Study programmes 2014-2015
Faculty of Applied Sciences
Master in Biomedical Engineering

Two-year master program

First year (Full English)

Compulsory Courses

		Or	Th	Pr	Au	Cr
GBIO0009-1	*Bioinformatics* (english language) - Kristel VAN STEEN	Q1	30	30	-	**5**
GBIO0029-1	*Bioelectronics* (english language) - Michael KRAFT		30	30	-	**5**
GBIO0012-2	*Biomechanics* (english language) - Liesbet GERIS, Davide RUFFONI - [1d FW]	Q1	30	30	[+]	**5**
GBIO0008-2	*Medical imaging* (english language) - Christophe PHILLIPS - [8h Labo., 1d FW]	Q2	33	12	[+]	**5**
GBIO0011-1	*Modeling of biological systems* - Pierre DAUBY, Liesbet GERIS	Q2	30	30	-	**5**
GBIO0013-1	*Transport phenomena in biology* - Dominique TOYE	Q1	30	30	-	**5**
GBIO0027-1	*Integrated project in biomedical engineering* (english language) - Liesbet GERIS, Davide RUFFONI	TA	30	90	-	**10**
	Notice : With the accord of the President of the jury, notably according to technical matter, the integrated project can be in line with a interdisciplinary project (for exemple Ingénieur de projets, Eurobot, Eco-Shell Marathon,...), done between the third year of the bachelor and the second year of the master.					
GEST3162-1	*Introduction to company management* (english language) - Michael GHILISSEN, François PICHAULT, Thierry PIRONET, Didier VAN CAILLIE	Q2	25	25	-	**5**

Optional courses

General technical formation

10 ECTS in the following list of courses

SYST0003-1	*Linear control systems* (english language) - Rodolphe SEPULCHRE - Suppl : Raphaël FONTENEAU	Q1	30	30	-	**5**
MATH0461-2	*Introduction to numerical optimization* (english language) - Quentin LOUVEAUX - [25h Proj.]	Q2	30	20	[+]	**5**
MATH0462-1	*Discrete optimization* (english language) - Quentin LOUVEAUX - [25h Proj.]	Q1	30	20	[+]	**5**
ELEN0060-2	*Information and coding theory* (english language) - Louis WEHENKEL - [30h Proj.]	Q2	30	15	[+]	**5**
MECA0036-2	*Finite Element Method* (english language) - JeanPhilippe PONTHOT - [40h Proj.]	Q2	30	30	[+]	**5**
MECA0464-1	*Large deformation of solids* (english language) - JeanPhilippe PONTHOT	Q1	30	30	-	**5**
PHYS0069-1	*Introduction to statistical physics* - Nicolas VANDEWALLE	Q2	30	30	-	**5**
INFO0939-1	*High performance scientific computing* (english language) - Christophe GEUZAINE - [20h Proj.]	Q1	30	15	[+]	**5**
[...]	With the accord of the academic mentor and the president of the jury, a course in this list can be replaced by course (with technical character) borrowed from the bachelor program of engineering					

Specialised technical formation

5 ECTS to choose in either list A or B

List A						
INFO0064-3	*Embedded systems* (english language) - Bernard BOIGELOT - [60h Proj.]	Q1	30	30	[+]	**5**
ELEN0074-1	*Sensors, microsensors and instrumentation* (english language) - Philippe VANDERBEMDEN	Q2	30	30	-	**5**
ELEN0037-1	*Microelectronics and IC design* (english language) - Michael KRAFT		30	30	-	**5**
INFO0009-1	*Database (general organisation)* - Pierre WOLPER - [25h Proj.]	Q2	30	25	[+]	**5**
List B						
MECA0031-2	*Kinematics and dynamics of mechanisms* (english language) - Olivier BRULS	Q2	30	30	-	**5**
MECA0446-2	*Continuum Mechanics* - JeanPhilippe PONTHOT - [50h Proj.]	Q2	30	30	[+]	**5**
CHIM0698-1	*Physical chemistry of interfaces* - Cédric GOMMES	Q1	15	15	-	**3**
MECA0025-3	*Fluid Mechanics* - Eric DELHEZ - [30h Proj.]	Q2	30	30	[+]	**5**
CHIM0675-1	*Macromolecular chemistry* - AnneSophie DUWEZ	Q1	20	20	-	**3**
[...]	With the accord of the academic mentor and the president of the jury, a course					

in this list can be replaced by a other course from the master program of engineering.

