Block view of the study programme

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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 all the 55 credits of the compulsory courses (including the master thesis), the 30 credits of the professional focus, choose two courses in the list of transversal methodology courses (for 10 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 from the core curriculum

ELEN0448-1	*Applied Electricity and Electronics* (english language) - JeanMichel REDOUTÉ, Philippe VANDERBEMDEN	Q1	26	26	-	**5**
INFO0064-2	*Embedded systems* (english language) - Bernard BOIGELOT **Corequisite :** APRI0007-1 - Major project in electrical engineering	Q1	25	20	-	**3**
ELEC0055-2	*Element of power Electronics, Part A* (english language) - Fabrice FREBEL **Corequisite :** SYST0022-1 - Linear Systems Design	Q1	30	6	-	**3**
APRI0007-1	*Major project in electrical engineering* (english language) - Marc BIRON, Bernard BOIGELOT, Guillaume DRION, JeanMichel REDOUTÉ - [300h Proj.] **Corequisite :** SYST0022-1 - Linear Systems Design ELEC0052-2 - Mesures électriques : fondements et applications ELEC0053-2 - Circuits électriques ELEC0055-2 - Element of power Electronics INFO0064-2 - Embedded systems	TA	20	-	[+]	**9**
ELEN0076-1	*Electromagnetism* (english language) - Benoît VANDERHEYDEN	Q1	26	26	-	**5**

[...] Students who have already taken ELEN0076 - (Electromagnétisme / Electromagnetism) at the Bachelor level must replace it with a unit from the list of transversal courses.

Optional courses from the core curriculum

Choose two among the following transversal courses that can be spread over the 2 blocks

Transversal courses

ELEN0060-2	*Information and coding theory* (english language) - Louis WEHENKEL - [30h Proj.]	Q2	30	15	[+]	**5**
INFO8003-1	*Reinforcement learning* (english language) - Damien ERNST - [45h Proj.]	Q2	25	10	[+]	**5**
ELEN0062-1	*Introduction to machine learning* (english language) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	Q1	30	5	[+]	**5**
INFO0062-1	*Object-oriented programming* (english language) - Bernard BOIGELOT - [20h Proj.]	Q2	25	20	[+]	**5**
INFO0939-1	*High performance scientific computing* (english language) - Christophe GEUZAINE - [20h Proj.]	Q1	30	15	[+]	**5**
MATH0461-2	*Introduction to numerical optimization* (english language) - Quentin LOUVEAUX - [25h Proj.]	Q1	30	20	[+]	**5**
MATH0462-1	*Discrete optimization* (english language) - Quentin LOUVEAUX - [25h Proj.]	Q2	30	20	[+]	**5**
ELEN0449-1	*Computer Vision understanding* (english language) - Anthony CIOPPA - [50h Proj.]	Q2	24	10	[+]	**5**
MQGE9007-1	*Advanced Modeling Techniques in Optimization* (english language) -	Q1	30	-	-	**5**

Quentin LOUVEAUX, N...

Focus courses

[...] 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	Q1	26	26	-	**5**
ELEN0037-1	*Microelectronics and IC design* (english language) - JeanMichel REDOUTÉ - [40h Proj.]	Q2	30	20	[+]	**5**
ELEN0074-1	*Sensors, microsensors and instrumentation* (english language) - Philippe VANDERBEMDEN - [20h Labo.]	Q2	30	-	[+]	**5**
SYST0020-1	*Introduction to microsystems and microtechnology* (english language) - Tristan GILET, JeanMichel REDOUTÉ - [4h Labo., 20h Proj.]	Q2	24	18	[+]	**5**
ELEN0017-1	(pas organisé en 2026-2027) *Analysis and Design of Telecommunications Systems* (english language) - Marc VAN DROOGENBROECK	Q1	26	26	-	**5**

Block 2

Compulsory courses from the core curriculum

GEST3162-1	*Principles of management* (english language) - Michaël PARMENTIER, Willem STANDAERT - [25h Proj.]	Q1	30	-	[+]	**5**
ATFE0014-1	*Master Thesis* (english language) - COLLÉGIALITÉ, Marc VAN DROOGENBROECK - [750h Proj.]	TA	-	-	[+]	**25**

Optional courses from the core curriculum

You must complete your programme with 25 additional credits, selected either from :
1) the list of transversal courses listed above,
2) the Focus courses of the "Neuromorphic Engineering" / "Electronic Systems and Devices" professional focus,
3) the list below.
This selection is subject to approval by the President of the Cycle Jury.

