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 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* (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**
GBIO0027-1	*Integrated project in biomedical engineering* (english language) - Liesbet GERIS, Davide RUFFONI **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) - Michael GHILISSEN, François PICHAULT	Q1	25	25	-	**5**

Technical courses
Choose one of the following options :

Electronics

Choose 25 credits in the following list :

[...] [b]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.[/b]

SYST0017-1	*Advanced topics in systems and control* (english language) - Guillaume DRION	Q1	26	26	-	**5**
SYST0003-1	*Linear control systems* (english language) - *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* (english language) - Philippe VANDERBEMDEN - [20h Labo.]	Q2	30	-	[+]	**5**
ELEN0071-1	*Applied digital signal processing* (english language) - Pierre SACRÉ - [40h Proj.]	Q2	39	13	[+]	**5**
ELEN0037-1	*Microelectronics and IC design* (english language) - JeanMichel REDOUTÉ - [40h Proj.]	Q2	30	20	[+]	**5**
INFO0064-2	*Embedded systems* (english language) - Bernard BOIGELOT	Q1	25	20	-	**3**
INFO2055-1	*Embedded systems project* (english language) - Bernard BOIGELOT - [60h Proj.]	Q2	-	-	[+]	**2**

Informatics

Choose 25 credits in the following list :

[...] [b]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.[/b]

SYST0003-1	*Linear control systems* (english language) - *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* (english language) - Christophe GEUZAINE - [20h Proj.]	Q1	30	15	[+]	**5**
MATH0462-1	*Discrete optimization* (english language) - Quentin LOUVEAUX - [25h Proj.]	Q2	30	20	[+]	**5**
ELEN0060-2	*Information and coding theory* (english language) - Louis WEHENKEL - [30h Proj.]	Q2	30	15	[+]	**5**
ELEN0071-1	*Applied digital signal processing* (english language) - Pierre SACRÉ - [40h Proj.]	Q2	39	13	[+]	**5**
ELEN0062-1	*Introduction to machine learning* (english language) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	Q1	30	5	[+]	**5**

Mechanical Engineering

Choose 25 credits in the following list :

[...] [b]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.[/b]

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

Chemistry/Materials

Choose 25 credits in the following list :

[...] [b]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.[/b]

CHIM0604-2	*Chemistry and organic materials* - Lionel DELAUDE	Q2	33	19	-	**5**
CHIM0675-1	*Macromolecular chemistry* - Lionel DELAUDE, AnneSophie DUWEZ - [5d Labo.] **Corequisite :** CHIM0604-2 - Chimie et matériaux organiques	Q1	15	-	[+]	**3**
CHIM9277-1	*Chemical reactor engineering* - Dominique TOYE - [15h Labo.]	Q1	35	15	[+]	**4**

CHIM0072-2	*Nanomaterials and divided materials engineering* - Benoît HEINRICHS, Stéphanie LAMBERT	Q1	15	15	-	**3**
MECA0139-1	*Additive manufacturing and 3D printing* (english language) - Thierry DORMAL, Anne MERTENS	Q1	26	26	-	**5**
MECA0462-2	*Materials selection* (english language) - Anne MERTENS, Davide RUFFONI - [30h Proj., 1d FW]	Q1	26	26	[+]	**5**
PHYS0904-4	*Physics of materials* - Luc COURARD, Anne MERTENS - [1d FW]	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

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

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* (english language) - Guillaume DRION	Q1	26	26	-	**5**
SYST0003-1	*Linear control systems* (english language) - *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* (english language) - Philippe VANDERBEMDEN - [20h Labo.]	Q2	30	-	[+]	**5**
ELEN0071-1	*Applied digital signal processing* (english language) - Pierre SACRÉ - [40h Proj.]	Q2	39	13	[+]	**5**
ELEN0037-1	*Microelectronics and IC design* (english language) - JeanMichel REDOUTÉ - [40h Proj.]	Q2	30	20	[+]	**5**
INFO0064-2	*Embedded systems* (english language) - Bernard BOIGELOT	Q1	25	20	-	**3**
INFO2055-1	*Embedded systems project* (english language) - Bernard BOIGELOT - [60h Proj.]	Q2	-	-	[+]	**2**

