

## Cycle view of the study programme

B1 Or Th Pr Au Cr

*Notice* : The Master's juries in bioengineering reserve the right not to organise elective courses if they are selected by fewer than five students.

### Core curriculum compulsory courses (B1 : 27Cr, B2 : 36Cr)

#### Periods 1 and 2

##### STE1.10 Core curriculum 1

GERE0015-1	<i>Group project</i> - Adrien MICHEZ - [150h AUTR]	B1	Q1	4	-	[+]	5
HYDR0016-1	<i>Applied fluid mechanics and hydraulics</i> (english language) - Joost WELLENS	B1	Q1	24	12	-	4
ENVT0045-1	<i>Geomatics and applied remote sensing, Introduction</i> - JeanFrançois BASTIN, Philippe LEJEUNE	B1	Q1	16	22	-	4
GERE0037-1	<i>Modelling the dynamics of biosystems</i> - Bernard LONGDOZ, Benoît MERCATORIS	B1	Q1	14	31	-	5
GEOPO003-2	<i>Origins, analysis and functions of soils</i> - Gilles COLINET, Aurore DEGRÉ, N... - [9h FT]	B1	Q1	36	36	[+]	9

##### STE2.11 Environmental management

ECON2248-1	<i>Environmental economy</i> - Kevin MARÉCHAL	B2	Q1	18	-	-	2
DROI1306-1	<i>Environmental law</i> - Renaud SMAL	B2	Q1	18	-	-	2

#### Periods 3 and 4

##### STE2.31 Final work and internship

RSTG0003-1	<i>Internship and professional relations</i> - Catherine COLAUX, Thomas DOGOT, Joost WELLENS	B2	TA	12	-	-	8
RTFE2002-1	<i>Thesis in education environmental sciences and technologies</i> - Catherine CHARLES	B2	Q2	-	-	-	24

### Common core courses (B1 : 5Cr, B2 : 24Cr)

Choose courses totalling 5 ECTS from the following : (B1 : 5Cr)

#### STE1.42 Elective courses 1

GERE0046-1	<i>Resource valorisation and circularity</i> - Gilles COLINET, Aurore DEGRÉ, Andrea DI MARIA - [6h FT]	B1	Q2	21	18	[+]	5
GERE0047-1	<i>Construction: Structural, energy and environmental performance</i> - Andrea DI MARIA, Frédéric LEBEAU, Benoît MERCATORIS	B1	Q2	30	15	-	5
<b>Corequisite :</b> GERE0044-1 - Construction : matériaux, produits, systèmes et impacts environnementaux							
GERE0048-1	<i>Solutions for conservation and protection of natural resources</i> (english language) - Gilles COLINET, Aurore DEGRÉ, Jeroen MEERSMANS, AnneClaude ROMAIN	B1	Q2	24	21	-	5

Choose 3 courses of 4 credits from: (B2 : 12Cr)

#### STE 2.11 Elective courses

GERE0026-1	<i>Autonomous navigation in the natural environment</i> - Benoît MERCATORIS - [6h AUTR]	B2	Q1	18	18	[+]	4
INFO8008-2	<i>Multivariate analysis 2: data mining et machine learning</i> (english language)	B2	Q1				4
	- <i>Introduction</i> - Yves BROSTAUX, Juan Antonio FERNANDEZ PIERNA, Hélène SOYEURT			9	18	-	
	- <i>In-depth study</i> - Yves BROSTAUX,			3	6	-	

IERNA, Hélène SOYEURT

**Prerequisite :**

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

ENVT3060-1 *Very high resolution remote sensing applied to the management of natural environments, Introduction* - JeanFrançois BASTIN, Philippe LEJEUNE, Adrien MICHEZ

**Prerequisite :**

ENVT0045-1 - Géomatique et télédétection appliquée

GERE0049-1 *Nature in the city* - Gilles COLINET, Aurore DEGRÉ, Grégory MAHY

GERE0050-1 *Nature-base solutions for climate change mitigation (english language)* - Andrea DI MARIA, Bernard HEINESCH, Jeroen MEERSMANS

[...] or 4 credits from the list of alternative courses

Choose a module for a total of 4 credits from: (B2 : 4Cr)

**STE2.13 Applied soil and landscape analysis**

GERE0051-1 *Applied soil and landscape analysis* - Gilles COLINET, Jeroen MEERSMANS

**STE2.14 Agrivoltaic modelling: application of complex systems engineering**

GERE0052-1 *Agrivoltaic modelling: application of complex systems engineering* - Frédéric LEBEAU - [6h AUTR]

**Prerequisite :**

GERE0038-1 - Systèmes énergétiques et énergies renouvelables

**STE2.15 Hydrological engineering of landscapes**

GERE0053-1 *Hydrological engineering of landscapes* - Aurore DEGRÉ, Adrien MICHEZ - [18h AUTR]

**Prerequisite :**

ENVT0045-1 - Géomatique et télédétection appliquée

[...] or 4 credits from the list of alternative courses

Choose a module for a total of 4 credits from: (B2 : 4Cr)

