Study programmes 2009-2010
Faculty of Applied Sciences
Master in Biomedical Engineering

Two-year master program

First Year

Compulsory courses

GBIO0009-1	*Bio-informatics* - Kristel VAN STEEN	30	30	-	**5**
GBIO0010-1	*Bioinstrumentation* - Jacques DESTINÉ	30	30	-	**5**
GBIO0012-1	*Biomechanics* - Liesbet GERIS	30	30	-	**5**
GBIO0008-1	*Medical imaging* - Christophe PHILLIPS	30	30	-	**5**
GBIO0011-1	*Biological systems modeling* - Pierre DAUBY, Rodolphe SEPULCHRE	30	30	-	**5**
GBIO0013-1	*Transport phenomena in biology* - Dominique TOYE	30	30	-	**5**

Non specific technical training - optional courses

With the agreement of the President of the jury students choose courses for 30 credits in the list below. The choose courses must secure the prerequisites for optional courses in the seconde year.

Optional courses for the first year in the Master's degree					
MATH0461-1	*Introduction to numerical optimization* (english) - Quentin LOUVEAUX	30	30	-	**5**
SYST0003-1	*Linear control systems* - Eric BULLINGER, Rodolphe SEPULCHRE	30	30	-	**5**
ELEN0060-1	*Information and Coding Theory* - Louis WEHENKEL	30	30	-	**5**
ELEN0074-1	*Sensors, microsensors and instrumentation* - Philippe VANDERBEMDEN	30	30	-	**5**
INFO0051-1	*Artificial Intelligence Logics* - Pascal GRIBOMONT	30	30	-	**5**
INFO0004-1	*Programming Languages: From Text to Execution* (english) - Justus PIATER	30	30	-	**5**
MECA0036-1	*Finite Element Method* - Jean-Philippe PONTHOT	30	30	-	**5**
PHYS0961-1	*Irreversibility, instabilities and chaos* - Pierre DAUBY	30	30	-	**5**
PHYS0069-1	*Introduction to statistical physics* - Stéphane DORBOLO	30	30	-	**5**
ELEN0004-1	*The physics of semiconductor devices* - Benoît VANDERHEYDEN	30	30	-	**5**
INFO0009-1	*Introduction to Data Bases* - Pierre WOLPER	30	30	-	**5**
ELEN0037-1	*Microelectronics. Analysis and CAD of integrated circuits* - Jacques DESTINÉ	30	30	-	**5**
Optional course among those in the second year of the Bachelor's degree					
Option: Electricity and Electronics					
ELEC0053-2	*Electric circuits* - Patricia ROUSSEAUX	30	30	-	**5**
ELEN0075-1	*Analog Electronics* - Benoît VANDERHEYDEN	30	30	-	**5**
option computer					
INFO0902-1	*Data structures and algorithms* (english) - Justus PIATER	30	30	-	**5**
INFO0062-1	*Object-Oriented Programming* - Bernard BOIGELOT	30	30	-	**5**
Option Mechanical					
MECA0012-5	*Mechanics of materials* (english) - Serge CESCOTTO	30	30	-	**5**
Option physics					
PHYS2026-1	*Physics 4 : Microscopic physics (partime a : waves optics, partime b : introduction to nuclear physics)* - Laurent DREESEN	30	30	-	**5**
MECA0445-1	*Transfers of heat and matter* - Michel HOGGE	30	30	-	**5**
Optional course among those in the third year of the Bachelor's degree					
Option: Electricity and Electronics					
ELEC0052-1	*Analysis and Design of Electrical Measuring Systems* - Philippe VANDERBEMDEN	30	30	-	**5**
ELEN0040-1	*Digital Electronics* - Jacques DESTINÉ	30	30	-	**5**
Option Advanced Electricity and Electronics					
ELEN0070-1	*Signal Processing* - Jacques VERLY	30	30	-	**5**
Option physics					
MECA0025-1	*Fluid Mechanics* - Eric DELHEZ	30	30	-	**5**
ELEN0076-1	*Electromagnetism* - Patricia ROUSSEAUX, Benoît VANDERHEYDEN	30	30	-	**5**
Option Chemistry and Material Sciences					
CHIM0012-2	*Chemical Kinetics* - Jean-Paul PIRARD	30	30	-	**5**
CHIM0022-2	*Introduction to Chemical Engineering* - Michel CRINE	30	30	-	**5**
CHIM0605-1	*Chemistry and inorganic materials* - Rudi CLOOTS	30	30	-	**5**
Advanced Mechanical					
PHYS0904-1	*Physics of materials* - Jacqueline LECOMTE#BECKERS	30	30	-	**5**
option computer					

INFO0064-1	*Embedded Systems* - Bernard BOIGELOT	30	30	-	**5**
Advanced Computer					
INFO0054-1	*Functional programming* - Pascal GRIBOMONT	30	30	-	**5**

Notice : Students who have, in their BAC studies, already taken one or more option courses found in this list must not take them again.

