Block view of the study programme

					Or	Th	Pr	Au	Cr

Block 1

Depending on your track record or your professional/research focus, some prerequisites/corequisites of your first year program might appear in bloc 2. You are therefore invited to go through the list of courses suggested in bloc 2 even if you enroll for the first time in this master program.

To complete their curriculum, students must earn or validate the 60 credits of the compulsory courses (including the master thesis), 30 credits of the professionnal focus (students have to choose one of the 3 options) and 30 credits optional courses. Ideally, students enrolling in the master program should have acquired the skills and knowledge corresponding to the 40 credits in "Biomedical" offered as part of the bachelor program in engineering.

Compulsory Courses

Code	Course	Or	Th	Pr	Au	Cr
GBIO0029-1	*Bioelectronics* (english language) - JeanMichel REDOUTÉ - [20h Labo., 20h Proj.]	Q1	30	15	[+]	**5**
GBIO0012-2	*Biomechanics* (english language) - Davide RUFFONI - [1d FW]	Q1	26	26	[+]	**5**
GBIO0008-2	*Medical imaging* (english language) - Christophe PHILLIPS - [8h Labo., 1d FW]	Q2	33	12	[+]	**5**
GBIO0014-2	*In silico medicine* - Thomas DESAIVE	Q2	30	30	-	**5**
GBIO0027-1	*Medical device design projects* (english language) - Liesbet GERIS, Davide RUFFONI - [8h Labo., 1d FW] **Corequisite :** GBIO0001-1 - Biophysique et biochimie GBIO0025-1 - Biologie générale et cellulaire GBIO0026-1 - Physiologie des systèmes	TA	30	90	[+]	**10**
GEST3162-1	*Principles of management* (english language) - François PICHAULT, Willem STANDAERT - [25h Proj.]	Q1	30	-	[+]	**5**

Elective courses

Single focus

Professional focus

Choose one of the following options :

Biomechanics, Biomaterials & Tissues Engineering

Code	Course	Or	Th	Pr	Au	Cr
BIOC0430-1	*Interactions materials - living systems* (english language) - Dorien VAN HEDE	Q1	25	-	-	**3**
MECA0139-1	*Additive manufacturing and 3D printing* (english language) - Anne MERTENS	Q1	26	26	-	**5**
PROT0430-3	*Biomedical robotics and active prostheses* (english language) - Olivier BRULS	Q1	15	10	-	**3**
GBIO0018-2	*Introduction to tissue engineering* (english language) - Liesbet GERIS	Q2	20	5	-	**4**
MECA0008-1	*Microfluidics* (english language) - Tristan GILET - [16h Labo., 14h Proj.]	Q2	22	8	[+]	**5**
MECA0036-2	*Finite Element Method* (english language) - JeanPhilippe PONTHOT - [40h Proj.]	Q2	26	26	[+]	**5**

In silico medicine

Code	Course	Or	Th	Pr	Au	Cr
ELEN0062-1	*Introduction to machine learning* (english language) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	Q1	30	5	[+]	**5**
INFO0939-1	*High performance scientific computing* (english language) - Christophe GEUZAINE - [20h Proj.]	Q1	30	15	[+]	**5**
MECA0036-2	*Finite Element Method* (english language) - JeanPhilippe PONTHOT -	Q2	26	26	[+]	**5**

[40h Proj.]

Code	Course					
INFO8010-1	*Deep learning* (english language) - Gilles LOUPPE - [60h Proj.]	Q2	30	-	[+]	**5**
SYST0022-1	*Linear Systems Design* (english language) - Guillaume DRION, Pierre SACRÉ - [15h Proj.]	Q2	26	26	[+]	**5**

Neural systems

Code	Course					
GNEU0001-1	*Principles of Neuroengineering* (english language) - Guillaume DRION, Alessio FRANCI, Christophe PHILLIPS, Pierre SACRÉ - [26h Labo., 15h Proj.]	Q1	26	-	[+]	**5**
ELEN0062-1	*Introduction to machine learning* (english language) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	Q1	30	5	[+]	**5**
ELEN0074-1	*Sensors, microsensors and instrumentation* (english language) - Philippe VANDERBEMDEN - [20h Labo.]	Q2	30	-	[+]	**5**
SYST0022-1	*Linear Systems Design* (english language) - Guillaume DRION, Pierre SACRÉ - [15h Proj.]	Q2	26	26	[+]	**5**
SYST0017-1	*Advanced topics in systems and control* (english language) - Pierre DAUBY, Guillaume DRION	Q1	26	26	-	**5**

Block 2

Depending on your track record or your professional/research focus, some prerequisites/corequisites of your first year program might appear in bloc 2. You are therefore invited to go through the list of courses suggested in bloc 2 even if you enroll for the first time in this master program.

