	-	
	- <i>Biology applied to pest prevention</i> - Frédéric FRANCIS		7	7	-	
	- <i>Biology applied to phytopathology</i> - Sébastien MASSART		3	12	-	

##### AGRO 2.15 Smart Farming

AGRO0023-1	<i>Smart farming</i> - JeanFrançois BASTIN, Jérôme BINDELLE, Benjamin DUMONT	Q1	54	-	-	<b>6</b>
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##### Option 3 of modules:

##### AGRO 2.16 Applied economic analysis

ECON2298-3	<i>Transition and new economic models</i> - Kevin MARÉCHAL	Q1	9	9	-	<b>2</b>
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##### Prerequisite :

STAT1213-1 - Analyse multivariée 1 : exploration et structuration de données  
GEST3019-2 - Food policies and strategies  
ECON0942-1 - Economie rurale et gestion des entreprises agricoles

ECON2250-1	<i>International economics</i> (english language) - Hossein AZADI - [12h AUTR]	Q1	6	-	[+]	<b>2</b>
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ECON2248-1	<i>Environmental economy</i> - Kevin MARÉCHAL	Q1	18	-	-	<b>2</b>
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**Prerequisite :**

STAT1213-1 - Analyse multivariée 1 : exploration et structuration de données

GEST3019-2 - Food policies and strategies

ECON0942-1 - Economie rurale et gestion des entreprises agricoles

**AGRO 2.17 Applied strategies for the integrated management of pests and weeds**

VEGE0042-1 *Integrated and agroecological protection of crops* - Frédéric FRANCIS, Q1 29 28 - 6  
Eric HAUBRUGE, Haissam JIJAKLI, Ludivine LASSOIS,  
Sébastien MASSART, Jeroen MEERSMANS, François VERHEGGEN - Suppl :  
François HENRIET

**AGRO 2.18 Advanced animal genetics, genomics and biodiversity**

ANIM0031-1 *Advanced animal genetics, genomics and biodiversity (english language)* - Q1 27 27 - 6  
Nicolas GENGLER

**Prerequisite :**

ANIM0029-1 - Fondements et dynamiques des systèmes d'élevage

ANIM0030-1 - Animal recording, breeding and reproduction in modern sustainable animal production system

**Module option 4 :**

**AGRO 2.19 Applied rural socioeconomics**

ECON2273-1 *Applied rural socioeconomics* - Yves BROSTAUX, Thomas DOGOT - [4h Q1 10 43 [+] 6  
SEM]

**Prerequisite :**

STAT1213-1 - Analyse multivariée 1 : exploration et structuration de données

**AGRO 2.20 Chemical, biological and environmental risks related to plant productions**

VEGE0034-1 *Chemical, biological and environmental risks related to plant productions* Q1 24 33 - 6  
- Patrick DU JARDIN, Benjamin DUMONT , Jeroen MEERSMANS,  
François VERHEGGEN

**Prerequisite :**

VEGE0024-1 - Phytotechnie générale et appliquée en milieux tempérés et tropicaux

VEGE0041-1 - Biologie et écologie des bioagresseurs

**AGRO 2.21 Feed & food**

ANIM0019-1 *Current issues in breeding systems* - Yves BECKERS Q1 5 31 - 4

ALIM0010-3 *Food, human nutrition and dietetics (english language)* - Q1 18 - - 2  
Jérôme BINDELLE

[...] Possibility to choose between 2 and 6 credits among the following courses, replacing the B2 elective courses:

GEOP0010-1 *Soil quality evaluation* - Gilles COLINET Q2 14 13 - 3

ENVT3129-1 *Evaluating sustainability* - Andrea DI MARIA, Angélique LÉONARD - Q2 12 16 [+] 3  
[2h SEM]

GERE0023-1 *Spatial analysis, organisation of grounds in the landscape and Q2 23 23 [+] 6  
preservation of grounds* - Gilles COLINET, Aurore DEGRÉ,  
Jeroen MEERSMANS - [8h FT]