Informatics

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

SYST0003-1	*Linear control systems* (english language) - *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* (english language) - Christophe GEUZAINE - [20h Proj.]	Q1	30	15	[+]	**5**

MATH0462-1	*Discrete optimization* (english language) - Quentin LOUVEAUX - [25h Proj.]	Q2	30	20	[+]	**5**
ELEN0060-2	*Information and coding theory* (english language) - Louis WEHENKEL - [30h Proj.]	Q2	30	15	[+]	**5**
ELEN0071-1	*Applied digital signal processing* (english language) - Pierre SACRÉ - [40h Proj.]	Q2	39	13	[+]	**5**
ELEN0062-1	*Introduction to machine learning* (english language) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	Q1	30	5	[+]	**5**

Mechanical Engineering

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

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

Chemistry/Materials

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

CHIM0604-2	*Chemistry and organic materials* - Lionel DELAUDE	Q2	33	19	-	**5**
CHIM0675-1	*Macromolecular chemistry* - Lionel DELAUDE, AnneSophie DUWEZ - [5d Labo.] **Corequisite :** CHIM0604-2 - Chimie et matériaux organiques	Q1	15	-	[+]	**3**
CHIM9277-1	*Chemical reactor engineering* - Dominique TOYE - [15h Labo.]	Q1	35	15	[+]	**4**
CHIM0072-2	*Nanomaterials and divided materials engineering* - Benoît HEINRICHS, Stéphanie LAMBERT	Q1	15	15	-	**3**
MECA0139-1	*Additive manufacturing and 3D printing* (english language) - Thierry DORMAL, Anne MERTENS	Q1	26	26	-	**5**
MECA0462-2	*Materials selection* (english language) - Anne MERTENS, Davide RUFFONI - [30h Proj., 1d FW]	Q1	26	26	[+]	**5**
PHYS0904-4	*Physics of materials* - Luc COURARD, Anne MERTENS - [1d FW]	Q2	26	26	[+]	**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* (english language) - Liesbet GERIS	TA	-	-	-	**8**
ASTG9007-1	*Observation internship* (english language) - Liesbet GERIS	TA	-	-	-	**3**

Imaging and instrumentation

MATH0049-1	*Morphological Characterization of Unordered Systems* - Silvia BLACHER	Q1	26	26	-	**5**
ELEN0071-1	*Applied digital signal processing* (english language) - Pierre SACRÉ - [40h	Q2	39	13	[+]	**5**