Compulsory Courses

Code	Course					
ATFE0016-1	*Master thesis (including introduction to research methodology)* - Davide RUFFONI - [750h Proj.]	TA	-	-	[+]	**25**

Elective courses

Single focus

Professional focus

Choose one of the following options :

Biomechanics, Biomaterials & Tissues Engineering

Code	Course					
BIOM0631-1	*Human movement analysis* (english language) - Olivier BRULS, Cédric SCHWARTZ - [15h Proj.]	Q1	33	14	[+]	**5**

In silico medicine

Code	Course					
GBIO0033-1	*Advances in in silico medicine* (english language) - Liesbet GERIS	Q1	26	26	-	**5**

Neural systems

Code	Course					
PHYS0128-1	*Magnetic Resonance Imaging - the Basics* (english language) - Laurent LAMALLE - [3d FW]	Q1	15	-	[+]	**3**
GBIO0034-1	*Neuroimaging data analysis* (english language) - Christophe PHILLIPS	Q1	10	5	-	**2**

Optionnal courses and compulsory Internship
Choose 30 credits from the following list :

Compulsory internship (choose between the 3 ECTS and 8 ECTS version)

Code	Course					
ASTG0024-1	*Immersion internship* (english language) - Liesbet GERIS	TA	-	-	-	**8**
ASTG9007-1	*Observation internship* (english language) - Liesbet GERIS	TA	-	-	-	**3**

Optionnal courses

The thematic structuring is indicative only. You can choose amongst all the listed courses regardless of the option chosen in the professional focus.

The subjects GBIO0001-1, GBIO0025-1 et GBIO0026-1 are corequisite to some compulsory courses of the master program. They must be taken as a priority, unless they were already taken as part of the bachelor in engineering, or unless the corresponding knowledge and skills have been acquired previously.

Biomedical engineering & sciences

GBIO0001-1	*Biophysics and Biochemistry* - Mireille DUMOULIN, Liesbet GERIS - [6h Proj.]	Q1	29	23	[+]	**5**
GBIO0016-1	*Introduction to systems and synthetic biology* (english language) - Frank DELVIGNE, Philippe JACQUES	Q2	26	26	-	**5**
GBIO0022-1	*Biomimicry* (english language) - Philippe COMPÈRE, Tristan GILET, Davide RUFFONI - [45h Proj.]	TA	15	-	[+]	**5**
GBIO0025-1	*General and cell biology* - Christel PEQUEUX	Q2	36	10	-	**5**
GBIO0026-1	*Systems physiology* - Philippe KOLH	Q2	26	26	-	**5**
LABO0432-1	*Techniques for cells and tissue cultures* - Erik MAQUOI	Q1	8	20	-	**2**
SBIM0495-2	*Molecular and cellular basis of disease* (english language) - Jo CAERS, Pierre CLOSE, Charlotte CORNIL, Laurence DELACROIX, Mireille DUMOULIN, Keith DURKIN, Carla GOMES DA SILVA, Céline KEMPENEERS, Vincent SEUTIN, Sabine WISLET - [40h Pers. Res.]	Q2	20	10	[+]	**7**

Biomechanics, Biomaterials & Tissues Engineering

CHIM0604-2	*Chemistry and organic materials* - Lionel DELAUDE	Q2	33	19	-	**5**
CHIM9319-1	*Chemistry and technology of polymers* (english language) - Antoine DEBUIGNE, Klaus KECKANTOINE - [10h Proj., 12h Labo.]	Q2	30	-	[+]	**5**
CHIM9320-1	*Introduction to chemical reaction engineering* - Nathalie JOB, Dominique TOYE	Q1	24	24	-	**5**
MECA0018-2	*Manufacturing processes* (english language) - Yves MARCHAL - [15h Labo., 11h Proj., 0,5d FW]	Q2	30	-	[+]	**5**
MECA0462-2	*Materials selection* (english language) - Anne MERTENS, Davide RUFFONI - [30h Proj., 1d FW]	Q1	26	26	[+]	**5**
MECA0516-1	*Mechanical properties of biological and bioinspired materials* (english language) - Davide RUFFONI - [4h Labo.]	Q1	26	22	[+]	**5**

In silico medicine

BIOL0021-1	*Biology of the systems* - Patrick MEYER - [10h Mon. WS]	Q1	10	-	[+]	**2**
ELEN0016-2	*Computer vision* (english language) - Marc VAN DROOGENBROECK - [50h Proj.]	Q1	30	10	[+]	**5**
GBIO0015-1	*A tour in genetic epidemiology* (english language) - Kristel VAN STEEN - [60h Proj.]	Q2	15	15	[+]	**3**
GBIO0030-1	*Computational approaches to statistical generics* (english language) - Kristel VAN STEEN - [35h Proj.]	Q2	25	15	[+]	**5**
GBIO0031-1	*Learning from genomic data* (english language) - Kristel VAN STEEN - [150h Proj.]	Q2	-	-	[+]	**5**
MATH0024-1	*Modelling with partial differential equations* (english language) - Maarten ARNST, Romain BOMAN - [25h Proj.]	Q1	30	20	[+]	**5**
MATH0471-2	*Multiphysics integrated computational project* (english language) - Romain BOMAN, Christophe GEUZAINE - [30h Proj.]	TA	33	-	[+]	**5**
MECA0010-1	*Uncertainty quantification and stochastic modelling* (english language) -	Q1	16	16	[+]	**5**

Maarten ARNST - [28h Proj.]

