Master in agricultural bioengineering, professional focus

Cycle view of the study programme

		Bl	Or	Th	Pr	Au	Cr

Cours obligatoires de la finalité (B1 : 30Cr)

Periods 1 and 2

AGRO1.11 Rural economics and European and international policy.

		Bl	Or	Th	Pr	Au	Cr
ECON0942-1	*Rural economics and farm business management* - Philippe BURNY, Thomas DOGOT - [8h FT]	B1	Q1	25	15	[+]	**5**
GEST3019-2	*Food policies and strategies* (english language) - Hossein AZADI - [3h FT]	B1	Q1	9	15	[+]	**3**

Corequisite :
LANG2952-1 - Pratique de l'anglais scientifique de bioingénieur (AGRO) (niveau B2+)

		Bl	Or	Th	Pr	Au	Cr
STAT1213-1	*Multivariate analysis 1: data exploration and structuring* - Yves BROSTAUX	B1	Q1	9	9	-	**2**

AGRO1.12 General crop husbandry

		Bl	Or	Th	Pr	Au	Cr
VEGE0041-1	*Pest biology and ecology*	B1	Q1				**5**
	- *Introduction* - Frédéric FRANCIS, François HENRIET, Sébastien MASSART - [8h AUTR]			34	6	[+]	
	- *Depth notions* - Frédéric FRANCIS, François HENRIET, Sébastien MASSART - [10h AUTR]			-	-	[+]	

Corequisite :
LANG2952-1 - Pratique de l'anglais scientifique de bioingénieur (AGRO) (niveau B2+)

		Bl	Or	Th	Pr	Au	Cr
VEGE0024-1	*General and applied phytotechnology in temperate and tropical settings* - Nicolas DESOIGNIES, Benjamin DUMONT - [5h FT]	B1	Q1	39	4	[+]	**5**

AGRO1.13 Livestock systems

		Bl	Or	Th	Pr	Au	Cr
ANIM0029-1	*Foundations and dynamics of livestock systems* - Yves BECKERS, Jérôme BINDELLE, Martine SCHROYEN	B1	Q1	54	-	-	**6**
ANIM0030-1	*Animal recording, breeding and reproduction in modern sustainable animal production system* (english language) - Nicolas GENGLER, Martine SCHROYEN - [4h FT]	B1	Q1	22	10	[+]	**4**

Corequisite :
LANG2952-1 - Pratique de l'anglais scientifique de bioingénieur (AGRO) (niveau B2+)

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.

Cours obligatoires du tronc commun (B1 : 12Cr, B2 : 38Cr)

Periods 3 and 4

AGRO1.30 Core curriculum Q2

		Bl	Or	Th	Pr	Au	Cr
MANA0004-1	*Portfolio (Master)* - Yves BECKERS, Hugues CLAESSENS, Gilles COLINET, Aurore DEGRÉ, Dorothée GOFFIN - [24h AUTR]	B1	TA	-	-	[+]	**2**
LANG2952-1	*Practice of Scientific English for bioengineers (AGRO) (level B2+)* - Sophie DEPOTERRE, Estelle MAYARD - [36h AUTR]	B1	TA	-	12	[+]	**4**

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

		Bl	Or	Th	Pr	Au	Cr
INFO9028-1	*Data Sciences* - JeanFrançois BASTIN, Yves BROSTAUX, Nicolas GENGLER, Hélène SOYEURT - [12h Pr.]	B1	Q2	6	-	[+]	**2**
AGRO0026-1	*Integrated production systems*	B1	Q2	-	-	-	**2**
AGRO0027-1	*Excursion week* - [8h Pr., 32h FT]	B1	Q2	-	-	[+]	**2**

Periods 1 and 2

AGRO2.10 Group project

AGRO0020-1	*Group project* - Yves BECKERS - [36h AUTR]	B2	Q1	-	-	[+]	**4**
GEST3020-1	*Conceiving and economics assessment of projects* (english language) - Hossein AZADI - [9h SEM]	B2	Q1	9	-	[+]	**2**

Periods 3 and 4

AGRO2.31 Final dissertation, training programme and English

RTFE2007-1	*Thesis in agronomic sciences* - Yves BECKERS	B2	Q2	-	-	-	**24**
RSTG0001-1	*Internship and professional relations* - Catherine COLAUX, Thomas DOGOT, Hélène SOYEURT	B2	TA	12	-	-	**8**

