Vue bloc du programme des cours

		Or	Th	Pr	Au	Cr

Bloc 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 55 credits of the compulsory courses (including the master thesis), 30 credits technical training and 35 credits optional courses (30 of wich counts towards the professional focus). 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.

Elective courses

Professional focus

GBIO0029-1	*Bioelectronics* (anglais) - JeanMichel REDOUTÉ - [20h Labo., 20h Proj.]	Q1	30	15	[+]	**5**
GBIO0012-2	*Biomechanics* (anglais) - Davide RUFFONI - [1j T. t.]	Q1	26	26	[+]	**5**
GBIO0008-2	*Medical imaging* (anglais) - Christophe PHILLIPS - [8h Labo., 1j T. t.]	Q2	33	12	[+]	**5**
GBIO0027-1	*Integrated project in biomedical engineering* (anglais) - Liesbet GERIS, Davide RUFFONI **Corequis :** 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* (anglais) - François PICHAULT, Willem STANDAERT - [25h Proj.]	Q1	30	-	[+]	**5**

Technical courses
Choose one of the following options :

Electronics

Choose 25 credits in the following list :

[...] 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.

SYST0017-1	*Advanced topics in systems and control* (anglais) - Guillaume DRION	Q1	26	26	-	**5**
SYST0003-1	*Linear control systems* (anglais) - *Theory* - Guillaume DRION - *Control system design in time domain and frequency domain* - Guillaume DRION - [6h Labo.]	Q1	26 -	6 20	- [+]	**5**
ELEN0074-1	*Sensors, microsensors and instrumentation* (anglais) - Philippe VANDERBEMDEN - [20h Labo.]	Q2	30	-	[+]	**5**
ELEN0071-1	*Applied digital signal processing* (anglais) - Pierre SACRÉ - [40h Proj.]	Q2	39	13	[+]	**5**
ELEN0037-1	*Microelectronics and IC design* (anglais) - JeanMichel REDOUTÉ - [40h Proj.]	Q2	30	20	[+]	**5**
INFO0064-2	*Embedded systems* (anglais) - Bernard BOIGELOT	Q1	25	20	-	**3**
INFO2055-1	*Embedded systems project* (anglais) - Bernard BOIGELOT - [60h Proj.]	Q2	-	-	[+]	**2**

Informatics

Choose 25 credits in the following list :

[...] 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.

SYST0003-1	*Linear control systems* (anglais) - *Theory* - Guillaume DRION - *Control system design in time domain and frequency domain* - Guillaume DRION - [6h Labo.]	Q1	26 -	6 - 20	[+]	**5**
INFO0939-1	*High performance scientific computing* (anglais) - Christophe GEUZAINE - [20h Proj.]	Q1	30	15	[+]	**5**
MATH0462-1	*Discrete optimization* (anglais) - Quentin LOUVEAUX - [25h Proj.]	Q2	30	20	[+]	**5**
ELEN0060-2	*Information and coding theory* (anglais) - Louis WEHENKEL - [30h Proj.]	Q2	30	15	[+]	**5**
ELEN0071-1	*Applied digital signal processing* (anglais) - Pierre SACRÉ - [40h Proj.]	Q2	39	13	[+]	**5**
ELEN0062-1	*Introduction to machine learning* (anglais) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	Q1	30	5	[+]	**5**

Mechanics

Choose 25 credits in the following list :

[...] 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.

MECA0036-2	*Finite Element Method* (anglais) - JeanPhilippe PONTHOT - [40h Proj.]	Q2	26	26	[+]	**5**
MECA0031-2	*Kinematics and dynamics of mechanisms* (anglais) - Olivier BRULS - [40h Proj.]	Q2	30	20	[+]	**5**
MECA0008-1	*Microfluidics* (anglais) - Tristan GILET - [16h Labo., 14h Proj.]	Q2	22	8	[+]	**5**
MECA0010-1	*Reliability and stochastic modeling of engineering systems* (anglais) - Maarten ARNST - [28h Proj.]	Q1	16	16	[+]	**5**
MECA0462-2	*Materials selection* (anglais) - Anne MERTENS, Davide RUFFONI - [30h Proj., 1j T. t.]	Q1	26	26	[+]	**5**
MECA0139-1	*Additive manufacturing and 3D printing* (anglais) - Anne MERTENS	Q1	26	26	-	**5**

Chemistry/Materials

Choose 25 credits in the following list :

[...] 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.