Neural systems

ELEC0054-1	*Advanced electrical measurement systems* (english language) - Philippe VANDERBEMDEN - [20h Labo.]	Q1	30	10	[+]	**5**
ELEN0037-1	*Microelectronics and IC design* (english language) - JeanMichel REDOUTÉ - [40h Proj.]	Q2	30	20	[+]	**5**
ELEN0062-1	*Introduction to machine learning* (english language) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	Q1	30	5	[+]	**5**
ELEN0074-1	*Sensors, microsensors and instrumentation* (english language) - Philippe VANDERBEMDEN - [20h Labo.]	Q2	30	-	[+]	**5**

Other optional courses

PROJ0011-2	*Personal student project* (english language) - Pierre DUYSINX, Liesbet GERIS, Grégoire LÉONARD - [150h Proj.]	TA	-	-	[+]	**5**
GNEU0001-1	*Principles of Neuroengineering* (english language) - Guillaume DRION, Alessio FRANCI, Christophe PHILLIPS, Pierre SACRÉ - [26h Labo., 15h Proj.]	Q1	26	-	[+]	**5**
INFO8006-1	*Introduction to artificial intelligence* (english language) - Gilles LOUPPE - [45h Proj.]	Q1	25	20	[+]	**5**
PHYS0128-1	*Magnetic Resonance Imaging - the Basics* (english language) - Laurent LAMALLE - [3d FW]	Q1	15	-	[+]	**3**
SYST0017-1	*Advanced topics in systems and control* (english language) - Pierre DAUBY, Guillaume DRION	Q1	26	26	-	**5**
SYST0020-1	*Introduction to microsystems and microtechnology* (english language) - Tristan GILET, JeanMichel REDOUTÉ - [4h Labo., 20h Proj.]	Q2	24	18	[+]	**5**
SYST0022-1	*Linear Systems Design* (english language) - Guillaume DRION, Pierre SACRÉ - [15h Proj.]	Q2	26	26	[+]	**5**
GBIO0033-1	*Advances in in silico medicine* (english language) - Liesbet GERIS	Q1	26	26	-	**5**
MECA0036-2	*Finite Element Method* (english language) - JeanPhilippe PONTHOT - [40h Proj.]	Q2	26	26	[+]	**5**
INFO0939-1	*High performance scientific computing* (english language) - Christophe GEUZAINE - [20h Proj.]	Q1	30	15	[+]	**5**
INFO8010-1	*Deep learning* (english language) - Gilles LOUPPE - [60h Proj.]	Q2	30	-	[+]	**5**
GBIO0018-2	*Introduction to tissue engineering* (english language) - Liesbet GERIS	Q2	20	5	-	**4**
MECA0008-1	*Microfluidics* (english language) - Tristan GILET - [16h Labo., 14h Proj.]	Q2	22	8	[+]	**5**
MECA0139-1	*Additive manufacturing and 3D printing* (english language) - Anne MERTENS	Q1	26	26	-	**5**
PROT0430-3	*Biomedical robotics and active prostheses* (english language) - Olivier BRULS	Q1	15	10	-	**3**
BIOC0430-1	*Interactions materials - living systems* (english language) - Dorien VAN HEDE	Q1	25	-	-	**3**
BIOM0631-1	*Human movement analysis* (english language) - Olivier BRULS, Cédric SCHWARTZ - [15h Proj.]	Q1	33	14	[+]	**5**
GNEU0004-1	*Computational cognitive modelling* (english language) - Alessio FRANCI	Q1	26	26	-	**5**

[...]   With the agreement of the jury, choose 5 credits in any course programme of the University or from the UNIC course catalog.

Bloc d'aménagement du programme de l'année

Additional ECTS Master in biomedical engineering

Optional courses

The program of each candidate will be determined by the Jury according to his previous training. If a candidate does not master certain prerequisites, his program may include up to 60 credits of additional courses mainly from the list below :

GBIO0025-1	*General and cell biology* - Christel PEQUEUX	Q2	36	10	-	**5**
GBIO0026-1	*Systems physiology* - Philippe KOLH	Q2	26	26	-	**5**
GBIO0002-1	*Genetics and bioinformatics* (english language) - Franck DEQUIEDT, Kristel VAN STEEN - [15h Proj.]	Q1	30	15	[+]	**5**
GBIO0011-1	*Biological Systems Modelling* - Pierre DAUBY, Liesbet GERIS	Q2	26	26	-	**5**
GBIO0001-1	*Biophysics and Biochemistry* - Mireille DUMOULIN, Liesbet GERIS - [6h Proj.]	Q1	29	23	[+]	**5**
GBIO0021-1	*Laboratory Project* - Thomas DESAIVE, Liesbet GERIS - [16h Labo., 8h Proj.]	Q2	-	44	[+]	**5**
GBIO0013-1	*Phenomenon of Transport in Biology* - Dominique TOYE	Q2	26	26	-	**5**
GBIO0005-1	*Introduction to cognitive neurosciences* - Gilles VANDEWALLE	Q1	26	26	-	**5**

[...] To this list may be added, within the limit of 60 credits, other technical courses depending on the skills acquired by the student.