Cycle view of the study programme

		Bl	Or	Th	Pr	Au	Cr

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 50 credits of the compulsory courses (including the master thesis), choose one of the three professional foci (30 credits), choose three courses in the list of transversal methodology courses (for 15 credits), and choose optional courses for 25 credits.
Ideally, students enrolling in the master program should have acquired the skills and knowledge corresponding to the 40 credits in "Electrical engineering" offered as part of the bachelor program in engineering.

Compulsory Courses (B1 : 20Cr, B2 : 30Cr)

SYST0003-2	*Linear control systems* (english language) - *Theory* - Guillaume DRION - *Control system design* - Guillaume DRION	B1	Q1 26 4	6 -	- -		**3**
INFO0064-2	*Embedded systems* (english language) - Bernard BOIGELOT **Corequisite :** APRI0007-1 - Major project in electrical engineering	B1	Q1	25	20	-	**3**
ELEC0055-2	*Element of power Electronics , Part A* (english language) - Fabrice FREBEL **Corequisite :** ELEC0431-2 - Electromagnetic energy conversion	B1	Q1	30	6	-	**3**
APRI0007-1	*Major project in electrical engineering* (english language) - Marc BIRON, Bernard BOIGELOT, Guillaume DRION, JeanMichel REDOUTÉ - [300h Proj.] **Corequisite :** SYST0003-2 - Linear control systems ELEC0055-2 - Element of power Electronics ELEC0053-2 - Circuits électriques ELEC0052-2 - Analyse et conception des systèmes de mesures électriques ELEC0431-2 - Electromagnetic energy conversion	B1	TA	20	-	[+]	**11**
GEST3162-1	*Principles of management* (english language) - François PICHAULT, Willem STANDAERT - [25h Proj.]	B2	Q1	30	-	[+]	**5**
ATFE0014-1	*Master Thesis* (english language) - COLLÉGIALITÉ, Bertrand CORNÉLUSSE - [750h Proj.]	B2	TA	-	-	[+]	**25**

Elective courses (B1 : 40Cr, B2 : 30Cr)

Choose one of the three following foci: (B1 : 25Cr, B2 : 5Cr)

Professional focus : Electric power and energy systems (B1 : 25Cr, B2 : 5Cr)

Notice : only accessible to students already registered for this focus.

Professional focus: Smart Grids (B1 : 25Cr, B2 : 5Cr)

[...] Remark : students who would have taken some of these courses previously in their program must replace them by other courses from the faculty of engineering; this choice must be approved by the President of the cycle's Jury.

ELEC0018-1	*Energy market* (english language) - Damien ERNST	B1	Q1	39	13	-	**5**
ELEC0041-1	*Modelling and design of electromagnetic systems* (english language) - Christophe GEUZAINE	B1	Q2	26	26	-	**5**
ELEN0445-1	*Microgrids* (english language) - Bertrand CORNÉLUSSE - [24h Proj., 1d FW]	B2	Q1	18	18	[+]	**5**
MECA0450-3	*Renewable energies* (english language) - Pierre DEWALLEF - [24h Proj., 1d FW]	B1	Q2	24	12	[+]	**5**
ELEC0447-1	*Analysis of electric power and energy systems* (english language) - Bertrand CORNÉLUSSE, Louis WEHENKEL	B1	Q1	26	26	-	**5**

Corequisite :
ELEC0053-2 - Circuits électriques

ELEC0448-1	*Planning and operation of electric power and energy systems* (english language) - Bertrand CORNÉLUSSE, Damien ERNST, Louis WEHENKEL **Corequisite :** ELEC0447-1 - Analysis of electric power and energy systems MATH0461-2 - Introduction to numerical optimization	B1	Q2	26	26	-	**5**

Professional focus : Electronic systems and devices (B1 : 25Cr, B2 : 5Cr)

[...] Remark : students who would have taken some of these courses previously in their program must replace them by other courses from the faculty of engineering; this choice must be approved by the President of the cycle's Jury.