Cours au choix du tronc commun (B1 : 18Cr, B2 : 22Cr)

Choose one module from the courses with options no. 1 (period 3): (B1 : 1Nbr)

AGRO1.32 Livestock systems engineering (B1 : 6Cr)

ANIM0017-1	*Biotechnology aspects of livestock systems* - Yves BECKERS, Jérôme BINDELLE, Martine SCHROYEN	B1	Q2	18	-	-	**2**
ANIM0025-1	*Feeding dairy cow* - Yves BECKERS	B1	Q2	9	9	-	**2**
ANIM0024-1	*Breeding system for agroecology* - Yves BECKERS, Jérôme BINDELLE - [3h FT]	B1	Q2	9	6	[+]	**2**

AGRO 1.33 Agricultural policy, sociology and rural legislation (B1 : 6Cr)

SOCI2234-1	*Construction of public policies* - AnneCatherine DALCQ, Juliette RENARD	B1	Q2	18	-	-	**2**
ECON2247-1	*Agricultural policy* - Philippe BURNY - [4h SEM]	B1	Q2	9	5	[+]	**2**
DROI0967-1	*Rural law* - Gaëtan GOISSE	B1	Q2	18	-	-	**2**

AGRO 1.34 Approche systémique des productions végétales en régions tempérées (B1 : 6Cr)

VEGE0027-1	*Systematic approach to plant production in temperate regions*	B1	Q2				**6**
	- Plant sciences and different field crop and production species - Benjamin DUMONT - [6h Ex.]			28	-	[+]	
	- Implementation of technical pathways under real conditions - Benjamin DUMONT - [3h FT]			-	12	[+]	
	- Evaluation and optimisation of production systems - Benjamin DUMONT			-	9	-	
	Corequisite : VEGE0024-1 - Phytotechnie générale et appliquée en milieux tempérés et tropicaux						

Choose one module from the courses with options no. 2 (period 3): (B1 : 1Nbr)

AGRO 1.35 Biochemistry and animal pathology (B1 : 6Cr)

ANIM0012-1	*Farm animal immunology and pathology* (english language) - Martine SCHROYEN **Corequisite :** LANG2952-1 - Pratique de l'anglais scientifique de bioingénieur (AGRO) (niveau B2+)	B1	Q2	18	-	-	**2**
ANIM0005-1	*Functional biochemistry in health and disease* (english language) - Martine SCHROYEN **Corequisite :** LANG2952-1 - Pratique de l'anglais scientifique de bioingénieur (AGRO) (niveau B2+)	B1	Q2	9	9	-	**2**
ANIM0011-3	*Welfare and ethics in animal productions* (english language) - Nicolas GENGLER - [3h FT] **Corequisite :** LANG2952-1 - Pratique de l'anglais scientifique de bioingénieur (AGRO) (niveau B2+)	B1	Q2	9	6	[+]	**2**

AGRO 1.36 Economics of development (B1 : 6Cr)

ECON2246-2	*Economics of developing countries* (english language) -	B1	Q2	8	-	[+]	**2**

ZADI - [16h SEM]
Corequisite :
LANG2952-1 - Pratique de l'anglais scientifique de bioingénieur (AGRO) (niveau B2+)

ECON2254-2	*Tropical markets* (english language) - Hossein AZADI	B1	Q2	9	9	-	**2**

Corequisite :
LANG2952-1 - Pratique de l'anglais scientifique de bioingénieur (AGRO) (niveau B2+)

ECON2253-2	*Economics of development Seminar* - Hossein AZADI, Thomas DOGOT - [18h SEM]	B1	Q2	-	-	[+]	**2**

AGRO 1.37 Innovative systems of plant production (B1 : 6Cr)

VEGE0037-1	*Innovative system of plant production*	B1	Q2				**6**
	- *Urban agriculture* - Haissam JIJAKLI			13	13	-	
	- *Developmental physiology applied to plant productions* - Pierre DELAPLACE - [6h FT]			12	-	[+]	
	- *Physical parameters control of plant productions in controlled conditions* - Vincent LEEMANS			9	-	-	

Choisir 1 module à option n° 3 (période 4) : (B1 : 1Nbr)

AGRO 1.43 Economic decision support (B1 : 6Cr)

