

## Vue bloc du programme des cours

Or Th Pr Au Cr

### Bloc 1

To complete their curriculum, students must earn or validate the 75 credits of the compulsory courses (including the master thesis and Internship), choose one of the two professional foci (30 credits) and choose optional courses for 15 credits. Ideally, students enrolling in the master program should have acquired the skills and knowledge corresponding to the 40 credits in " Energy " offered as part of the bachelor program in engineering.

#### Compulsory courses

CHIM0695-2	<i>Modelling of chemical &amp; energy processes</i> (anglais) - Grégoire LÉONARD	Q1	20	32	-	5
ELEC0055-3	<i>Element of power Electronics</i> (anglais) - <i>Partim A</i> - Fabrice FREBEL - <i>Partim B</i> - Fabrice FREBEL	Q1	30	6	-	5
ELEC0447-1	<i>Analysis of electric power and energy systems</i> (anglais) - Bertrand CORNÉLUSSE, Louis WEHENKEL - [1j T. t.]	Q1	26	26	[+]	5
MECA0450-3	<i>Renewable Energy System Design</i> (anglais) - Pierre DEWALLEF - [24h Proj., 1j T. t.]	Q1	24	12	[+]	5
ENRG0001-1	<i>Energy challenge (including seminars)</i> (anglais) - Bertrand CORNÉLUSSE, Pierre DEWALLEF, Samuel GENDEBIEN, Vincent LEMORT, Grégoire LÉONARD - [3j T. t., 80h Proj.]	TA	30	-	[+]	10

#### Elective courses

Choisir des cours pour un total de 15 crédits parmi :

[...] Remark : Electives may also be replaced by one or more courses from the undergraduate "energy" option for which competencies would not be acquired. the courses. ELEC0053-2 and SYST0022-1 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.

ELEC0053-2	<i>Circuits électriques</i> - Bertrand CORNÉLUSSE	Q2	26	26	-	5
SYST0022-1	<i>Linear Systems Design</i> (anglais) - Guillaume DRION, Pierre SACRÉ - [15h Proj.]	Q2	26	26	[+]	5
MECA0002-1	<i>Thermodynamique appliquée et introduction aux machines thermiques</i> - Vincent LEMORT	Q1	26	26	-	5
CHIM9315-1	<i>Gestion durable des combustibles : approvisionnement, synthèse et utilisation</i> - Angélique LÉONARD, Grégoire LÉONARD - [1j T. t., 10h Proj.]	Q1	50	-	[+]	5
CHIM0009-3	<i>Thermodynamique chimique appliquée</i> - MarieNoëlle DUMONT, Nathalie JOB, Grégoire LÉONARD	Q2	26	26	-	5
GEOL1046-1	<i>Geothermal energy</i> (anglais) - Alain DASSARGUES, Bertrand FRANÇOIS - [40h Proj., 1j T. t.]	Q2	18	15	[+]	5
ENRG0002-1	<i>Wind Energy</i> (anglais) - Thomas ANDRIANNE, Koen HILLEWAERT - [12h Proj.]	Q2	36	16	[+]	5
ENRG0003-1	<i>Hydropower</i> (anglais) - Sébastien ERPICUM - [20h Proj., 1j T. t.]	Q2	26	26	[+]	5
GENU0018-3	<i>Introduction to Nuclear Engineering and Power Plant Technologies</i> (anglais) - Pierre DEWALLEF	Q2	26	26	-	5
GCIV0008-2	<i>Energy and transport</i> (anglais) - Mario COOLS - [25h Proj.]	Q1	30	15	[+]	5
ARCH3272-1	<i>Building performance simulation and monitoring</i> (anglais) - <i>Partim 1</i> - Shady ATTIA - <i>Partim 2</i> - Shady ATTIA - [70h Proj.]	Q1	15	15	-	5
ENRG0004-1	(pas organisé en 2023-2024) <i>CO2 capture, utilisation and storage</i> (anglais) - N...	Q2	26	26	-	5

[...] Upon approval by the jury, 5 credits can be chosen among the courses of the two professional foci, from an

other programme at ULiège or from the UNIC course catalog

**Choose one professional focus :**

**Professional focus in Energy components**

MECA0037-1	<i>Thermal Power Plants and Combined Heat and Power</i> (anglais) - Pierre DEWALLEF - [12h Proj.]	Q2	24	24	[+]	5
MECA0006-1	<i>Cooling and low-temperature heating systems</i> (anglais) - Vincent LEMORT - [4h Proj.]	Q2	26	26	[+]	5
MECA0532-1	<i>Turbomachines</i> - Koen HILLEWAERT	Q1	26	26	-	5