**STE2.16 Phenotyping**

GERE0054-1 *Phenotyping by imaging* - Vincent LEEMANS, Benoît MERCATORIS

**STE2.17 Ecosystem exchanges - atmosphere, under climate change**

GERE0034-1 *Exchanges between the ecosystem and the atmosphere as a result of climate change* - Bernard HEINESCH, Bernard LONGDOZ, Youri ROTHFUSS - [3h AUTR]

**STE 2.18 Environmental quality improvement**

GERE0055-1 *Soil remediation and water purification* - Gilles COLINET, Frank DELVIGNE - [10h AUTR]

[...] or 4 credits from the list of alternative courses

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

**All year round**

**STE 2.31 English language (B2 : 4Cr)**

LANG2957-1 *Practice of specialized English in Sciences and Environmental Technologies: (level C1 - presentation)* - Estelle MAYARD, Lelania SPERRAZZA - [36h AUTR]

**STE 2.32 Dutch language (B2 : 4Cr)**

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

**STE 2.33 Spanish language (B2 : 4Cr)**

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

**Cours de remplacement :**

ENVT3050-1 *Quantification of ecosystem services* - Marc DUFRÈNE - [6h AUTR] B2 Q1 9 5 [+] 2

BIOD0001-3 *Biodiversity management* - Arnaud MONTY - [6h SEM] B2 Q1 18 - [+] 2

VEGE0037-1 *Innovative system of plant production* B2 Q2 6  
*- Urban agriculture* - Haissam JIJAKLI 13 13 -  
*- Developmental physiology applied to plant productions* - 12 - [+]  
 Pierre DELAPLACE - [6h FT]  
*- Physical parameters control of plant productions in controlled conditions* - Vincent LEEMANS 9 - -

VEGE0028-1 *Methods for managing plant health* - Frédéric FRANCIS, B2 Q2 42 15 - 6  
 Olivier GUELTON, Eric HAUBRUGE, François HENRIET,  
 Haissam JIJAKLI, Sébastien MASSART, François VERHEGGEN

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 for preparing and preserving foods* B2 Q2 2  
*- General concepts* - Christophe BLECKER 21 - -  
*- In-depth study for bioengineers* - Christophe BLECKER 3 - -

BIOL2015-3 *Molecular biology* - Patrick FICKERS B2 Q2 24 - - 2

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

RSTG0011-1 *Additional internship* - Pierre DELAPLACE 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 *Multivariate analysis 3: Data mining et Machine Learning: advanced* B2 Q2 12 28 - 4  
 (english language) - Yves BROSTAUX, David COLIGNON,  
 Benoît MERCATORIS, Hélène SOYEURT

Notice : INFO8008-2: prerequisite for the course INFO9013-1

**Focus compulsory courses (B1 : 20Cr)**

**Period 1 and 2**

**STE1.10 Core curriculum 1**

STAT1213-1 *Multivariate analysis 1: data exploration and structuring* - B1 Q1 9 9 - 2  
 Yves BROSTAUX

**STE1.10 Core curriculum 2**

MANA0004-1 *Portfolio (Master)* - Yves BECKERS, Hugues CLAESSENS, B1 TA - - [+] 2  
 Gilles COLINET, Pierre DELAPLACE, Dorothée GOFFIN - [24h AUTR]

LANG2956-1 *Practice of Scientific English for bioengineers (STE) (level B2+)* - B1 TA - 12 [+] 4  
 Estelle MAYARD, Lelania SPERRAZZA - [36h AUTR]

**Corequisite :**

GEOP0003-2 - Genèse, analyse et fonctionnement des sols  
 GERE0037-1 - Modélisation de la dynamique des biosystèmes

**Period 3**

**STE1.10 Core curriculum 3**

GERE0040-1	<i>Modelling soil transfers</i> - Aurore DEGRÉ	B1	Q2	6	12	-	2
GERE0019-1	<i>Grounds mechanic and geotechnology</i> - Frédéric COLLIN, Bertrand FRANÇOIS	B1	Q2	21	21	-	4

**Period 4**

**STE1.41 Field applications and visits**

GERE0039-1	<i>Field applications and visits</i> - Gilles COLINET, Jeroen MEERSMANS - [23h FT]	B1	Q2	1	-	[+]	2
GERE0038-1	<i>Energy systems and renewable energies</i> - Frédéric LEBEAU	B1	Q2	18	18	-	4

**Focus optional courses (B1 : 8Cr)**

Choose courses for a total of 8 credits (note, GERE0044-1 and GERE0045-1 cannot be taken together): (B1 : 8Cr)

**STE1.32 Optional courses 1**

GERE0041-1	<i>Instrumentation: data acquisition</i> - Bernard HEINESCH	B1	Q2	9	27	-	4
HYDR0015-1	<i>Irrigation (english language)</i> - Joost WELLENS - [3h FT]	B1	Q2	13	20	[+]	4
GERE0044-1	<i>Construction: materials, products, systems and environmental impact</i> - Andrea DI MARIA, JeanFrançois RONDEAUX	B1	Q2	27	12	-	4
GERE0045-1	<i>Terrestrial ecosystems functioning and C dynamics (english language)</i> - Bernard LONGDOZ, Jeroen MEERSMANS	B1	Q2	18	24	-	4