	Proj.]					
ELEN0004-1	*Semiconductor devices* (english language) - Benoît VANDERHEYDEN	Q1	26	26	-	**5**
MATH0461-2	*Introduction to numerical optimization* (english language) - Quentin LOUVEAUX - [25h Proj.]	Q1	30	20	[+]	**5**
ELEN0016-2	*Computer vision* (english language) - Marc VAN DROOGENBROECK - [50h Proj.]	Q1	30	10	[+]	**5**
ELEC0017-1	*Electromagnetic Compatibility* (english language) - Véronique BEAUVOIS, Christophe GEUZAINE - [30h Proj.]	TA	20	10	[+]	**5**
PHYS0128-1	*Magnetic Resonance Imaging - the Basics* (english language) - Evelyne BALTEAU - [3d FW]	Q1	15	-	[+]	**3**
ELEC0041-1	*Modelling and design of electromagnetic systems* (english language) - Christophe GEUZAINE	Q2	26	26	-	**5**
ELEC0054-1	*Application of electrical measurement systems* (english language) - Philippe VANDERBEMDEN - [20h Labo.]	Q1	30	10	[+]	**5**
ELEN0062-1	*Introduction to machine learning* (english language) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	Q1	30	5	[+]	**5**
STAT0722-1	*Introduction to medical statistics* (english language) - Christophe PHILLIPS	Q1	10	5	-	**2**
INFO0009-2	*Database (general organisation)* - Samuel HIARD - [25h Proj.]	Q2	26	26	[+]	**5**
SYST0020-1	*Introduction to microsystems and microtechnology* (english language) - Tristan GILET, JeanMichel REDOUTÉ - [4h Labo., 20h Proj.]	Q2	24	18	[+]	**5**
Mechanics, materials and chemistry						
PROT0430-3	*Biomedical robotics and active prostheses* (english language) - Olivier BRULS (Odd years)	Q1	15	10	-	**3**
MECA0516-1	*Mechanical properties of biological and bioinspired materials* (english language) - Davide RUFFONI - [4h Labo.]	Q1	26	22	[+]	**5**
CHIM0625-1	*Molecular mechanics and molecular dynamics* - Frédéric KERFF	Q1	10	10	-	**2**
MECA0464-1	*Large deformation of solids* (english language) - JeanPhilippe PONTHOT - [60h Proj.]	Q1	26	26	[+]	**5**
MECA0446-2	*Continuum Mechanics* (english language) - JeanPhilippe PONTHOT - [50h Proj.]	Q2	26	26	[+]	**5**
MECA0025-3	*Fluid Mechanics* - Eric DELHEZ - [30h Proj.]	Q2	26	26	[+]	**5**
MECA0018-2	*Manufacturing processes* (english language) - Yves MARCHAL - [15h Labo., 11h Proj., 0,5d FW]	Q2	30	-	[+]	**5**
CHIM0698-1	*Physical Chemistry of Interfaces* (english language) - Cédric GOMMES	Q2	20	10	-	**3**
PHYS0038-2	*Introduction into polymer physics including plasturgy* (english language) - Klaus KECKANTOINE	Q1	30	-	-	**4**
CHIM0666-2	*Inorganic materials: manufacturing processes and properties of use* - Stéphanie LAMBERT, Bénédicte VERTRUYEN - [3d Labo., 1d FW]	Q2	30	-	[+]	**5**
CHIM0676-1	*Polymerisation processes* (english language) - Klaus KECKANTOINE	Q2	20	-	-	**2**
BIOL0114-3	*Electronic microscopies* - *Part A* - Philippe COMPÈRE - *Part B* - Philippe COMPÈRE	Q2	 15 24	 - 13	 - -	**5**
CHIM0668-1	*Agitation and mixture* - Dominique TOYE - [5h Labo.]	Q1	30	5	[+]	**4**
MECA0473-1	*Metallic materials engineering* - Anne MERTENS	Q1	26	26	-	**5**
CHIM0697-1	*Heterogeneous catalysis* (english language) - Nathalie JOB - [10h Proj.]	Q1	20	20	[+]	**4**
MECA0012-6	*Solid mechanics* - Laurent DUCHENE - [15h Proj.]	Q2	26	26	[+]	**5**
MECA0023-1	*Advanced solid mechanics* (english language) - JeanPhilippe PONTHOT -	Q1	26	26	[+]	**5**

