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 all the 50 credits of the compulsory courses (including the master thesis), 30 credits from of the professional focus, 15 credits from the list of transversal methodology courses, and 25 credits of other optional courses.
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.

Focus courses (B1 : 25Cr, B2 : 5Cr)

Only available to students enrolled before 2023-2024.

[...] 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 markets and regulation* (english language) - Damien ERNST	B1	Q1	39	13	-	**5**
ELEC0041-1	*Modelling and design of electromagnetic systems* (english language) - Christophe GEUZAINE (Odd years)	B1	Q2	26	26	-	**5**
ELEN0445-1	*Microgrids* (english language) - Bertrand CORNÉLUSSE - [24h Proj., 1d FW]	B2	Q1	18	18	[+]	**5**
MECA0450-3	*Renewable Energy System Design* (english language) - Pierre DEWALLEF - [24h Proj., 1d FW]	B1	Q1	24	12	[+]	**5**
ELEC0447-1	*Analysis of electric power and energy systems* (english language) - Bertrand CORNÉLUSSE - [1d FW] **Corequisite :** ELEC0053-2 - Circuits électriques	B1	Q1	26	26	[+]	**5**
ELEC0448-1	*Planning and operation of electric power and energy systems* (english language) - Bertrand CORNÉLUSSE, Damien ERNST, Louis WEHENKEL **Corequisite :** MATH0461-2 - Introduction to numerical optimization ELEC0447-1 - Analysis of electric power and energy systems	B1	Q2	26	26	-	**5**

Compulsory courses from the core curriculum (B1 : 20Cr, B2 : 30Cr)

ELEN0448-1	*Applied Electricity and Electronics* (english language) - JeanMichel REDOUTÉ, Philippe VANDERBEMDEN	B1	Q1	26	26	-	**5**
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 :** ELEC0431-2 - Electromagnetic energy conversion ELEC0052-2 - Mesures électriques : fondements et applications ELEC0053-2 - Circuits électriques ELEC0055-2 - Element of power Electronics INFO0064-2 - Embedded systems	B1	TA	20	-	[+]	**9**
GEST3162-1	*Principles of management* (english language) - Thomas PIRSOUL, Willem STANDAERT - [25h Proj.]	B2	Q1	30	-	[+]	**5**
ATFE0014-1	*Master Thesis* (english language) - COLLÉGIALITÉ,	B2	TA	-	-	[+]	**25**

ROOGENBROECK - [750h Proj.]

Optional courses from the core curriculum (B1 : 15Cr, B2 : 25Cr)

Choose three among the following transversal courses that can be spread over the 2 blocks (B1 : 15Cr)

Transversal courses

ELEN0060-2	*Information and coding theory* (english language) - Louis WEHENKEL - [30h Proj.]	B1	Q2	30	15	[+]	**5**
INFO8003-1	*Reinforcement learning* (english language) - Damien ERNST - [45h Proj.]	B1	Q2	25	10	[+]	**5**
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**

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)

Remark : the courses ELEC0431-2, ELEC0052-2 et ELEC0053-2 (see the list "Fundamentals of Electrical Engineering" are corequisite to some compulsory courses of the master program. They must be taken prioritarily, unless they were already taken as part of the bachelor in engineering, or unless the corresponding knowledge and skills have been acquired previously.

Fundamentals of Electrical Engineering

ELEC0431-2	*Electromagnetic energy conversion* (english language) - Christophe GEUZAINE - [15h Labo.]	B2	Q2	30	15	[+]	**5**
ELEC0052-2	*Electric measurements: foundations and applications* - Philippe VANDERBEMDEN - [24h Labo.]	B2	Q1	30	6	[+]	**5**
ELEC0053-2	*Electric circuits* - Bertrand CORNÉLUSSE	B2	Q2	26	26	-	**5**

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

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

Smart grids

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 markets and regulation	B2	TA	-	-	[+]	**5**
CHIM0664-1	*Electrochemical energy conversion and storage* (english language) - *part 1* - Nathalie JOB - *part 2* - Nathalie JOB - [15h Labo.]	B2	Q1 15 -	- -	- [+]		**3**

Electronic systems and devices

GBIO0029-1	*Bioelectronics* (english language) - JeanMichel REDOUTÉ - [20h	B2	Q1	30	15	[+]	**5**

	Labo., 20h Proj.]						
ELEN0069-1	*Nanoelectronics / Optoelectronics* (english language) - Benoît VANDERHEYDEN - [40h Proj.] **Corequisite :** ELEN0004-1 - Semiconductor devices	B2	Q2	30	-	[+]	**5**
ELEN0445-1	*Microgrids* (english language) - Bertrand CORNÉLUSSE - [24h Proj., 1d FW]	B2	Q1	18	18	[+]	**5**
ELEN0047-1	*Superconductivity* (english language) - Philippe VANDERBEMDEN - [15h Labo.]	B2	Q1	30	-	[+]	**5**
Neuromorphic engineering							
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 - [20h Proj.] **Corequisite :** INFO8010-1 - Deep learning ELEN0062-1 - Introduction to machine learning	B2	Q2	25	-	[+]	**5**
INFO8006-1	*Introduction to artificial intelligence* (english language) - Gilles LOUPPE - [45h Proj.]	B2	Q1	25	20	[+]	**5**
INFO8010-1	*Deep learning* (english language) - Gilles LOUPPE - [60h Proj.]	B2	Q2	30	-	[+]	**5**
GNEU0004-1	*Computational cognitive modelling* (english language) - Alessio FRANCI	B2	Q1	26	26	-	**5**

[...] Possibility to choose 10 credits of courses in the ULIège programmes or from the UNIC course catalog : this choice must have the approval of the cycle's juryPresident

Bridging courses Master in electrical engineering

Notice : 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.

Optional courses (B0 : 30Cr)

[...] Choose 1 to 30 credits from :

ELEC0431-2	*Electromagnetic energy conversion* (english language) - Christophe GEUZAINE - [15h Labo.]	B0	Q2	30	15	[+]	**5**
ELEC0052-2	*Electric measurements: foundations and applications* - 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 a maximum of 25 off-list credits

Bridging courses Master in electrical engineering

Notice : 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.

Optional courses (B0 : 60Cr)

[...] Choose 31 to 60 credits from :

ELEC0431-2	*Electromagnetic energy conversion* (english language) - Christophe GEUZAINE - [15h Labo.]	B0	Q2	30	15	[+]	**5**
ELEC0052-2	*Electric measurements: foundations and applications* - 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 a maximum of 25 off-list credits

Bridging courses M. electro-mech. engineer. (gen.)

ELEC0431-2	*Electromagnetic energy conversion* (english language) - Christophe GEUZAINE - [15h Labo.]	B0	Q2	30	15	[+]	**5**
ELEC0052-2	*Electric measurements: foundations and applications* - 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**