ELEN0004-1	*Semiconductor devices* (english language) - Benoît VANDERHEYDEN	B1	Q1	26	26	-	**5**
ELEN0037-1	*Microelectronics and IC design* (english language) - JeanMichel REDOUTÉ - [40h Proj.]	B1	Q2	30	20	[+]	**5**
ELEN0074-1	*Sensors, microsensors and instrumentation* (english language) - Philippe VANDERBEMDEN - [20h Labo.]	B1	Q2	30	-	[+]	**5**
SYST0020-1	*Introduction to microsystems and microtechnology* (english language) - Tristan GILET, JeanMichel REDOUTÉ - [4h Labo., 20h Proj.]	B1	Q2	24	18	[+]	**5**
ELEN0017-1	*Analysis and Design of Telecommunications Systems* (english language) - Marc VAN DROOGENBROECK	B1	Q1	26	26	-	**5**
GBIO0029-1	*Bioelectronics* (english language) - JeanMichel REDOUTÉ - [20h Labo., 20h Proj.]	B2	Q1	30	15	[+]	**5**

Professional focus : Signal processing and intelligent robotics (B1 : 25Cr, B2 : 5Cr)

[...] Remark : students who would have taken some of these courses previously in their program must replace them by other courses from the faculty of engineering; this choice must be approved by the President of the cycle's Jury.

SYST0017-1	*Advanced topics in systems and control* (english language) - Guillaume DRION	B1	Q1	26	26	-	**5**
ELEN0060-2	*Information and coding theory* (english language) - Louis WEHENKEL - [30h Proj.]	B1	Q2	30	15	[+]	**5**
INFO0948-2	*Introduction to intelligent robotics* (english language) - Pierre SACRÉ - [80h Proj.]	B1	Q2	30	4	[+]	**5**
INFO8010-1	*Deep learning* (english language) - Gilles LOUPPE - [55h Proj.] **Corequisite :** ELEN0062-1 - Introduction to machine learning	B1	Q2	25	10	[+]	**5**
INFO8003-1	*Optimal decision making for complex problems* (english language) - Damien ERNST - [45h Proj.]	B1	Q2	25	10	[+]	**5**
ELEN0016-2	*Computer vision* (english language) - Marc VAN DROOGENBROECK - [50h Proj.]	B2	Q1	30	10	[+]	**5**

Choose three among the following transversal courses (B1 : 15Cr)

Transversal courses

ELEN0062-1	*Introduction to machine learning* (english language) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	B1	Q1	30	5	[+]	**5**
INFO0062-1	*Object-oriented programming* (english language) - Bernard BOIGELOT - [20h Proj.]	B1	Q2	25	20	[+]	**5**
INFO0939-1	*High performance scientific computing* (english language) - Christophe GEUZAINE - [20h Proj.]	B1	Q1	30	15	[+]	**5**

MATH0461-2	*Introduction to numerical optimization* (english language) - Quentin LOUVEAUX - [25h Proj.]	B1	Q1	30	20	[+]	**5**
MATH0462-1	*Discrete optimization* (english language) - Quentin LOUVEAUX - [25h Proj.]	B1	Q2	30	20	[+]	**5**

Fundamentals of Electrical Engineering

[...] The subjects ELEC0431-2, ELEC0052-2 and ELEC0053-2 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.

ELEC0431-2	*Electromagnetic energy conversion* (english language) - Christophe GEUZAINE - [15h Labo.]	B1	Q2	30	15	[+]	**5**
ELEC0052-2	*Analysis and Design of Electrical Measuring Systems* - Philippe VANDERBEMDEN - [24h Labo.]	B1	Q1	30	6	[+]	**5**
ELEC0053-2	*Electric circuits* - Bertrand CORNÉLUSSE	B1	Q2	26	26	-	**5**

Complete your programme with 25 credits chosen among any of the courses listed above (that are not already part of your programme) or in the list below (this choice must be approved by the President of the cycle's Jury). (B2 : 25Cr)

Notice : Remark : the course units ASTG0019-1 et ASTG0026-1 are mutually exclusive

ASTG0019-1	*Internship (distinct from master's thesis)* (english language) - Bertrand CORNÉLUSSE - [40d FW]	B2	TA	-	-	[+]	**10**
ASTG0026-1	*Internship (linked to master's thesis)* (english language) - COLLÉGIALITÉ, Bertrand CORNÉLUSSE - [80d FW]	B2	TA	-	-	[+]	**2**