**Professional focus in Energy networks**

MATH0461-2	<i>Introduction to numerical optimization</i> (anglais) - Quentin LOUVEAUX - [25h Proj.]	Q1	30	20	[+]	5
ELEC0448-1	<i>Planning and operation of electric power and energy systems</i> (anglais) - Bertrand CORNÉLUSSE, Damien ERNST, Louis WEHENKEL	Q2	26	26	-	5
ENRG0006-1	<i>Energy Transition : Modeling and Scenario Analysis</i> (anglais) - Sylvain QUOILIN	Q2	26	26	-	5

**Bloc 2**

**Compulsory courses**

CHIM0664-1	(pas organisé en 2023-2024) <i>Electrochemical energy conversion and storage</i> (anglais) - <i>partim théorique</i> - Nathalie JOB - <i>partim laboratoire</i> - Nathalie JOB - [15h Labo.]	Q1				5
			15	-	-	
			-	-	[+]	
ELEC0018-1	<i>Energy market and regulation</i> (anglais) - Damien ERNST	Q1	39	13	-	5
GEST3162-1	<i>Principles of management</i> (anglais) - François PICHault, Willem STANDAERT - [25h Proj.]	Q1	30	-	[+]	5
ATFE9011-1	<i>Master's thesis and Internship</i> (anglais) - Bertrand CORNÉLUSSE - [750h Proj.]	TA	-	-	[+]	30

**Elective courses**

**Choose one professional focus :**

**Professional focus in Energy components**

ENRG0005-1	(pas organisé en 2023-2024) <i>Power-to-fuel systems</i> (anglais) - N...	Q1	26	26	-	5
------------	---	----	----	----	---	---

Select 10 credits among :

MECA0032-1	<i>Flow in turbomachines</i> (anglais) - Koen HILLEWAERT - [60h Proj.]	Q1	26	26	[+]	5
MECA0041-1	<i>Internal combustion engine</i> (anglais) - <i>Partim 1 : Fundamental aspects</i> - Marc NÉLIS - [1j T. t., 15h Proj.] - <i>Partim 2 : Application to propulsion</i> - Marc NÉLIS - [10h Proj., 0,5j T. t.]	Q2				5
			15	15	[+]	
			10	10	[+]	
MECA0527-1	<i>Electric, hybrid and fuel cell vehicles</i> (anglais) - Pierre DUYSINX - [5h Labo., 15h Proj.]	Q1	30	10	[+]	5
MECA0531-1	<i>Experimental Evaluation of Components and Processes</i> (anglais) - Pierre DEWALLEF, Samuel GENDEBIEN - [12h Labo., 1j T. t.]	Q1	26	14	[+]	5
ELEC0041-1	<i>Modelling and design of electromagnetic systems</i> (anglais) - Christophe GEUZAINÉ	Q2	26	26	-	5

**Professional focus in Energy networks**

ELEN0062-1	<i>Introduction to machine learning</i> (anglais) - Pierre GEURTS,	Q1	30	5	[+]	5
------------	--	----	----	---	-----	---

EHENKEL - [40h Proj.]

Select 10 credits among :

ELEN0445-1	<i>Microgrids</i> (anglais) - Bertrand CORNÉLUSSE - [24h Proj., 1j T. t.]	Q1	18	18	[+]	5
MECA0034-1	<i>Energy flexibility in buildings</i> (anglais) - Vincent LEMORT	Q1	26	26	-	5
ENRG0007-1	(pas organisé en 2023-2024) <i>Urban energy planning</i> (anglais) - N...	Q2	26	26	-	5
ELEC0449-1	<i>Practices and evolution of the electric power and energy industry</i> (anglais) - Bertrand CORNÉLUSSE, Damien ERNST, Louis WEHENKEL - [12h Proj., 6j T. t.]	TA	-	-	[+]	5
MATH0462-1	<i>Discrete optimization</i> (anglais) - Quentin LOUVEAUX - [25h Proj.]	Q2	30	20	[+]	5
INFO8010-1	<i>Deep learning</i> (anglais) - Gilles LOUPPE - [60h Proj.]	Q2	30	-	[+]	5

**Prérequis :**

ELEN0062-1 - Introduction to machine learning