CHIM0604-2	*Chimie et matériaux organiques* - Lionel DELAUDE	Q2	33	19	-	**5**
CHIM9277-1	*Génie chimique (étude des réacteurs)* - Dominique TOYE - [15h Labo.]	Q1	35	15	[+]	**4**
CHIM0072-2	*Ingénierie des nanomatériaux et des matériaux divisés* - Benoît HEINRICHS, Stéphanie LAMBERT	Q1	15	15	-	**3**
MECA0139-1	*Additive manufacturing and 3D printing* (anglais) - Anne MERTENS	Q1	26	26	-	**5**
MECA0462-2	*Materials selection* (anglais) - Anne MERTENS, Davide RUFFONI - [30h Proj., 1j T. t.]	Q1	26	26	[+]	**5**
PHYS0904-4	*Physique des matériaux* - Luc COURARD, Anne MERTENS - [1j T. t.]	Q2	26	26	[+]	**5**

Choose 5 credits :

[...] The remaining credits (5 ECTS) can be chosen in amongst the optional or technical courses that have not yet been followed

Bloc 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

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

Elective courses

Single focus

Technical courses
Choose one of the following options :

Electronics

Choose 5 credits in the following list to complete the option choosen :

SYST0017-1	*Advanced topics in systems and control* (anglais) - Guillaume DRION	Q1	26	26	-	**5**
SYST0003-1	*Linear control systems* (anglais) - *Theory* - Guillaume DRION - *Control system design in time domain and frequency domain* - Guillaume DRION - [6h Labo.]	Q1	26 -	6 20	- [+]	**5**
ELEN0074-1	*Sensors, microsensors and instrumentation* (anglais) - Philippe VANDERBEMDEN - [20h Labo.]	Q2	30	-	[+]	**5**
ELEN0071-1	*Applied digital signal processing* (anglais) - Pierre SACRÉ - [40h Proj.]	Q2	39	13	[+]	**5**
ELEN0037-1	*Microelectronics and IC design* (anglais) - JeanMichel REDOUTÉ - [40h Proj.]	Q2	30	20	[+]	**5**
INFO0064-2	*Embedded systems* (anglais) - Bernard BOIGELOT	Q1	25	20	-	**3**
INFO2055-1	*Embedded systems project* (anglais) - Bernard BOIGELOT - [60h Proj.]	Q2	-	-	[+]	**2**

Informatics

Choose 5 credits in the following list to complete the option choosen :

SYST0003-1	*Linear control systems* (anglais) - *Theory* - Guillaume DRION - *Control system design in time domain and frequency domain* - Guillaume DRION - [6h Labo.]	Q1	26 -	6 20	- [+]	**5**
INFO0939-1	*High performance scientific computing* (anglais) - Christophe GEUZAINE - [20h Proj.]	Q1	30	15	[+]	**5**
MATH0462-1	*Discrete optimization* (anglais) - Quentin LOUVEAUX - [25h Proj.]	Q2	30	20	[+]	**5**
ELEN0060-2	*Information and coding theory* (anglais) - Louis WEHENKEL - [30h Proj.]	Q2	30	15	[+]	**5**
ELEN0071-1	*Applied digital signal processing* (anglais) - Pierre SACRÉ - [40h Proj.]	Q2	39	13	[+]	**5**
ELEN0062-1	*Introduction to machine learning* (anglais) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	Q1	30	5	[+]	**5**

Mechanics

Choose 5 credits in the following list to complete the option choosen :

MECA0036-2	*Finite Element Method* (anglais) - JeanPhilippe PONTHOT - [40h Proj.]	Q2	26	26	[+]	**5**
MECA0031-2	*Kinematics and dynamics of mechanisms* (anglais) - Olivier BRULS - [40h Proj.]	Q2	30	20	[+]	**5**
MECA0008-1	*Microfluidics* (anglais) - Tristan GILET - [16h Labo., 14h Proj.]	Q2	22	8	[+]	**5**