ECON2299-1	*Assistance in economic decision-making* - Yves BROSTAUX, Catherine CHARLES, Thomas DOGOT - [6h AUTR]	B1	Q2	30	24	[+]	**6**

AGRO1.44 Bromatology and the cultivation of animal fodder (B1 : 6Cr)

ANIM0018-1	*Bromatology and grazing management* - Yves BECKERS, Jérôme BINDELLE - [7h FT]	B1	Q2	37	13	[+]	**6**

AGRO 1.45 Plant protection methods (B1 : 6Cr)

VEGE0028-1	*Methods for managing plant health* - Frédéric FRANCIS, Olivier GUELTON, Eric HAUBRUGE, François HENRIET, Haissam JIJAKLI, Sébastien MASSART, François VERHEGGEN	B1	Q2	42	15	-	**6**

Periods 1 and 2

Choose 3 modules from the 4 modules options : (B2 : 18Cr)

Option 1 of modules:

AGRO 2.11 Physiology, plant breeding and multiplication of cultivated plants

VEGE0026-1	*Physiology, plant breeding and multiplication of cultivated plants*	B2	Q1				**6**
	- *Physiology* - Pierre DELAPLACE			7	5	-	
	- *Plant breeding*			9	5	-	
	- *Diversity of plant genetic resources* - [7h FT]			7	1	[+]	
	- *Multiplication of cultivated plants* - [2h FT]			9	5	[+]	

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

AGRO 2.12 Data mining & Machine learning

INFO8008-1	*Multivaried analysis 2: data mining and machine learning* (english language) - Yves BROSTAUX, Juan Antonio FERNANDEZ PIERNA, Hélène SOYEURT	B2	Q1	12	26	-	**4**

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

INFO8009-1	*Bioinformatics* - Sébastien MASSART, Martine SCHROYEN	B2	Q1	9	9	-	**2**

Module option 2 :

AGRO 2.13 Market and supply analysis

| ECON2251-3 | *Food value chains analysis, Introduction* (english language) - Hossein AZADI | B2 | Q1 | 18 | - | - | **2** |
| ECON2252-2 | *Marketing and consumer market research* - Alain DECROP | B2 | Q1 | 36 | - | - | **4** |

AGRO 2.14 Plant biotechnology

VEGE0032-1	*Plant biotechnology*	B2	Q1				**6**
	- *Molecular plant biotechnology* - Hervé VANDERSCHUREN			9	5	-	
	- *Exercise of plant biotechnology* - Hervé VANDERSCHUREN			-	14	-	
	- *Biology applied to pest prevention* - Frédéric FRANCIS			7	7	-	
	- *Biology applied to phytopathology* - Sébastien MASSART			3	12	-	

AGRO 2.15 Smart Farming

| AGRO0023-1 | *Smart farming* - JeanFrançois BASTIN, Jérôme BINDELLE, Benjamin DUMONT | B2 | Q1 | 54 | - | - | **6** |

Option 3 of modules:

AGRO 2.16 Applied economic analysis

| ECON2298-3 | *Transition and new economic models* - Kevin MARÉCHAL | B2 | Q1 | 9 | 9 | - | **2** |

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

| ECON2250-1 | *International economics* (english language) - Hossein AZADI - [12h AUTR] | B2 | Q1 | 6 | - | [+] | **2** |
| ECON2248-1 | *Environmental economy* - Kevin MARÉCHAL | B2 | Q1 | 18 | - | - | **2** |

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

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

| VEGE0042-1 | *Integrated and agroecological protection of crops* - Frédéric FRANCIS, Eric HAUBRUGE, François HENRIET, Haissam JIJAKLI, Sébastien MASSART, Jeroen MEERSMANS, François VERHEGGEN | B2 | Q1 | 29 | 28 | - | **6** |

AGRO 2.18 Advanced animal genetics, genomics and biodiversity

| ANIM0031-1 | *Advanced animal genetics, genomics and biodiversity* (english language) - Nicolas GENGLER | B2 | Q1 | 27 | 27 | - | **6** |

Prerequisite :
ANIM0030-1 - Animal recording, breeding and reproduction in modern sustainable animal production system
ANIM0029-1 - Fondements et dynamiques des systèmes d'élevage

Module option 4 :

AGRO 2.19 Applied rural socioeconomics

| ECON2273-1 | *Applied rural socioeconomics* - Yves BROSTAUX, Thomas DOGOT - [4h SEM] | B2 | Q1 | 10 | 43 | [+] | **6** |

