

Bachelor's Degree

ENGINEERING SCIENCE

Major in Electrical Energy

- > Are you passionate about science and the energy sector?
- > Do you want to design innovative electrical systems?

This training is for you !



Company visits



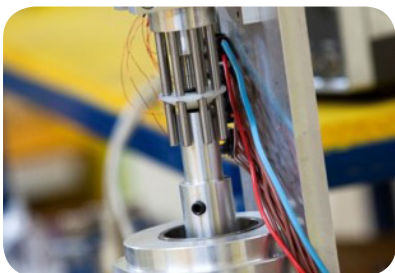
Electrical energy knowledge



Multi-Energy



Projects with companies



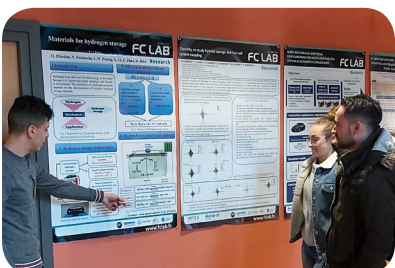
Projects with laboratories



Teamwork



Poster creation



Research congresses



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• Objectives of the training program

This course provides basic knowledge in the fields of electrical engineering, namely energy conversion, electronics, automation and industrial computing, combining the mathematical and physical tools of the engineer. In addition, the development of transversal competencies such as communication, organizational and management skills, is encouraged. An emphasis is put on English, complemented by scientific and technical modules also taught in English.

• Target audience

- 1st year: Baccalauréat S recommended (French High School diploma with advanced science), DAEU (diploma granting access to higher education)
- 'Licence': 2nd year of the field concerned, 'DUT' and 'BTS'* according to majors, continuing training (resumption of studies or VAE - validation of prior experience). Selection on file.
(*Advanced vocational diploma / vocational training certificate)

• Job opportunities

- Engineering and/or design assistant
- Quality engineer
- Installation and commissioning manager
- Project Manager
- R&D Assistant Engineer
- Head of a test and/or qualification laboratory

• Master of Engineering H3E Hydrogen Energy & Energy Efficiency (CMI)

This curriculum trains engineers in innovative energy production and management techniques, in particular thermal and electrical, with a focus on the energy vector of the future : hydrogen. Students work in collaboration with FEMTO- ST laboratory. Selection based on application.

Level of the validated degree :

Baccalauréat +3
Bachelor's degree

Internship period :

10 weeks
semester 6

Training program location :

Département Sciences et Energies
UFR STGI BELFORT
2 rue Chantereine

Further studies :

Master's degree in Energy and
Electrical Engineering

Registration :

<http://formation.univ-fcomte.fr/composantes/ufr-stgi>

Contact :

Student affairs office
Bachelor's Degree in Engineering
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'Licence' 1st year

	Type	CM	TD	TP	Total
Semester 01	Compul.				
EU 1.1 Mathematics	Compul.	22	56		78
Algebra	Oblig.	10	26		36
Analysis	Oblig.	12	30		42
EU 1.2 Physics and measurements	Oblig.	16	28	12	56
Electrokinetics	Oblig.	8	14	12	34
Thermodynamics	Oblig.	8	14		22
EU 1.3 Discovery	Oblig.	18	24	30	72
Discovery of EEA (electronics, electrical energy and automation)	Oblig.	6	6	9	21
Discovery of Mechanics	Oblig.	6	6	9	21
Programming basics	Oblig.	6	12	12	30
EU 1.4 Chemistry	Oblig.	10	30	15	55
EU 1.5 Transversal teaching unit	Oblig.		6	12	18
English language self-training module	Oblig.		6		6
Desk research	Oblig.				
C2I S1 (IT and Internet Certificate Semester 1)	Compul.			12	12
'Parcours CMI' (Master of Engineering H3E [Hydrogen Energy & Energy Efficiency] curriculum)	Oblig.				
EU CMI - English and personal development	Compul.		30		30
English	Compul.		12		12
Personalized Professional Project (PPP)	Compul.		18		18
Semester 02	Compul.				
EU 2.1 Mathematical Tools 1	Oblig.	12	42		54
EU 2.2 SPI 1	Oblig.	18	21	21	60
Electrokinetics 1	Oblig.	9	12	9	30
Automation	Oblig.	9	9	12	30
EU 2.3 Newtonian Physics	Oblig.	14	26	18	58
EU 2.4 SPI 2	Oblig.	15	18	27	60
Mechanics and Engineering	Oblig.	6	6	18	30
Electrokinetics 2	Oblig.	9	12	9	30
EU 2.5 Transversal teaching unit	Oblig.		32	18	50
C2I S2	Oblig.			12	12
Expression and communication	Oblig.			6	6
English	Oblig.		24		24
Scientific practice	Oblig.		8		8
'Parcours CMI' (Master of Engineering H3E [Hydrogen Energy & Energy Efficiency] curriculum)	Compul.				
EU CMI - Personal Research and Development Internship	Oblig.		18	6	24
Expression	Oblig.		18		18
Portfolio of experiences and skills ('PEC')	Oblig.			6	6
Initiation to Research	Oblig.				
Internship	Oblig.		10		10