MECA0010-1	*Reliability and stochastic modeling of engineering systems* (anglais) - Maarten ARNST - [28h Proj.]	Q1	16	16	[+]	**5**
MECA0462-2	*Materials selection* (anglais) - Anne MERTENS, Davide RUFFONI - [30h Proj., 1j T. t.]	Q1	26	26	[+]	**5**
MECA0139-1	*Additive manufacturing and 3D printing* (anglais) - Anne MERTENS	Q1	26	26	-	**5**

Chemistry/Materials

Choose 5 credits in the following list to complete the option choosen :

CHIM0604-2	*Chimie et matériaux organiques* - Lionel DELAUDE	Q2	33	19	-	**5**
CHIM9277-1	*Génie chimique (étude des réacteurs)* - Dominique TOYE - [15h Labo.]	Q1	35	15	[+]	**4**
CHIM0072-2	*Ingénierie des nanomatériaux et des matériaux divisés* - Benoît HEINRICHS, Stéphanie LAMBERT	Q1	15	15	-	**3**
MECA0139-1	*Additive manufacturing and 3D printing* (anglais) - Anne MERTENS	Q1	26	26	-	**5**
MECA0462-2	*Materials selection* (anglais) - Anne MERTENS, Davide RUFFONI - [30h Proj., 1j T. t.]	Q1	26	26	[+]	**5**
PHYS0904-4	*Physique des matériaux* - Luc COURARD, Anne MERTENS - [1j T. t.]	Q2	26	26	[+]	**5**
CHIM9319-1	*Chemistry and technology of polymers* (anglais) - Antoine DEBUIGNE, AnneSophie DUWEZ, Klaus KECKANTOINE - [10h Proj., 12h Labo.]	Q2	30	-	[+]	**5**

Other optionnal courses and Internship
Choose 30 credits from the following list. The thematic structuring is indicative only.

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

ASTG0024-1	*Immersion internship* (anglais) - Liesbet GERIS	TA	-	-	-	**8**
ASTG9007-1	*Observation internship* (anglais) - Liesbet GERIS	TA	-	-	-	**3**

Imaging and instrumentation

MATH0049-1	*Caractérisation morphologique de systèmes désordonnés* - Silvia BLACHER	Q1	26	26	-	**5**
ELEN0071-1	*Applied digital signal processing* (anglais) - Pierre SACRÉ - [40h Proj.]	Q2	39	13	[+]	**5**
ELEN0004-1	*Semiconductor devices* (anglais) - Benoît VANDERHEYDEN	Q1	26	26	-	**5**
MATH0461-2	*Introduction to numerical optimization* (anglais) - Quentin LOUVEAUX - [25h Proj.]	Q1	30	20	[+]	**5**
ELEN0016-2	*Computer vision* (anglais) - Marc VAN DROOGENBROECK - [50h Proj.]	Q1	30	10	[+]	**5**
ELEC0017-1	*Electromagnetic Compatibility* (anglais) - Véronique BEAUVOIS, Christophe GEUZAINE - [30h Proj.]	TA	20	10	[+]	**5**
PHYS0128-1	*Bases de l'imagerie par résonance magnétique nucléaire* (anglais) - N... - Suppl : Laurent LAMALLE - [3j T. t.]	Q2	15	-	[+]	**3**
ELEC0041-1	*Modelling and design of electromagnetic systems* (anglais) - Christophe GEUZAINE	Q2	26	26	-	**5**
ELEC0054-1	*Application of electrical measurement systems* (anglais) - Philippe VANDERBEMDEN - [20h Labo.]	Q1	30	10	[+]	**5**
ELEN0062-1	*Introduction to machine learning* (anglais) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	Q1	30	5	[+]	**5**
STAT0722-1	*Introduction à la statistique médicale* (anglais) - Christophe PHILLIPS	Q1	10	5	-	**2**
INFO0009-2	*Bases de données (organisation générale)* - Christophe DEBRUYNE - [25h Proj.]	Q2	26	26	[+]	**5**
SYST0020-1	*Introduction to microsystems and microtechnology* (anglais) - Tristan GILET, JeanMichel REDOUTÉ - [4h Labo., 20h Proj.]	Q2	24	18	[+]	**5**

