

#### Block view of the study programme

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#### Block 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> (english language) - Grégoire LÉONARD	Q1	20	32	-	5
ELEC0055-3	<i>Element of power Electronics</i> (english language) - Part A - Fabrice FREBEL - Part B - Fabrice FREBEL	Q1	30	6	-	5
ELEC0447-1	<i>Analysis of electric power and energy systems</i> (english language) - Bertrand CORNÉLUSSE, Louis WEHENKEL - [1d FW]	Q1	26	26	[+]	5
MECA0450-3	<i>Renewable Energy System Design</i> (english language) - Pierre DEWALLEF - [24h Proj., 1d FW]	Q1	24	12	[+]	5
ENRG0001-1	<i>Energy challenge (including seminars)</i> (english language) - Bertrand CORNÉLUSSE, Pierre DEWALLEF, Samuel GENDEBIEN, Vincent LEMORT, Grégoire LÉONARD - [3d FW, 80h Proj.]	TA	30	-	[+]	10

#### Elective courses

Choose courses totalling 15 ECTS out of the following :

[...] 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>Electric circuits</i> - Bertrand CORNÉLUSSE	Q2	26	26	-	5
SYST0022-1	<i>Linear Systems Design</i> (english language) - Guillaume DRION, Pierre SACRÉ - [15h Proj.]	Q2	26	26	[+]	5
MECA0002-1	<i>Applied Thermodynamics and Introduction to Heat Engines</i> - Vincent LEMORT	Q1	26	26	-	5
CHIM9315-1	<i>Sustainable management of fuels: supply, synthesis and use</i> - Angélique LÉONARD, Grégoire LÉONARD - [1d FW, 10h Proj.]	Q1	50	-	[+]	5
CHIM0009-3	<i>Applied Chemical Thermodynamics</i> - MarieNoëlle DUMONT, Nathalie JOB, Grégoire LÉONARD	Q2	26	26	-	5
GEOL1046-1	<i>Geothermal energy</i> (english language) - Alain DASSARGUES, Bertrand FRANÇOIS - [40h Proj., 1d FW]	Q2	18	15	[+]	5
ENRG0002-1	<i>Wind Energy</i> (english language) - Thomas ANDRIANNE, Koen HILLEWAERT - [12h Proj.]	Q2	36	16	[+]	5
ENRG0003-1	<i>Hydropower</i> (english language) - Sébastien ERPICUM - [20h Proj., 1d FW]	Q2	26	26	[+]	5
GENU0018-3	<i>Introduction to Nuclear Engineering and Power Plant Technologies</i> (english language) - Pierre DEWALLEF	Q2	26	26	-	5
GCIV0008-2	<i>Energy and transport</i> (english language) - Mario COOLS - [25h Proj.]	Q1	30	15	[+]	5
ARCH3272-1	<i>Building performance simulation and monitoring</i> (english language) - Part 1 - Shady ATTIA - Part 2 - Shady ATTIA - [70h Proj.]	Q1	15	15	-	5
ENRG0004-1	(pas organisé en 2023-2024) <i>CO2 capture, utilisation and storage</i> (english language) - N...	Q2	26	26	-	5

# Study programmes 2023-2024

## Faculty of Applied Sciences

### Master of Science in Energy Engineering

[...] 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> (english language) - Pierre DEWALLEF - [12h Proj.]	Q2	24	24	[+]	5
MECA0006-1	<i>Cooling and low-temperature heating systems</i> (english language) - 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> (english language) - Quentin LOUVEAUX - [25h Proj.]	Q1	30	20	[+]	5
ELEC0448-1	<i>Planning and operation of electric power and energy systems</i> (english language) - Bertrand CORNÉLUSSE, Damien ERNST, Louis WEHENKEL	Q2	26	26	-	5
ENRG0006-1	<i>Energy Transition: Modeling and Scenario Analysis</i> (english language) - Sylvain QUOILIN	Q2	26	26	-	5

#### Block 2

##### Compulsory Courses

CHIM0664-1	(pas organisé en 2023-2024) <i>Electrochemical energy conversion and storage</i> (english language) - theory - Nathalie JOB - lab - Nathalie JOB - [15h Labo.]	Q1		15	-	-	5
ELEC0018-1	<i>Energy market and regulation</i> (english language) - Damien ERNST	Q1	39	13	-	5	
GEST3162-1	<i>Principles of management</i> (english language) - François PICHHAULT, Willem STANDAERT - [25h Proj.]	Q1	30	-	[+]	5	
ATFE9011-1	<i>Master's thesis and Internship</i> (english language) - 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> (english language) - N...	Q1	26	26	-	5
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Select 10 credits among:

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

Study programmes 2023-2024  
 Faculty of Applied Sciences  
 Master of Science in Energy Engineering

**Professional focus in Energy networks**

ELEN0062-1 *Introduction to machine learning* (english language) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.] Q1 30 5 [+] 5

Select 10 credits among:

ELEN0445-1 *Microgrids* (english language) - Bertrand CORNÉLUSSE - [24h Proj., 1d FW] Q1 18 18 [+] 5

MECA0034-1 *Energy flexibility in buildings* (english language) - Vincent LEMORT Q1 26 26 - 5

ENRG0007-1 (pas organisé en 2023-2024) *Urban energy planning* (english language) - N... Q2 26 26 - 5

ELEC0449-1 *Practices and evolution of the electric power and energy industry* (english language) - Bertrand CORNÉLUSSE, Damien ERNST, Louis WEHENKEL - [12h Proj., 6d FW] TA - - [+] 5

MATH0462-1 *Discrete optimization* (english language) - Quentin LOUVEAUX - [25h Proj.] Q2 30 20 [+] 5

INFO8010-1 *Deep learning* (english language) - Gilles LOUPPE - [60h Proj.] Q2 30 - [+] 5  
**Prerequisite :**  
 ELEN0062-1 - Introduction to machine learning