[...] 1) the list of transversal courses listed above,2) the Focus courses of the "Neuromorphic Engineering" / "Electronic Systems and Devices" professional focus,

3) the list below.
This selection is subject to approval by the President of the Cycle Jury.

Remark : the courses SYST0022-1, 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.

Internship

ASTG0019-1	*Internship (distinct from master's thesis)* (english language) - JeanMichel REDOUTÉ - [40d FW]	TA	-	-	[+]	**10**

Smart grids

ELEC0449-1	*Practices and evolution of the electric power and energy industry* (english language) - Olivier BRONKART, Bertrand CORNÉLUSSE, Damien ERNST - [12h Proj., 6d FW] **Prerequisite :** ELEC0447-1 - Analysis of electric power and energy systems ELEC0018-1 - Energy markets and regulation	Q2	18	18	[+]	**5**
CHIM0664-1	*Electrochemical energy conversion and storage* (english language) - *partim 1* - Nathalie JOB - *partim 2* - Nathalie JOB - [15h Labo.]	Q1	 15 -	 - -	 - [+]	**3**

Electronic systems and devices

GBIO0029-1	*Bioelectronics* (english language) - JeanMichel REDOUTÉ - [20h Labo., 20h Proj.]	Q1	30	15	[+]	**5**
ELEN0069-1	*Nanoelectronics / Optoelectronics* (english language) - Benoît VANDERHEYDEN - [40h Proj.] **Corequisite :** ELEN0004-1 - Semiconductor devices	Q2	30	-	[+]	**5**
ELEN0047-1	*Superconductivity* (english language) - Philippe VANDERBEMDEN - [15h Labo.]	Q1	30	-	[+]	**5**
ELEN0445-1	*Microgrids* (english language) - Bertrand CORNÉLUSSE - [24h Proj., 1d FW]	Q2	18	18	[+]	**5**
ELEC0055-4	*Element of power Electronics, Part B* (english language) - Fabrice FREBEL **Corequisite :** ELEC0055-2 - Element of power Electronics *Notice* : Students wishing to take ELEC0055-4 Elements of power electronics - Partim B must take it in the same semester as ELEC0055-2 Elements of power electronics - Partim A.	Q1	-	20	-	**2**

Neuromorphic engineering

GBIO0008-2	*Medical imaging* (english language) - Christophe PHILLIPS - [8h Labo., 1d FW]	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	Q2	25	-	[+]	**5**
INFO8006-1	*Introduction to artificial intelligence* (english language) - Gilles LOUPPE - [45h Proj.]	Q1	25	20	[+]	**5**
INFO8010-1	*Deep learning* (english language) - Gilles LOUPPE - [60h Proj.] **Corequisite :** ELEN0062-1 - Introduction to machine learning	Q2	30	-	[+]	**5**
GNEU0004-1	*Computational cognitive modelling* (english language) - Alessio FRANCI	Q1	26	26	-	**5**
ELEC0055-4	*Element of power Electronics, Part B* (english language) - Fabrice FREBEL *Notice* : Students wishing to take ELEC0055-4 Elements of power electronics - Partim B must take it in the same semester as ELEC0055-2 Elements of power electronics - Partim A.	Q1	-	20	-	**2**

Other elective courses

[...]	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

Fundamentals of Electrical Engineering

SYST0022-1	*Linear Systems Design* (english language) - Guillaume DRION, Pierre SACRÉ - [15h Proj.]	Q2	26	26	[+]	**5**
ELEC0052-2	*Electric measurements: foundations and applications* - Philippe VANDERBEMDEN - [24h Labo.]	Q1	30	6	[+]	**5**
ELEC0053-2	*Electric circuits* - Bertrand CORNÉLUSSE	Q2	26	26	-	**5**

Focus courses

ELEN0447-1	*High-frequency electronics* (english language) - JeanMichel REDOUTÉ, Benoît VANDERHEYDEN - [10h Labo.]	Q1	26	12	[+]	**5**

Bloc d'aménagement du programme de l'année

Bridging courses Master in electrical engineering

Optional courses

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.

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