	[30h Proj.]					
CHIM9302-1	*Advanced Question in Chemical Engineering : Biotechnology* - Frank DELVIGNE, Aurore RICHEL, Dominique TOYE - [30h Proj., 1d FW]	Q1	30	10	[+]	**5**
Modeling and informatics						
GBIO0014-2	*Modeling of physiological systems and clinical applications* - Thomas DESAIVE	Q1	30	30	-	**4**
GBIO0015-1	*A tour in genetic epidemiology* (english language) - Kristel VAN STEEN - [60h Proj.]	Q2	15	15	[+]	**3**
BIOC0718-2	*Structure-function of biomolecules* - Mireille DUMOULIN	Q2	15	25	-	**4**
GBIO0007-1	*Gene sequencing and protein analysis : part a*	Q1	10	10	-	**2**
GBIO0030-1	*Computational approaches to statistical generics* (english language) - Kristel VAN STEEN - [35h Proj.]	Q2	25	15	[+]	**5**
MATH0024-1	*Modelling with partial differential equations* (english language) - Maarten ARNST, Romain BOMAN - [25h Proj.]	Q1	30	20	[+]	**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 - [40h Proj.]	Q2	26	26	[+]	**5**
MATH0461-2	*Introduction to numerical optimization* (english language) - Quentin LOUVEAUX - [25h Proj.]	Q1	30	20	[+]	**5**
MATH0471-2	*Multiphysics integrated computational project* (english language) - Romain BOMAN, Christophe GEUZAINE - [30h Proj.]	TA	33	-	[+]	**5**
INFO0009-2	*Database (general organisation)* - Samuel HIARD - [25h Proj.]	Q2	26	26	[+]	**5**
ELEN0060-2	*Information and coding theory* (english language) - Louis WEHENKEL - [30h Proj.]	Q2	30	15	[+]	**5**
GBIO0031-1	*Learning from genomic data* (english language) - Kristel VAN STEEN - [150h Proj.]	Q2	-	-	[+]	**5**
INFO0064-2	*Embedded systems* (english language) - Bernard BOIGELOT	Q1	25	20	-	**3**
Biomedical engineering						
GBIO0018-2	*Introduction to tissue engineering* (english language) - Liesbet GERIS - [15h Proj.]	Q2	20	5	[+]	**3**
BIOC0430-1	*Interaction of living material* - Christian GRANDFILS	Q1	25	-	-	**3**
GBIO0022-1	*Biomimicry* (english language) - Philippe COMPÈRE, Liesbet GERIS, Tristan GILET, Davide RUFFONI - [45h Proj.]	TA	15	-	[+]	**5**
INGE0012-1	*Scientific research in engineering and its impact on innovation* (english language) - Rodolphe SEPULCHRE	Q2	26	26	-	**5**
BIOM0631-1	*Human movement analysis* (english language) - Olivier BRULS, Cédric SCHWARTZ - [15h Proj.]	Q1	33	14	[+]	**5**
GBIO0016-1	*Introduction to systems and synthetic biology* (english language) - Frank DELVIGNE, JeanDenis DOCQUIER, Philippe JACQUES	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, Julien HANSON, François JOURET , Vincent SEUTIN, Sabine WISLET - [40h Pers. Res.]	Q2	20	10	[+]	**7**
PROJ0011-2	*Personal student project* (english language) - Pierre DUYSINX, Liesbet GERIS, Grégoire LÉONARD - [150h Proj.]	TA	-	-	[+]	**5**

GEST0188-1	*Determination and recognition of quality and conformity* - *Common theory* - Pierre DEWALLEF - *practice* - Joëlle WIDART	Q1	 15 -	 - 15	 - -	**3**
MECA0521-1	(pas organisé en 2020-2021) *HSE management, Part 2 : Practical aspects of HSE management* - Pierre DEWALLEF - [10h Proj., 1d FW]	TA	20	10	[+]	**2**

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

Bloc d'aménagement du programme de l'année

Additional ECTS Master in biomedical engineering

Optional courses

Each student¿s programme will be determined by the jury depending on their prior training. If an applicant does not meet certain prerequisites, his or her programme may include up to 60 additional course credits essentially taken from the list below :

GBIO0025-1	*General and cell biology* - Olivier PEULEN	Q2	26	26	-	**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* - Paulette CHARLIER, Liesbet GERIS - [6h Proj.]	Q1	29	23	[+]	**5**
GBIO0021-1	*Laboratory Project* - Thomas DESAIVE, Liesbet GERIS - [16h Labo., 8h Proj.]	TA	-	44	[+]	**5**
GBIO0013-1	*Phenomenon of Transport in Biology* - Dominique TOYE	Q2	26	26	-	**5**
GBIO0005-1	*Introduction to cognitive neurosciences* - Gilles VANDEWALLE	Q2	26	26	-	**5**

[...] To this list may be added, up to a limit of 60 credits, other technical classes depending on the skills the student has acquired.

Basics in bioengineering

GBIO0001-1	*Biophysics and Biochemistry* - Paulette CHARLIER, Liesbet GERIS - [6h Proj.]	Q1	29	23	[+]	**5**
GBIO0025-1	*General and cell biology* - Olivier PEULEN	Q2	26	26	-	**5**
GBIO0026-1	*Systems physiology* - Philippe KOLH	Q2	26	26	-	**5**