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'Licence' 2nd year

	Type	CM	TD	TP	Total
Semester 3	Compul.				
EU 3.1 Mathematical tools	Oblig.	12	44		56
EU 3.2 Mechanics and structural design	Oblig.	22	20	24	66
Mechanics	Oblig.	11	10	12	33
Sizing of structures	Oblig.	11	10	12	33
EU 3.3 Thermodynamics and Fluid Mechanics	Oblig.	28	23	9	60
Thermodynamics	Oblig.	12	9	9	30
Fluid mechanics	Oblig.	16	14		30
UE 3.4 Electronics and automation	Oblig.	18	18	18	54
Electronics	Oblig.	9	9	9	27
Automation	Oblig.	9	9	9	27
EU 3.5 Transversal teaching unit	Oblig.		16	17	33
English S3 self-training module	Oblig.		4		4
APAS	Oblig.			5	5
Computer tools	Oblig.			12	12
General knowledge	Oblig.		12		12
'Parcours CMI' (Master of Engineering H3E [Hydrogen Energy & Energy Efficiency] curriculum)	Compul.				
EU CMI - Chemistry and personal development	Oblig.				
English	Oblig.		12		12
Chemistry	Oblig.	8	10		18
Personalized professional project (PPP)	Oblig.		18		18
Semester 04	Compul.				
EU 4.1 IT and Industrial IT	Oblig.	20	23	17	60
Information technology	Oblig.	10	11	9	30
Industrial IT	Oblig.	10	12	8	30
EU 4.2 Industrial Automation and Electrical Engineering	Oblig.	24	20	16	60
Industrial Automation	Oblig.	12	10	8	30
Electrical Engineering	Oblig.	12	10	8	30
EU 4.3 Electromagnetism and Magnetic circuits	Oblig.	24	24	12	60
Electromagnetism	Oblig.	16	16		32
Magnetic circuits	Oblig.	8	8	12	28
EU 4.4 Technical and Thermal Project	Oblig.	9	12	9	30
Thermics	Oblig.	9	12	9	30
Tutored technical project	Oblig.				
EU 4.5 Transversal teaching unit	Oblig.		40	4	44
Corporate culture	Oblig.		10		10
English S4	Oblig.		30		30
Documentary research project	Oblig.			4	4
'Parcours CMI' (Master of Engineering H3E [Hydrogen Energy & Energy Efficiency] curriculum)	Compul.				
EU CMI - Initiation to research	Oblig.	8	35		43
Chemistry	Oblig.	8	10		18
Communication	Oblig.		10		10
Documentary and bibliographic research project	Oblig.				
Laboratory research and development	Oblig.		15		15

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'Licence' 3rd year - ELECTRICAL ENGINEERING AND ENERGY

	Type	CM	TD	TP	Total
Semester 05	Compul.				
UE1 - Applied Mathematics	Oblig.	22	20	12	54
Numerical analysis	Oblig.	9	4	12	25
Mathematics for the engineer	Oblig.	13	16		29
UE2 - Applied Physics	Oblig.	20	16	24	60
Electronics	Oblig.	12	12	12	36
Electromagnetism	Oblig.	8	4	12	24
EU3 - Electrical energy conversion	Oblig.	34	28	20	82
Power electronics	Oblig.	20	14	12	46
Electrical engineering	Oblig.	14	14	8	36
EU4 - Instrumentation and industrial IT	Oblig.	25	14	32	71
Instrumentation, measurements and sensors	Oblig.	10	8	16	34
Industrial IT	Oblig.	15	6	16	37
EU5 - Knowledge of the professional world	Oblig.		30	9	39
Professional project workshop	Oblig.			9	9
English	Oblig.		30		30
'Parcours CMI' (Master of Engineering H3E [Hydrogen Energy & Energy Efficiency] curriculum)	Compul.				
EU CMI - Cogeneration and project management	Oblig.				
Cogeneration	Oblig.	8	8	4	20
Project management	Oblig.	6	12		18
Similarity and dimensional analysis	Oblig.	6	4		10
Semester 06	Compul.				
EU6 - Signals and systems	Oblig.	30	26	32	88
Linear drives	Oblig.	10	8	12	30
Automation	Oblig.	12	10	8	30
Signal processing	Oblig.	8	8	12	28
UE7 - Thermics and mechanics of systems	Oblig.	24	24	24	72
Systems mechanics	Oblig.	12	12	12	36
Thermics of components	Oblig.	12	12	12	36
EU8 - Technology and storage of electrical energy	Oblig.	20	24	20	64
English and technology	Oblig.	2	6	12	20
Storage of electrical energy	Oblig.	8	8	8	24
Electrical technology	Oblig.	10	10		20
EU9 - Integrator project	Oblig.				
EU10 - Industrial internship	Oblig.				
'Parcours CMI' (Master of Engineering H3E [Hydrogen Energy & Energy Efficiency] curriculum)	Compul.				
EU CMI - English and business knowledge	Oblig.				
English	Oblig.		30		30
Corporate culture	Oblig.	9	9		18

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