Mechanics, materials and chemistry

PROT0430-3	*Biomedical robotics and active prostheses* (anglais) - Olivier BRULS (années impaires)	Q1	15	10	-	**3**
MECA0516-1	*Mechanical properties of biological and bioinspired materials* (anglais) - Davide RUFFONI - [4h Labo.]	Q1	26	22	[+]	**5**
CHIM0625-1	*Mécanique et dynamique moléculaire* - Frédéric KERFF	Q1	10	10	-	**2**
MECA0464-1	*Large deformation of solids* (anglais) - Romain BOMAN, JeanPhilippe PONTHOT - [60h Proj.]	Q1	26	26	[+]	**5**
MECA0446-2	*Continuum Mechanics* (anglais) - JeanPhilippe PONTHOT - [50h Proj.]	Q2	26	26	[+]	**5**
MECA0025-3	*Mécanique des fluides* - Eric DELHEZ - [30h Proj.]	Q2	26	26	[+]	**5**
MECA0018-2	*Manufacturing processes* (anglais) - Yves MARCHAL - [15h Labo., 11h Proj., 0,5j T. t.]	Q2	30	-	[+]	**5**
CHIM0698-1	*Physical chemistry of interfaces* (anglais) - Cédric GOMMES	Q2	20	10	-	**3**
PHYS0038-2	*Introduction into polymer physics including plasturgy* (anglais) - Klaus KECKANTOINE, Klaus KECKANTOINE	Q1	30	-	-	**4**
CHIM9318-1	*Matériaux inorganiques : procédés de fabrication et propriétés d'usage* - Stéphanie LAMBERT - [12h Labo.]	Q2	20	20	[+]	**5**
BIOL0114-3	*Microscopies électroniques* - *Partim A* - Philippe COMPÈRE - *Partim B* - Philippe COMPÈRE	Q2	 15 24	 - 13	 - -	**5**
CHIM0668-1	*Agitation et mélange* - Dominique TOYE - [5h Labo.]	Q1	30	5	[+]	**4**
MECA0473-1	*Ingénierie des matériaux métalliques* - Anne MERTENS	Q1	26	26	-	**5**
CHIM0697-1	*Heterogeneous catalysis* (anglais) - Nathalie JOB - [10h Proj.]	Q1	20	20	[+]	**4**
MECA0012-6	*Mécanique des solides* - Laurent DUCHENE - [15h Proj.]	Q2	26	26	[+]	**5**
MECA0023-1	*Advanced solid mechanics* (anglais) - JeanPhilippe PONTHOT - [30h Proj.]	Q1	26	26	[+]	**5**

Modeling and informatics

GBIO0014-2	*Modélisation des systèmes physiologiques et applications cliniques* - Thomas DESAIVE	Q1	30	30	-	**4**
GBIO0015-1	*A tour in genetic epidemiology* (anglais) - Kristel VAN STEEN - [60h Proj.]	Q2	15	15	[+]	**3**
BIOC0718-2	*Relations structure-fonction dans les biomolécules* - Mireille DUMOULIN	Q2	15	25	-	**4**
GBIO0030-1	*Computational approaches to statistical genetics* (anglais) - Kristel VAN STEEN - [35h Proj.]	Q2	25	15	[+]	**5**
MATH0024-1	*Modelling with partial differential equations* (anglais) - Maarten ARNST, Romain BOMAN - [25h Proj.]	Q1	30	20	[+]	**5**
INFO0939-1	*High performance scientific computing* (anglais) - Christophe GEUZAINE - [20h Proj.]	Q1	30	15	[+]	**5**
MECA0036-2	*Finite Element Method* (anglais) - JeanPhilippe PONTHOT - [40h Proj.]	Q2	26	26	[+]	**5**
MATH0461-2	*Introduction to numerical optimization* (anglais) - Quentin LOUVEAUX - [25h Proj.]	Q1	30	20	[+]	**5**
MATH0471-2	*Multiphysics integrated computational project* (anglais) - Romain BOMAN, Christophe GEUZAINE - [30h Proj.]	TA	33	-	[+]	**5**
INFO0009-2	*Bases de données (organisation générale)* - Christophe DEBRUYNE - [25h Proj.]	Q2	26	26	[+]	**5**
ELEN0060-2	*Information and coding theory* (anglais) - Louis WEHENKEL - [30h Proj.]	Q2	30	15	[+]	**5**
GBIO0031-1	*Learning from genomic data* (anglais) - Kristel VAN STEEN - [150h Proj.]	Q2	-	-	[+]	**5**
INFO0064-2	*Embedded systems* (anglais) - Bernard BOIGELOT	Q1	25	20	-	**3**