Second year (Full English - Prospects 2015-2016)

Compulsory course

ATFE0016-1	*Master thesis (including introduction to research methodology)*		-	-	-	**25**

Optional courses

A course chosen in the course program of the university or in the list below :

The choice must be approuved by the President of the cycle's jury.

LANG1957-1	*Dutch for Engeneering Students* (dutch language) - Claudine COLIN	TA	60	-	-	**5**
LANG1958-1	*German for Engineering Students* (german language) - Françoise CARL	TA	60	-	-	**5**
[...]	one course of the university					

Research focus

Optional courses

Choose course for a total of 30 ECTS in the following list.

Choosing a course not in this list must receive approval by the president of the jury.

Imaging and bioinstrumentation						
MATH0049-1	*Morphological Characterization of Unordered Systems* - Silvia BLACHER		30	30	-	**5**
ELEN0016-2	*Digital image and video processing* (english language) - Marc VAN DROOGENBROECK - [20h Proj.]	Q1	30	10	[+]	**5**
ELEN0071-1	*Digital Signal Processing* (english language) - Jacques VERLY - [40h Proj.]		45	15	[+]	**5**
ELEN0072-1	*Statistical signal processing* (english language) - Jacques VERLY - [40h Proj.]		45	15	[+]	**5**
ELEN0038-1	*Integrated electronics of microsystems* (english language) - Michael KRAFT		30	30	-	**5**
ELEN0069-1	*Nanoelectronics / Optoelectronics* - Benoît VANDERHEYDEN	Q2	30	30	-	**5**
ELEC0017-1	*Electromagnetic compatibility* - Véronique BEAUVOIS, Christophe GEUZAINE	Q1	30	30	-	**5**
ELEC0041-1	*Modelling and design of electromagnetic systems* (english language) - Patrick DULAR, Christophe GEUZAINE	TA	30	30	-	**5**
ELEC0054-1	*Application of Electrical Measuring Systems* - Philippe VANDERBEMDEN	Q1	30	30	-	**5**
ELEN0019-2	*Audio signal processing : principles and experiments* (english language) - JeanJacques EMBRECHTS - [24h Labo., 30h Proj.]	Q1	5	-	[+]	**5**
Bioinformatics						
ELEN0062-1	*Applied Inductive Learning* (english language) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	Q1	30	5	[+]	**5**
GBIO0015-1	*A tour in genetic epidemiology* (english language) - Kristel VAN STEEN	Q2	15	15	-	**3**
BIOC0718-2	*Structure-function of biomolecules* - Mireille DUMOULIN		15	25	-	**4**
GENE0436-1	*Statistic Genetic* - N...		10	10	-	**2**
GENE0434-1	*Experimental genomic techniques* - N...		10	10	-	**2**
GBIO0007-1	*Gene sequencing and protein analysis : part a* - Bernard JORIS	Q1	10	10	-	**2**
MATH0462-1	*Discrete optimization* (english language) - Quentin LOUVEAUX - [25h Proj.]	Q1	30	20	[+]	**5**
Biomechanics						
PROT0430-3	*Biomedical robotics and active prostheses* - Olivier BRULS	Q1	15	10	-	**2**
MECA0058-1	*Fracture mechanics, damage and fatigue* (english language) - Ludovic NOELS	Q1	30	30	-	**5**
MECA0446-2	*Continuum Mechanics* - JeanPhilippe PONTHOT - [50h Proj.]	Q2	30	30	[+]	**5**
MECA0464-1	*Large deformation of solids* (english language) - JeanPhilippe PONTHOT	Q1	30	30	-	**5**
MECA0008-1	*Microfluidics* (english language) - Tristan GILET	Q1	30	30	-	**5**
MECA0010-1	*Stochastic modelling* (english language) - Maarten ARNST	Q2	30	30	-	**5**
MECA0516-1	*Mechanical properties of biologics and bioinspired materials* (english language) - Davide RUFFONI	Q1	15	15	-	**3**
Chemistry and material sciences						
CHIM0072-1	*Engineering of nanomaterials and divided materials* - Benoît HEINRICHS,	Q1	15	15	-	**3**