Second year

Compulsory courses

ATFE0016-1	*Final Work (including an introduction to methodology and research)* - COLLÉGIALITÉ	-	-	-	**25**
[...]	A general course to be chosen from the University's programme of courses (with the agreement of the cycle's President of the Jury)				

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**
ELEN0016-1	*Digital Image Processing* - Marc VAN DROOGENBROECK	30	30	-	**5**
ELEN0071-1	*Digital Signal Processing* - Jacques VERLY	30	30	-	**5**
ELEN0072-1	*Statistical Signal Processing* - Jacques VERLY	30	30	-	**5**
ELEN0035-1	*CAD in (Analogue and Digital) On-Demand Microelectronics* - Jacques DESTINÉ	30	30	-	**5**
ELEN0038-1	*Microsystems* - Jacques DESTINÉ	30	30	-	**5**
INFO0013-1	*Computer vision* (english) - Justus PIATER	30	30	-	**5**
ELEN0069-1	*Nanoelectronics / Optoelectronics* - Benoît VANDERHEYDEN	30	30	-	**5**
ELEC0017-1	*Indirect Effects of Electromagnetic Fields* - Véronique BEAUVOIS, Jean-Louis LILIEN	30	30	-	**5**
ELEC0041-1	*Modeling and design of electromagnetic systems* - Patrick DULAR, Christophe GEUZAINE	30	30	-	**5**
ELEC0054-1	*Application of Electrical Measuring Systems* - Philippe VANDERBEMDEN	30	30	-	**5**
ELEN0019-1	*Treatment of the audio signals: principles and experiments* - Jean-Jacques EMBRECHTS	30	30	-	**5**
Bioinformatics and Modeling					
ELEN0062-1	*Applied Inductive Learning* - Pierre GEURTS, Louis WEHENKEL	30	30	-	**5**
SYST0017-1	*Non linear systems* - Rodolphe SEPULCHRE	30	30	-	**5**
GBIO0015-1	*A tour in genetic epidemiology* - Kristel VAN STEEN	15	15	-	**3**
GBIO0016-1	*Introduction to systems biology* - Eric BULLINGER, Rodolphe SEPULCHRE	30	30	-	**5**
BIOC0718-2	*Structure-function of biomolecules* - Mireille DUMOULIN	15	25	-	**4**
GENE0436-1	*Statistic Genetic* - Michel GEORGES	10	10	-	**2**
GBIO0017-1	*Identification of biological processes and networks* - Dominique TOYE	10	10	-	**2**
CHIM0625-1	*Molecular mechanics and molecular dynamics* - Dominique DEHARENG	10	10	-	**2**
GENE0434-1	*Experimental genomic techniques* - Michel GEORGES	10	10	-	**2**
GBIO0007-1	*Gene sequencing and protein analysis: part a* - Bernard JORIS	10	10	-	**2**
MATH0462-1	*Discrete optimization* - Quentin LOUVEAUX	30	30	-	**5**
Biomechanics					
PROT0430-2	*Biomedical robotics and active prostheses* - Olivier BRULS	30	30	-	**5**
GBIO0014-2	*Network hemodynamics with deformable walls* - Thomas DESAIVE	15	15	-	**3**
MECA0058-1	*Fracture mechanics, damage and fatigue* - Ludovic NOELS	30	30	-	**5**
MECA0097-1	*Digital Methods in Fluid Dynamics* - Jean-André ESSERS	15	15	-	**3**
MECA0446-1	*Continuum Mechanics* - Jean-Philippe PONTHOT	30	30	-	**5**
MECA0464-1	*Large deformation of solids* - Jean-Philippe PONTHOT	30	30	-	**5**
Chemistry and Material Sciences					
BIOC0430-1	*Interaction of living material* - Christian GRANDFILS	25	-	-	**3**

CHIM0072-1	*Engineering of nanomaterials and divided materials* - Benoît HEINRICHS	15	15	-	**3**
PHYS0038-1	*Physics of polymer materials, including plasturgy* - N... - Suppl : Eric MARTIN	20	20	-	**4**
CHIM0667-2	*Transport phenomena in complex media (Transport in membranes)* - Dominique TOYE	15	15	-	**3**
MATH0049-1	*Morphological Characterization of Unordered Systems* - Silvia BLACHER	30	30	-	**5**
CHIM0069-1	*Porous Material Physical Chemistry* - Jean-Paul PIRARD	15	-	-	**2**
META0430-1	*Metal-Ceramic Materials* - Adrien MAGNÉE	15	10	-	**2**
BIOL0114-3	*Electronic microscopies* - Philippe COMPÈRE	45	15	-	**5**
MECA0462-1	*MECA0462: materials selection* - Jacqueline LECOMTE#BECKERS	30	30	-	**5**
CHIM0668-1	*Stirring and mixing* - Dominique TOYE	15	15	-	**3**
CHIM0067-1	*Biochemical Reactors II* - Michel CRINE	15	-	-	**2**
MECA0473-1	*Metallic materials Engineering* - Jacqueline LECOMTE#BECKERS	30	30	-	**5**
ASTG0024-1	*Placement* - COLLÉGIALITÉ	-	-	-	**10**

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

Students studying for the Bachelors in Civil Engineering who have not chosen the appropriate option:

* must take all the so-called "prerequisite" courses hereafter, if they were not taken during the 1st cycle. These courses must be taken during the 1st year of the masters and some 1st-year compulsory courses must be rolled over to the 2nd year.
* must subsequently reduce the number of courses they choose to take in the 2nd year of the masters. If all the "prerequisite" courses must be taken, it will be impossible for them to choose which courses they take.

The adapted programme for these students must first gain be approved by the Jury.

Compulsory courses

GBIO0001-1	*Introduction to Biomedical Engineering* - Kristel VAN STEEN	30	30	-	**5**
BIOC0002-1	*Biochemistry* - Paulette CHARLIER	30	30	-	**5**
GBIO0002-1	*Genetics and molecular biology* - Michel GEORGES, Joseph MARTIAL	30	30	-	**5**
GBIO0005-1	*Introduction to neurosciences* - Shibeshih BELACHEW, Pierre MAQUET	30	30	-	**5**
GBIO0004-1	*Physiology of the systems* - Philippe KOLH	30	30	-	**5**
GBIO0003-1	*Molecular and cellular physiology* - Olivier PEULEN	30	30	-	**5**