Smart girds

ELEC0449-1	*Practices and evolution of the electric power and energy industry* (english language) - Bertrand CORNÉLUSSE, Damien ERNST, Louis WEHENKEL - [12h Proj., 6d FW] **Prerequisite :** ELEC0447-1 - Analysis of electric power and energy systems ELEC0018-1 - Energy market	B2	TA	-	-	[+]	**5**
CHIM0664-1	*Electrochemical energy conversion and storage* (english language) - Nathalie JOB - [15h Labo.]	B2	Q1	15	-	[+]	**3**
ENVT3065-1	*Sustainability challenges* (english language) - *Partim 1 - Les enjeux climat et énergie* - Bertrand CORNÉLUSSE, Xavier FETTWEIS - *Partim 2* - Bertrand CORNÉLUSSE, Xavier FETTWEIS	B2	Q1 16 10	 16 10	 - -		**5**

Electronic systems and devices

ELEC0017-1	*Electromagnetic Compatibility* (english language) - Véronique BEAUVOIS, Christophe GEUZAINE - [30h Proj.]	B2	TA	20	10	[+]	**5**
ELEC0054-1	*Application of electrical measurement systems* (english language) - Philippe VANDERBEMDEN - [20h Labo.]	B2	Q1	30	10	[+]	**5**
ELEN0069-1	*Nanoelectronics / Optoelectronics* (english language) - Benoît VANDERHEYDEN - [40h Proj.] **Prerequisite :** ELEN0004-1 - Semiconductor devices	B2	Q2	30	-	[+]	**5**

Signal processing and intelligent robotics

GBIO0008-2	*Medical imaging* (english language) - Christophe PHILLIPS - [8h Labo., 1d FW]	B2	Q2	33	12	[+]	**5**
INFO8004-1	*Advanced Machine learning* (english language) - Pierre GEURTS, Gilles LOUPPE, Louis WEHENKEL - [45h Proj.]	B2	Q2	25	-	[+]	**5**
INFO8006-1	*Introduction to artificial intelligence* (english language) - Gilles LOUPPE - [45h Proj.]	B2	Q1	25	20	[+]	**5**

Computer systems and networks

INFO0012-2	*Computation structures* (english language) - Pascal FONTAINE, Laurent MATHY - [40h Proj.]	B2	Q1	26	26	[+]	**5**
INFO0010-4	*Introduction to computer networking* (english language) - Guy LEDUC - [12h Labo., 40h Proj.] **Prerequisite :** INFO0062-1 - Object-oriented programming	B2	Q1	35	2	[+]	**5**

Other elective courses

INGE0012-1	*Scientific research in engineering and its impact on innovation* (english language) - Rodolphe SEPULCHRE	B2	Q2	26	26	-	**5**

[...] One course to choose from the ULiège courses programme ; this choice must have the approval of the cycle's jury President

Additional ECTS Master in electrical engineering

Optional courses (B0 : 60Cr)

The individual program of each transfer student will be established by the jury on the basis of his/her background.
If some of the prerequisite are not met, this program will contain up to 60 additional credits mainly taken from the list below. Students who do not speak French will never be committed to take subjects/courses that are only taught in French. (B0 : 60Cr)

ELEC0431-2	*Electromagnetic energy conversion* (english language) - Christophe GEUZAINE - [15h Labo.]	B0	Q2	30	15	[+]	**5**
ELEC0052-2	*Analysis and Design of Electrical Measuring Systems* - Philippe VANDERBEMDEN - [24h Labo.]	B0	Q1	30	6	[+]	**5**
ELEC0053-2	*Electric circuits* - Bertrand CORNÉLUSSE	B0	Q2	26	26	-	**5**
ELEN0040-1	*Digital electronics* (english language) - JeanMichel REDOUTÉ	B0	Q2	26	26	-	**5**
ELEN0076-1	*Electromagnetism* - Benoît VANDERHEYDEN	B0	Q1	26	26	-	**5**
ELEN0008-1	*Principles of analog and digital telecommunications systems* - Marc VAN DROOGENBROECK	B0	Q2	26	26	-	**5**
ELEN0075-3	*Analog Electronics* - Benoît VANDERHEYDEN - [16h Labo.]	B0	Q2	29	23	[+]	**5**

[...] Choose maximum 25 credits to complete the study programme