ENVT3050-1 *Quantification of ecosystem services* - Marc DUFRÈNE - [6h AUTR] Q1 9 5 [+] 2

BIOD0001-3 *Biodiversity management* - Arnaud MONTY - [6h SEM] Q1 18 - [+] 2

CHIM9321-1 *Immunology* - Bénédicte MACHIELS Q2 27 - - 3

ALIM0015-1 *Food sanitary safety* - Mohamed AYADI - [2h SEM] Q1 16 6 [+] 2

ALIM0013-2 *Techniques of food preservation* - Christophe BLECKER Q2 24 - - 2

BIOL2015-3 *Molecular biology* - Patrick FICKERS Q2 24 - - 2

**Choose one language module from:**

#### Periods 3 and 4

##### AGRO 2.31 English language

LANG2953-1	<i>Practice of specialized English for agricultural sciences : part 2 (level C1 - Presentation)</i> - Sophie DEPOTERRE, Estelle MAYARD - Suppl : Fiona THEWISSEN - [36h AUTR]	TA	-	12	[+]	<b>4</b>
	<b>Corequisite :</b> RTFE2007-1 - Travail de fin d'études en sciences agronomiques					

#### All year round

##### AGRO 2.32 Dutch language

LANG9914-1	<i>Dutch Intermediate Level (dutch language)</i> - Catherine PEETERS	TA	18	18	-	<b>4</b>
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##### AGRO 2.33 Spanish language

LANG9915-1	<i>Spanish - beginners</i> - Valérie COYETTE	TA	18	18	-	<b>4</b>
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#### Optional activity

INFO9013-1	<i>Multivariate analysis 3: Data mining et Machine Learning: advanced (english language)</i> - Yves BROSTAUX, David COLIGNON, Benoît MERCATORIS, Hélène SOYEURT	Q2	12	28	-	<b>4</b>
	<i>Notice :</i> INFO8001-1 prerequisite of the INFO9013-1 course					

#### Bloc d'aménagement du programme de l'année

## Additional ECTS Master in agricultural bioengineering

#### Compulsory courses

##### Common core courses

GEST3028-2	<i>Accounting and management</i> - <i>General accounting</i> - Thomas DOGOT - <i>Management, green accounting and business plan</i> - Thomas DOGOT	Q1				<b>4</b>
			12	12	-	
			10	14	-	
GEST3773-1	<i>Management of quality</i> - Mohamed AYADI, Sébastien MASSART - [6h AUTR]	Q1	18	-	[+]	<b>2</b>
STAT2004-1	<i>Applied statistics : First part</i> - Yves BROSTAUX	Q1	12	12	-	<b>2</b>
STAT2005-1	<i>Applied statistic : Second part</i> - Yves BROSTAUX	Q2	12	12	-	<b>2</b>
	<b>Corequisite :</b> STAT2004-1 - Statistique appliquée : 1ère partie					
PSYC5897-3	<i>Team, organization and change</i> - Daniel FAULX, Véronique JANS, Tiber MANFREDINI - [44h SEM]	TA	4	-	[+]	<b>2</b>
	<b>Corequisite :</b> GEST3028-2 - Comptabilité et gestion des entreprises GEST3773-1 - Gestion de la qualité MANA0003-1 - Portfolio (Bachelier)					
MANA0003-1	<i>Portfolio (Bachelor)</i> - Yves BECKERS, Hugues CLAESSENS, Gilles COLINET, Aurore DEGRÉ, Dorothée GOFFIN - [24h AUTR]	TA	-	-	[+]	<b>2</b>
	<b>Corequisite :</b> PSYC5897-3 - Equipe, organisation & changement					
RSTG0008-1	<i>Internship (Bachelor)</i> - Hélène SOYEURT - [18h AUTR]	TA	6	-	[+]	<b>2</b>
	<b>Corequisite :</b> GEST3773-1 - Gestion de la qualité GEST3028-2 - Comptabilité et gestion des entreprises					

