

## Block view of the study programme

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### Block 1

*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

##### Periods 1 and 2

##### STE1.10 Core curriculum 1

GERE0015-1	<i>Group project</i> - Adrien MICHEZ - [150h AUTR]	Q1	4	-	[+]	5
HYDR0016-1	<i>Applied fluid mechanics and hydraulics</i> (english language) - Joost WELLENS	Q1	24	12	-	4
ENVT0045-1	<i>Geomatics and applied remote sensing, Introduction</i> - JeanFrançois BASTIN, Philippe LEJEUNE	Q1	16	22	-	4
GERE0037-1	<i>Modelling the dynamics of biosystems</i> - Bernard LONGDOZ, Benoît MERCATORIS	Q1	14	31	-	5
GEOP0003-2	<i>Origins, analysis and functions of soils</i> - Gilles COLINET, Aurore DEGRÉ, N... - [9h FT]	Q1	36	36	[+]	9

#### Common core courses

Choose courses totalling 5 ECTS from the following :

##### STE1.42 Elective courses 1

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

#### Optional activities

RSTG0011-1	<i>Additional internship</i> - Pierre DELAPLACE	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

#### Focus compulsory courses

##### Period 1 and 2

##### STE1.10 Core curriculum 1

STAT1213-1	<i>Multivariate analysis 1: data exploration and structuring</i> - Yves BROSTAUX	Q1	9	9	-	2
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##### STE1.10 Core curriculum 2

MANA0004-1	<i>Portfolio (Master)</i> - Yves BECKERS, Hugues CLAESSENS, Gilles COLINET, Pierre DELAPLACE, Dorothee GOFFIN - [24h AUTR]	TA	-	-	[+]	2
LANG2956-1	<i>Practice of Scientific English for bioengineers (STE) (level B2+)</i> - Estelle MAYARD, Lelania SPERRAZZA - [36h AUTR] <b>Corequisite :</b> GEOP0003-2 - Genèse, analyse et fonctionnement des sols GERE0037-1 - Modélisation de la dynamique des biosystèmes	TA	-	12	[+]	4

**Period 3**

**STE1.10 Core curriculum 3**

GERE0040-1	<i>Modelling soil transfers</i> - Aurore DEGRÉ	Q2	6	12	-	2
GERE0019-1	<i>Grounds mechanic and geotechnology</i> - Frédéric COLLIN, Bertrand FRANÇOIS	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]	Q2	1	-	[+]	2
GERE0038-1	<i>Energy systems and renewable energies</i> - Frédéric LEBEAU	Q2	18	18	-	4

**Focus optional courses**

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

**STE1.32 Optional courses 1**

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

**Block 2**

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**Core curriculum compulsory courses**

**Periods 1 and 2**

**STE2.11 Environmental management**

ECON2248-1	<i>Environmental economy</i> - Kevin MARÉCHAL	Q1	18	-	-	2
DROI1306-1	<i>Environmental law</i> - Renaud SMAL	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	TA	12	-	-	8
RTFE2002-1	<i>Thesis in education environmental sciences and technologies</i> - Catherine CHARLES	Q2	-	-	-	24

**Common core courses**

Choose 3 courses of 4 credits from:

**STE 2.11 Elective courses**

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

	- <i>In-depth study</i> - Yves BROSTAUX, Juan Antonio FERNANDEZ PIERNA, Hélène SOYEURT <b>Prerequisite :</b> STAT1213-1 - Analyse multivariée 1 : exploration et structuration de données	3	6	-	
ENVT3060-1	<i>Very high resolution remote sensing applied to the management of natural environments, Introduction</i> - JeanFrançois BASTIN, Philippe LEJEUNE, Adrien MICHEZ <b>Prerequisite :</b> ENVT0045-1 - Géomatique et télédétection appliquée	Q1	12	24	- 4
GERE0049-1	<i>Nature in the city</i> - Gilles COLINET, Aurore DEGRÉ, Grégory MAHY	Q1	12	24	- 4
GERE0050-1	<i>Nature-base solutions for climate change mitigation (english language)</i> - Andrea DI MARIA, Bernard HEINESCH, Jeroen MEERSMANS	Q1	24	12	- 4

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

Choose a module for a total of 4 credits from:

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

GERE0051-1	<i>Applied soil and landscape analysis</i> - Gilles COLINET, Jeroen MEERSMANS	Q1	6	30	- 4
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**STE2.14 Agrivoltaic modelling: application of complex systems engineering**

GERE0052-1	<i>Agrivoltaic modelling: application of complex systems engineering</i> - Frédéric LEBEAU - [6h AUTR] <b>Prerequisite :</b> GERE0038-1 - Systèmes énergétiques et énergies renouvelables	Q1	15	15	[+] 4
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**STE2.15 Hydrological engineering of landscapes**

GERE0053-1	<i>Hydrological engineering of landscapes</i> - Aurore DEGRÉ, Adrien MICHEZ - [18h AUTR] <b>Prerequisite :</b> ENVT0045-1 - Géomatique et télédétection appliquée	Q1	9	9	[+] 4
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[...] or 4 credits from the list of alternative courses

Choose a module for a total of 4 credits from:

**STE2.16 Phenotyping**

GERE0054-1	<i>Phenotyping by imaging</i> - Vincent LEEMANS, Benoît MERCATORIS	Q1	18	18	- 4
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**STE2.17 Ecosystem exchanges - atmosphere, under climate change**

GERE0034-1	<i>Exchanges between the ecosystem and the atmosphere as a result of climate change</i> - Bernard HEINESCH, Bernard LONGDOZ, Youri ROTHFUSS - [3h AUTR]	Q1	24	12	[+] 4
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**STE 2.18 Environmental quality improvement**