	Stéphanie LAMBERT					
PHYS0038-1	*Physics of polymer materials, including plasturgy* - Klaus KECK, N...		20	20	-	**4**
MATH0049-1	*Morphological Characterization of Unordered Systems* - Silvia BLACHER		30	30	-	**5**
BIOL0114-3	*Electronic microscopies* - Philippe COMPÈRE	Q2	45	15	-	**5**
MECA0462-2	*Materials selection* (english language) - Jacqueline LECOMTEBECKERS, Davide RUFFONI - [1d FW]	Q1	30	30	[+]	**5**
CHIM0668-1	*Stirring and mixing* - Dominique TOYE	Q1	15	15	-	**3**
BIOC9241-1	*Microbial technologies* - N...		15	5	-	**2**
MECA0473-1	*Metallic materials Engineering* - Jacqueline LECOMTEBECKERS	Q1	30	30	-	**5**
Biomedical engineering and modeling						
CHIM0625-1	*Molecular mechanics and molecular dynamics* - Eric SAUVAGE	Q1	10	10	-	**2**
SYST0017-1	*Non linear systems* - Rodolphe SEPULCHRE - Suppl : Alexandre MAUROY	Q1	30	30	-	**5**
GBIO0017-1	*Parametric identification of biological models* - Dominique TOYE	Q1	10	10	-	**2**
GBIO0018-2	*Introduction to tissue engineering* (english language) - Liesbet GERIS	Q2	20	20	-	**3**
BIOC0430-1	*Interaction of living material* - Christian GRANDFILS	Q1	25	-	-	**3**
GBIO0022-1	*Biomimetism* (english language) - Liesbet GERIS, Tristan GILET, Eric PARMENTIER, Davide RUFFONI	TA	30	30	-	**5**
GBIO0014-2	*Modeling of physiological systems and clinical applications* - Thomas DESAIVE	Q1	30	30	-	**5**
ASTG0024-1	*Stage d'immersion* - Liesbet GERIS		-	-	-	**8**
ASTG9007-1	*Observation placement* - Liesbet GERIS		-	-	-	**3**

Second year (2014-2015 transitory program)

Compulsory courses

ATFE0016-1	*Final Work (including an introduction to research methodology)* - COLLÉGIALITÉ		-	-	-	**25**

Optional courses

Choose one course from the ULg courses' programme or from the list below. In any case, this course must have the approval of the cycle's Jury President

LANG1957-1	*Dutch for Engeneering Students* (dutch language) - Claudine COLIN	TA	60	-	-	**5**
LANG1958-1	*German for Engineering Students* (german language) - Françoise CARL	TA	60	-	-	**5**
[...]	One course of the University					

Research Focus

Optional courses

Choose courses totaling 30 credits from the following list.
The choice of a course not included in this list must be approved by the President of the cycle's Jury.

Imagery and bioinstrumentation						
MATH0049-1	*Morphological Characterization of Unordered Systems* - Silvia BLACHER		30	30	-	**5**
ELEN0016-2	*Digital image and video processing* (english language) - Marc VAN DROOGENBROECK - [20h Proj.]	Q1	30	10	[+]	**5**
ELEN0071-1	*Digital Signal Processing* (english language) - Jacques VERLY - [40h Proj.]		45	15	[+]	**5**
ELEN0072-1	*Statistical signal processing* (english language) - Jacques VERLY - [40h Proj.]		45	15	[+]	**5**
ELEN0038-1	*Integrated electronics of microsystems* (english language) - Michael KRAFT		30	30	-	**5**
ELEN0069-1	*Nanoelectronics / Optoelectronics* - Benoît VANDERHEYDEN	Q2	30	30	-	**5**
ELEC0017-1	*Electromagnetic compatibility* - Véronique BEAUVOIS, Christophe GEUZAINE	Q1	30	30	-	**5**
ELEC0041-1	*Modelling and design of electromagnetic systems* (english language) - Patrick DULAR, Christophe GEUZAINE	TA	30	30	-	**5**
ELEC0054-1	*Application of Electrical Measuring Systems* - Philippe VANDERBEMDEN	Q1	30	30	-	**5**
ELEN0019-2	*Audio signal processing : principles and experiments* (english language) - JeanJacques EMBRECHTS - [24h Labo., 30h Proj.]	Q1	5	-	[+]	**5**
Bioinformatique						
ELEN0062-1	*Applied Inductive Learning* (english language) - Pierre GEURTS,	Q1	30	5	[+]	**5**