	PSYC5897-3 - Equipe, organisation & changement						
BIOL2044-1	<i>Plant physiology</i> - Patrick DU JARDIN	Q1	27	9	-		<b>3</b>
BIOL2013-2	<i>General microbiology, Introduction</i> - Patrick FICKERS, Philippe JACQUES	Q1	16	8	-		<b>2</b>
ENVT2044-1	<i>General ecology</i> - Grégory MAHY, Arnaud MONTY	Q1	24	-	-		<b>2</b>
INFO2038-1	<i>Computer science and algorithmic</i> - Hélène SOYEURT	Q1	2	22	-		<b>2</b>
MATH2016-1	<i>General mathematics and modelling of dynamics systems</i> - Jérôme BINDELLE, Catherine CHARLES, Frank DELVIGNE, Adeline FAYOLLE, Benoît MERCATORIS	Q1	24	24	-		<b>4</b>
PHYS3036-1	<i>Environmental physics</i> - Bernard LONGDOZ	Q1	18	18	-		<b>3</b>
LANG2966-2	<i>English language: level 3</i> - Sophie DEPOTERRE, Estelle MAYARD, Fiona THEWISSEN - Suppl : Fiona THEWISSEN - [48h E-Lrng]	TA	-	24	[+]		<b>4</b>
INGE0008-1	<i>Multidisciplinary experimental project</i> - Yves BROSTAUX, Pierre DELAPLACE, Sébastien MASSART, Benoît MERCATORIS, Arnaud MONTY, Bernard POCHE - [60h AUTR] <b>Corequisite :</b> STAT2005-1 - Statistique appliquée : 2ème partie STAT2004-1 - Statistique appliquée : 1ère partie GEST3773-1 - Gestion de la qualité BIOL2044-1 - Physiologie végétale ENVT2044-1 - Ecologie générale	TA	6	6	[+]		<b>6</b>
<b>Course Agricultural Sciences</b>							
AGRO0001-1	<i>Basic principles of agriculture and agroecology</i> - Pierre DELAPLACE, Benjamin DUMONT - [4h FT]	Q2	20	-	[+]		<b>2</b>
AGRO0002-1	<i>Fertilization and crop nutrition</i> - Caroline DE CLERCK, Patrick DU JARDIN, Benjamin DUMONT - [2h AUTR] <b>Corequisite :</b> AGRO0001-1 - Fondement d'agriculture et d'agroécologie BIOL2044-1 - Physiologie végétale	Q2	18	4	[+]		<b>2</b>
AGRO0021-1	<i>Introduction to cultivation techniques and levers</i> - Benjamin DUMONT , Ludivine LASSOIS - Suppl : Nicolas DESOIGNIES - [4h AUTR] <b>Corequisite :</b> AGRO0001-1 - Fondement d'agriculture et d'agroécologie	Q2	20	-	[+]		<b>2</b>
BIOL2015-3	<i>Molecular biology</i> - Patrick FICKERS <b>Corequisite :</b> BIOL2016-3 - Génétique générale	Q2	24	-	-		<b>2</b>
BIOL2016-3	<i>General genetics</i> - Nicolas GENGLER, Ludivine LASSOIS - Suppl : Martine SCHROYEN <b>Corequisite :</b> BIOL2015-3 - Biologie moléculaire	Q2	12	12	-		<b>2</b>
BIOL2018-1	<i>Animal nutrition</i> - Yves BECKERS	Q2	24	-	-		<b>2</b>
SPRA0001-1	<i>Sustainable breeding and zoogenetic resources</i> - Nicolas GENGLER - [4h FT] <b>Corequisite :</b> BIOL2016-3 - Génétique générale	Q2	20	-	[+]		<b>2</b>
BIOL2043-1	<i>Application of molecular biology and genetics</i> - Nicolas GENGLER, Ludivine LASSOIS, Martine SCHROYEN, Hervé VANDERSCHUREN, Luc WILLEMS <b>Corequisite :</b> BIOL2016-3 - Génétique générale	Q2	-	24	-		<b>2</b>
INGE0002-1	<i>Refrigeration and drying</i> - Nicolas JACQUET, Paul MALUMBA KAMBA	Q2	18	6	-		<b>2</b>