GERE0055-1	<i>Soil remediation and water purification</i> - Gilles COLINET, Frank DELVIGNE - [10h AUTR]	Q1	24	8	[+] 4
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[...] or 4 credits from the list of alternative courses

Choose a language module from :

**All year round**

**STE 2.31 English language**

LANG2957-1	<i>Practice of specialized English in Sciences and Environmental Technologies: (level C1 - presentation)</i> - Estelle MAYARD, Lelania SPERRAZZA - [36h AUTR]	TA	-	12	[+] 4
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**STE 2.32 Dutch language**

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

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

**Optional activity**

INFO9013-1 *Multivaried analysis 3: Data mining et Machine Learning: advanced* (english language) - Yves BROSTAUX, David COLIGNON, Benoît MERCATORIS, Hélène SOYEURT Q2 12 28 - 4

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

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

**Bridging courses Master in environmental bioengineering**

**Compulsory courses**

GEST3028-2 *Accounting and management* - Thomas DOGOT Q1 22 26 - 4

GEST3773-1 *Management of quality* - Mohamed AYADI, Sébastien MASSART - [6h AUTR] Q1 18 - [+] 2

STAT2004-1 *Applied statistics : First part* - Yves BROSTAUX Q1 12 12 - 2

STAT2005-1 *Applied statistic : Second part* - Yves BROSTAUX Q2 12 12 - 2

**Corequisite :**

STAT2004-1 - Statistique appliquée : 1ère partie

PSYC5897-3 *Team, organization and change* - Daniel FAULX, Tiber MANFREDINI, Elise SEGHERS - [44h SEM] TA 4 - [+] 2

**Corequisite :**

MANA0003-1 - Portfolio (Bachelier)

GEST3773-1 - Gestion de la qualité

GEST3028-2 - Comptabilité et gestion des entreprises

MANA0003-1 *Portfolio (Bachelor)* - Yves BECKERS, Hugues CLAESSENS, Gilles COLINET, Pierre DELAPLACE, Dorothée GOFFIN - [24h AUTR] TA - - [+] 2

**Corequisite :**

PSYC5897-3 - Equipe, organisation & changement

RSTG0008-1 *Internship (Bachelor)* - Hélène SOYEURT - [18h AUTR] TA 6 - [+] 2

**Corequisite :**

PSYC5897-3 - Equipe, organisation & changement

GEST3028-2 - Comptabilité et gestion des entreprises

GEST3773-1 - Gestion de la qualité

BIOL2044-1 *Plant physiology* - Patrick DU JARDIN Q1 27 9 - 3

BIOL2013-2 *General microbiology, Introduction* - Patrick FICKERS, Philippe JACQUES Q1 16 8 - 2

ENVT2044-1 *General ecology* - Grégory MAHY, Arnaud MONTY Q1 24 - - 2

INFO2038-1 *Computer science and algorithmic* - Hélène SOYEURT Q1 2 22 - 2

MATH2016-1 *General mathematics and modelling of dynamics systems* - Jérôme BINDELLE, Catherine CHARLES, Frank DELVIGNE, Gauthier LIGOT, Benoît MERCATORIS Q1 24 24 - 4

PHYS3036-1 *Environmental physics* - Bernard LONGDOZ Q1 18 18 - 3

LANG2966-2 *English language: level 3* - Lelania SPERRAZZA - [48h E-Lrng] TA - 24 [+] 4

INGE0008-1 *Multidisciplinary experimental project* - Yves BROSTAUX, Pierre DELAPLACE, Sébastien MASSART, Benoît MERCATORIS, Jacques MIGNON, Arnaud MONTY - [60h AUTR] TA 6 6 [+] 6

**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

**Option Environmental Bioengineering**

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

**Option cours**

Select 1 course from Environmental sciences and technologies subject :

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

**Cours de remplacement :**

ENVT3050-1	<i>Quantification of ecosystem services</i> - Marc DUFRÊNE - [6h AUTR]	Q1	9	5	[+]	<b>2</b>
BIOD0001-3	<i>Biodiversity management</i> - Arnaud MONTY - [6h SEM]	Q1	18	-	[+]	<b>2</b>
VEGE0037-1	<i>Innovative system of plant production</i> - Urban agriculture - Haissam JIJAKLI - Developmental physiology applied to plant productions - Pierre DELAPLACE - [6h FT] - Physical parameters control of plant productions in controlled conditions - Vincent LEEMANS	Q2				<b>6</b>
			13	13	-	
			12	-	[+]	
			9	-	-	
VEGE0028-1	<i>Methods for managing plant health</i> - Frédéric FRANCIS, Olivier GUELTON, Eric HAUBRUGE, François HENRIET, Haissam JIJAKLI, Sébastien MASSART, François VERHEGGEN	Q2	42	15	-	<b>6</b>
CHIM9321-1	<i>Immunology</i> - Bénédicte MACHIELS	Q2	27	-	-	<b>3</b>
ALIM0015-1	<i>Food sanitary safety</i> - Mohamed AYADI - [2h SEM]	Q1	16	6	[+]	<b>2</b>
ALIM0013-2	<i>Techniques for preparing and preserving foods</i> - General concepts - Christophe BLECKER - In-depth study for bioengineers - Christophe BLECKER	Q2				<b>2</b>
			21	-	-	
			3	-	-	
BIOL2015-3	<i>Molecular biology</i> - Patrick FICKERS	Q2	24	-	-	<b>2</b>