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* - Patrick DU JARDIN, Benjamin DUMONT , Jeroen MEERSMANS, François VERHEGGEN | B2 | Q1 | 24 | 33 | - | **6** |

Prerequisite :

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

AGRO 2.21 Feed & food

ANIM0019-1	*Current issues in breeding systems* - Yves BECKERS	B2	Q1	5	31	-	**4**
ALIM0010-3	*Food, human nutrition and dietetics* (english language) - Jérôme BINDELLE	B2	Q1	18	-	-	**2**

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

ENVT3129-1	*Evaluating sustainability* - Andrea DI MARIA, Angélique LÉONARD - [2h SEM]	B2	Q2	12	16	[+]	**3**
ENVT3050-1	*Quantification of ecosystem services* - Marc DUFRÊNE - [6h AUTR]	B2	Q1	9	5	[+]	**2**
BIOD0001-3	*Biodiversity management* - Arnaud MONTY - [6h SEM]	B2	Q1	18	-	[+]	**2**
CHIM9321-1	*Immunology* - Bénédicte MACHIELS	B2	Q2	27	-	-	**3**
ALIM0015-1	*Food sanitary safety* - Mohamed AYADI - [2h SEM]	B2	Q1	16	6	[+]	**2**
ALIM0013-2	*Techniques of food preservation* - Christophe BLECKER	B2	Q2	24	-	-	**2**
BIOL2015-3	*Molecular biology* - Patrick FICKERS	B2	Q2	24	-	-	**2**

Choose one language module from: (B2 : 4Cr)

Periods 3 and 4

AGRO 2.31 English language (B2 : 4Cr)

LANG2953-1	*Practice of specialized English for agricultural science (level C1 - Presentation)* - Sophie DEPOTERRE, Estelle MAYARD - [36h AUTR] **Corequisite :** AGRO0020-1 - Projet de groupe	B2	TA	-	12	[+]	**4**

All year round

AGRO 2.32 Dutch language (B2 : 4Cr)

LANG9914-1	*Dutch Intermediate Level* (dutch language) - Catherine PEETERS	B2	TA	18	18	-	**4**

AGRO 2.33 Spanish language (B2 : 4Cr)

LANG9915-1	*Spanish - beginners* - Valérie COYETTE	B2	TA	18	18	-	**4**

Optional activities (B1 : 14Cr, B2 : 4Cr)

RSTG0011-1	*Additional internship* - Aurore DEGRÉ	B1	TA	-	-	-	**5**
HULG9547-1	*French course for IN mobility students (S1)* - N...	B1	Q1	-	-	-	**3**
HULG9548-1	*French course for IN mobility students (S2)* - N...	B1	Q2	-	-	-	**3**
HULG9546-1	*Erasmus: integration weeks* - N...	B1	Q1	-	-	-	**3**
INFO9013-1	*Multivaried analysis 3: Data mining et Machine Learning: advanced* (english language) - Yves BROSTAUX, David COLIGNON, Benoît MERCATORIS, Hélène SOYEURT	B2	Q2	12	28	-	**4**

Notice : INFO8001-1 prerequisite of the INFO9013-1 course

Additional ECTS Master in agricultural bioengineering

Compulsory courses (B0 : 60Cr)