	EHENKEL - [40h Proj.]					
GBIO0015-1	*A tour in genetic epidemiology* (english language) - Kristel VAN STEEN	Q2	15	15	-	**3**
BIOC0718-2	*Structure-function of biomolecules* - Mireille DUMOULIN		15	25	-	**4**
GENE0436-1	*Statistic Genetic* - N...		10	10	-	**2**
GENE0434-1	*Experimental genomic techniques* - N...		10	10	-	**2**
GBIO0007-1	*Gene sequencing and protein analysis : part a* - Bernard JORIS	Q1	10	10	-	**2**
MATH0462-1	*Discrete optimization* (english language) - Quentin LOUVEAUX - [25h Proj.]	Q1	30	20	[+]	**5**
Biomechanics						
PROT0430-3	*Biomedical robotics and active prostheses* - Olivier BRULS	Q1	15	10	-	**2**
MECA0058-1	*Fracture mechanics, damage and fatigue* (english language) - Ludovic NOELS	Q1	30	30	-	**5**
MECA0446-2	*Continuum Mechanics* - JeanPhilippe PONTHOT - [50h Proj.]	Q2	30	30	[+]	**5**
MECA0464-1	*Large deformation of solids* (english language) - JeanPhilippe PONTHOT	Q1	30	30	-	**5**
MECA0008-1	*Microfluidics* (english language) - Tristan GILET	Q1	30	30	-	**5**
MECA0010-1	*Stochastic modelling* (english language) - Maarten ARNST	Q2	30	30	-	**5**
MECA0516-1	*Mechanical properties of biologics and bioinspired materials* (english language) - Davide RUFFONI	Q1	15	15	-	**3**
Chemistry and Material Sciences						
CHIM0072-1	*Engineering of nanomaterials and divided materials* - Benoît HEINRICHS, Stéphanie LAMBERT	Q1	15	15	-	**3**
PHYS0038-1	*Physics of polymer materials, including plasturgy* - Klaus KECK, N...		20	20	-	**4**
MATH0049-1	*Morphological Characterization of Unordered Systems* - Silvia BLACHER		30	30	-	**5**
BIOL0114-3	*Electronic microscopies* - Philippe COMPÈRE	Q2	45	15	-	**5**
MECA0462-2	*Materials selection* (english language) - Jacqueline LECOMTEBECKERS, Davide RUFFONI - [1d FW]	Q1	30	30	[+]	**5**
CHIM0668-1	*Stirring and mixing* - Dominique TOYE	Q1	15	15	-	**3**
BIOC9241-1	*Microbial technologies* - N...		15	5	-	**2**
MECA0473-1	*Metallic materials Engineering* - Jacqueline LECOMTEBECKERS	Q1	30	30	-	**5**
Génie biomédical et modélisation						
CHIM0625-1	*Molecular mechanics and molecular dynamics* - Eric SAUVAGE	Q1	10	10	-	**2**
SYST0017-1	*Non linear systems* - Rodolphe SEPULCHRE - Suppl : Alexandre MAUROY	Q1	30	30	-	**5**
GBIO0017-1	*Parametric identification of biological models* - Dominique TOYE	Q1	10	10	-	**2**
GBIO0018-2	*Introduction to tissue engineering* (english language) - Liesbet GERIS	Q2	20	20	-	**3**
BIOC0430-1	*Interaction of living material* - Christian GRANDFILS	Q1	25	-	-	**3**
GBIO0022-1	*Biomimetism* (english language) - Liesbet GERIS, Tristan GILET, Eric PARMENTIER, Davide RUFFONI	TA	30	30	-	**5**
GBIO0014-2	*Modeling of physiological systems and clinical applications* - Thomas DESAIVE	Q1	30	30	-	**5**
ASTG0024-1	*Placement* - COLLÉGIALITÉ		-	-	-	**8**
ASTG9007-1	*Observation placement* - Liesbet GERIS		-	-	-	**3**

Adjusted programme for student of the Bachelors in Civil Engineering who have not taken the "Biomedical Engineering" option

Engineering bachelors who have not followed the appropriate option must follow the courses indicated by "prérequis" below if they have not followed them during their bachelor education. The courses need to be followed during the 1st master year and certains compulsory courses of the 1st master need to be postponed to the 2nd master.
The choice must be approved by the Jury.

Compulsory courses

GBIO0001-1	*Biophysics* (english language) - Liesbet GERIS	Q2	30	30	-	**5**
BIOC0002-1	*Biochemistry* - Paulette CHARLIER	Q2	30	30	-	**5**
GBIO0002-1	*Genetics and bioinformatics* - Franck DEQUIEDT, Michel GEORGES, Kristel VAN STEEN	Q1	30	30	-	**5**
GBIO0005-1	*Introduction to cognitive neurosciences* - Pierre LEPRINCE, Gilles VANDEWALLE	Q2	30	30	-	**5**
GBIO0020-1	*Physiology* - Philippe KOLH, Olivier PEULEN	Q1	30	30	-	**10**
GBIO0021-1	*Laboratory project* - Thomas DESAIVE, Liesbet GERIS	Q2	-	60	-	**5**