**Bridging courses Master in environmental bioengineering**

**Compulsory courses (B0 : 58Cr)**

GEST3028-2	<i>Accounting and management</i> - Thomas DOGOT	B0	Q1	22	26	-	4
GEST3773-1	<i>Management of quality</i> - Mohamed AYADI, Sébastien MASSART - [6h AUTR]	B0	Q1	18	-	[+]	2
STAT2004-1	<i>Applied statistics : First part</i> - Yves BROSTAUX	B0	Q1	12	12	-	2
STAT2005-1	<i>Applied statistic : Second part</i> - Yves BROSTAUX	B0	Q2	12	12	-	2
	<b>Corequisite :</b> STAT2004-1 - Statistique appliquée : 1ère partie						
PSYC5897-3	<i>Team, organization and change</i> - Daniel FAULX, Tiber MANFREDINI, Elise SEGHERS - [44h SEM]	B0	TA	4	-	[+]	2
	<b>Corequisite :</b> MANA0003-1 - Portfolio (Bachelier) GEST3773-1 - Gestion de la qualité GEST3028-2 - Comptabilité et gestion des entreprises						
MANA0003-1	<i>Portfolio (Bachelor)</i> - Yves BECKERS, Hugues CLAESSENS, Gilles COLINET, Pierre DELAPLACE, Dorothée GOFFIN - [24h AUTR]	B0	TA	-	-	[+]	2
	<b>Corequisite :</b> PSYC5897-3 - Equipe, organisation & changement						
RSTG0008-1	<i>Internship (Bachelor)</i> - Hélène SOYEURT - [18h AUTR]	B0	TA	6	-	[+]	2
	<b>Corequisite :</b> PSYC5897-3 - Equipe, organisation & changement GEST3028-2 - Comptabilité et gestion des entreprises GEST3773-1 - Gestion de la qualité						
BIOL2044-1	<i>Plant physiology</i> - Patrick DU JARDIN	B0	Q1	27	9	-	3
BIOL2013-2	<i>General microbiology, Introduction</i> - Patrick FICKERS, Philippe JACQUES	B0	Q1	16	8	-	2

ENVT2044-1	<i>General ecology</i> - Grégory MAHY, Arnaud MONTY	B0	Q1	24	-	-	2
INFO2038-1	<i>Computer science and algorithmic</i> - Hélène SOYEURT	B0	Q1	2	22	-	2
MATH2016-1	<i>General mathematics and modelling of dynamics systems</i> - Jérôme BINDELLE, Catherine CHARLES, Frank DELVIGNE, Gauthier LIGOT, Benoît MERCATORIS	B0	Q1	24	24	-	4
PHYS3036-1	<i>Environmental physics</i> - Bernard LONGDOZ	B0	Q1	18	18	-	3
LANG2966-2	<i>English language: level 3</i> - Lelania SPERRAZZA - [48h E-Lrng]	B0	TA	-	24	[+]	4
INGE0008-1	<i>Multidisciplinary experimental project</i> - Yves BROSTAUX, Pierre DELAPLACE, Sébastien MASSART, Benoît MERCATORIS, Jacques MIGNON, Arnaud MONTY - [60h AUTR] <b>Corequisite :</b> 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

**Option Environmental Bioengineering**

GERE0036-1	<i>Instrumentation: sensors and signals</i> - Benoît MERCATORIS <b>Corequisite :</b> MATH2016-1 - Mathématique générale et modélisation des systèmes dynamiques	B0	Q2	24	24	-	4
HYDR0001-1	<i>General hydrology</i> - Aurore DEGRÉ	B0	Q2	14	10	-	2
GERE0043-1	<i>Foundations of soil quality</i> - Gilles COLINET, Caroline DE CLERCK, Aurore DEGRÉ	B0	Q2	18	6	-	2
INGE0001-2	<i>Strength of materials and elasticity</i> - Introduction - Laurent DUCHENE - In-depth study - Laurent DUCHENE	B0	Q2	24	-	-	3
PHYS3010-2	<i>Climate changes</i> - Bernard LONGDOZ	B0	Q2	24	-	-	2
ENVT3129-1	<i>Evaluating sustainability</i> - Andrea DI MARIA - [2h SEM]	B0	Q2	12	16	[+]	3

**Option cours (B0 : 2Cr)**

Select 1 course from Environmental sciences and technologies subject : (B0 : 1Nbr)

AGRO0001-1	<i>Basic principles of agriculture and agroecology</i> - Pierre DELAPLACE, Benjamin DUMONT - [4h Ex.]	B0	Q2	16	4	[+]	2
INGE0002-1	<i>Refrigeration and drying</i> - Nicolas JACQUET, Paul MALUMBA KAMBA	B0	Q2	18	6	-	2