Common core courses

Code	Title						
GEST3028-2	*Accounting and management* - Thomas DOGOT	B0	Q1	22	26	-	**4**
GEST3773-1	*Management of quality* - Mohamed AYADI, Sébastien MASSART - [6h AUTR]	B0	Q1	18	-	[+]	**2**
STAT2004-1	*Applied statistics : First part* - Yves BROSTAUX	B0	Q1	12	12	-	**2**
STAT2005-1	*Applied statistic : Second part* - Yves BROSTAUX **Corequisite :** STAT2004-1 - Statistique appliquée : 1ère partie	B0	Q2	12	12	-	**2**
PSYC5897-3	*Team, organization and change* - Daniel FAULX, Véronique JANS, Tiber MANFREDINI - [44h SEM] **Corequisite :** MANA0003-1 - Portfolio (Bachelier) GEST3773-1 - Gestion de la qualité GEST3028-2 - Comptabilité et gestion des entreprises	B0	TA	4	-	[+]	**2**
MANA0003-1	*Portfolio (Bachelor)* - Yves BECKERS, Hugues CLAESSENS, Gilles COLINET, Aurore DEGRÉ, Dorothée GOFFIN - [24h AUTR] **Corequisite :** PSYC5897-3 - Equipe, organisation & changement	B0	TA	-	-	[+]	**2**
RSTG0008-1	*Internship (Bachelor)* - Hélène SOYEURT - [18h AUTR] **Corequisite :** PSYC5897-3 - Equipe, organisation & changement GEST3028-2 - Comptabilité et gestion des entreprises GEST3773-1 - Gestion de la qualité	B0	TA	6	-	[+]	**2**
BIOL2044-1	*Plant physiology* - Patrick DU JARDIN	B0	Q1	27	9	-	**3**
BIOL2013-2	*General microbiology, Introduction* - Patrick FICKERS, Philippe JACQUES	B0	Q1	16	8	-	**2**
ENVT2044-1	*General ecology* - Grégory MAHY, Arnaud MONTY	B0	Q1	24	-	-	**2**
INFO2038-1	*Computer science and algorithmic* - Hélène SOYEURT	B0	Q1	2	22	-	**2**
MATH2016-1	*General mathematics and modelling of dynamics systems* - Jérôme BINDELLE, Catherine CHARLES, Frank DELVIGNE, Adeline FAYOLLE, Benoît MERCATORIS - Suppl : Gauthier LIGOT	B0	Q1	24	24	-	**4**
PHYS3036-1	*Environmental physics* - Bernard LONGDOZ	B0	Q1	18	18	-	**3**
LANG2966-2	*English language: level 3* - Sophie DEPOTERRE, Estelle MAYARD, Fiona THEWISSEN - [48h E-Lrng]	B0	TA	-	24	[+]	**4**
INGE0008-1	*Multidisciplinary experimental project* - Yves BROSTAUX, Pierre DELAPLACE, Sébastien MASSART, Benoît MERCATORIS, Jacques MIGNON, Arnaud MONTY - [60h AUTR] **Corequisite :** ENVT2044-1 - Ecologie générale BIOL2044-1 - Physiologie végétale GEST3773-1 - Gestion de la qualité STAT2004-1 - Statistique appliquée : 1ère partie STAT2005-1 - Statistique appliquée : 2ème partie	B0	TA	6	6	[+]	**6**

Course Agricultural Sciences

Code	Title						
AGRO0001-1	*Basic principles of agriculture and agroecology* - Pierre DELAPLACE, Benjamin DUMONT - [4h FT]	B0	Q2	20	-	[+]	**2**
AGRO0002-1	*Fertilization and crop nutrition* - Caroline DE CLERCK, Patrick DU JARDIN, Benjamin DUMONT - [2h AUTR] **Corequisite :** BIOL2044-1 - Physiologie végétale AGRO0001-1 - Fondement d'agriculture et d'agroécologie	B0	Q2	18	4	[+]	**2**
AGRO0021-1	*Introduction to cultivation techniques and levers* - Benjamin DUMONT , Ludivine LASSOIS - [4h AUTR]	B0	Q2	20	-	[+]	**2**

Corequisite :
AGRO0001-1 - Fondement d'agriculture et d'agroécologie

BIOL2015-3	*Molecular biology* - Patrick FICKERS	B0	Q2	24	-	-	**2**

Corequisite :
BIOL2016-3 - Génétique générale

BIOL2016-3	*General genetics* - Nicolas GENGLER, Ludivine LASSOIS	B0	Q2	12	12	-	**2**

Corequisite :
BIOL2015-3 - Biologie moléculaire

BIOL2018-1	*Animal nutrition* - Yves BECKERS	B0	Q2	24	-	-	**2**
SPRA0001-1	*Sustainable breeding and zoogenetic resources* - Nicolas GENGLER - [4h FT]	B0	Q2	20	-	[+]	**2**

Corequisite :
BIOL2016-3 - Génétique générale

BIOL2043-1	*Application of molecular biology and genetics* - Nicolas GENGLER, Martine SCHROYEN, Hervé VANDERSCHUREN, Luc WILLEMS	B0	Q2	-	24	-	**2**

Corequisite :
BIOL2016-3 - Génétique générale

GERE0043-1	*Foundations of soil quality* - Gilles COLINET, Caroline DE CLERCK, Aurore DEGRÉ	B0	Q2	18	6	-	**2**