Biomedical engineering

GBIO0018-2	*Introduction to tissue engineering* (anglais) - Liesbet GERIS - [15h Proj.]	Q2	20	5	[+]	**3**
BIOC0430-1	*Interaction matériau - vivant* - Christian GRANDFILS	Q1	25	-	-	**3**
GBIO0022-1	*Biomimicry* (anglais) - Philippe COMPÈRE, Liesbet GERIS, Tristan GILET, Davide RUFFONI - [45h Proj.]	TA	15	-	[+]	**5**
INGE0012-1	*Scientific research in engineering and its impact on innovation* (anglais) - Rodolphe SEPULCHRE	Q2	26	26	-	**5**
BIOM0631-1	*Human movement analysis* (anglais) - Olivier BRULS, Cédric SCHWARTZ - [15h Proj.]	Q1	33	14	[+]	**5**
GBIO0016-1	*Introduction to systems and synthetic biology* (anglais) - Frank DELVIGNE, JeanDenis DOCQUIER, Philippe JACQUES	Q2	26	26	-	**5**
LABO0432-1	*Techniques de culture de cellules et de tissus* - Erik MAQUOI	Q1	8	20	-	**2**
SBIM0495-2	*Molecular and cellular basis of disease* (anglais) - Jo CAERS, Pierre CLOSE, Charlotte CORNIL, Laurence DELACROIX, Mireille DUMOULIN, Keith DURKIN, Julien HANSON, François JOURET , Vincent SEUTIN, Sabine WISLET - [40h RP]	Q2	20	10	[+]	**7**
PROJ0011-2	*Personal student project* (anglais) - Georges DE PELSEMAEKER, Pierre DUYSINX, Liesbet GERIS, Grégoire LÉONARD - [150h Proj.]	TA	-	-	[+]	**5**

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

Bloc d'aménagement du programme de l'année

Crédits supplémentaires Master ingénieur civil biomédical

Cours au choix

Le programme de chaque étudiant sera déterminé par le jury en fonction de sa formation antérieure. Si un candidat à l'admission ne maitrise pas certains prérequis, son programme pourra comporter jusqu'à 60 crédits de cours supplémentaires essentiellement issus de la liste ci-dessous :

GBIO0025-1	*Biologie générale et cellulaire* - Christel PEQUEUX	Q2	26	26	-	**5**
GBIO0026-1	*Physiologie des systèmes* - Philippe KOLH	Q2	26	26	-	**5**
GBIO0002-1	*Genetics and bioinformatics* (anglais) - Franck DEQUIEDT, Kristel VAN STEEN - [15h Proj.]	Q1	30	15	[+]	**5**
GBIO0011-1	*Modélisation des systèmes biologiques* - Pierre DAUBY, Liesbet GERIS	Q2	26	26	-	**5**
GBIO0001-1	*Biophysique et biochimie* - Mireille DUMOULIN, Liesbet GERIS - [6h Proj.]	Q1	29	23	[+]	**5**
GBIO0021-1	*Projet de laboratoire* - Thomas DESAIVE, Liesbet GERIS - [16h Labo., 8h Proj.]	TA	-	44	[+]	**5**
GBIO0013-1	*Phénomènes de transport en biologie* - Dominique TOYE	Q2	26	26	-	**5**
GBIO0005-1	*Introduction aux neurosciences cognitives* - Gilles VANDEWALLE	Q1	26	26	-	**5**

[...] A cette liste pourront s'ajouter, dans la limite des 60 crédits, d'autres cours techniques en fonction des compétences acquises par l'étudiant.

Basics in bioengineering

GBIO0001-1	*Biophysique et biochimie* - Mireille DUMOULIN, Liesbet GERIS - [6h Proj.]	Q1	29	23	[+]	**5**
GBIO0025-1	*Biologie générale et cellulaire* - Christel PEQUEUX	Q2	26	26	-	**5**
GBIO0026-1	*Physiologie des systèmes* - Philippe KOLH	Q2	26	26	-	**5**