

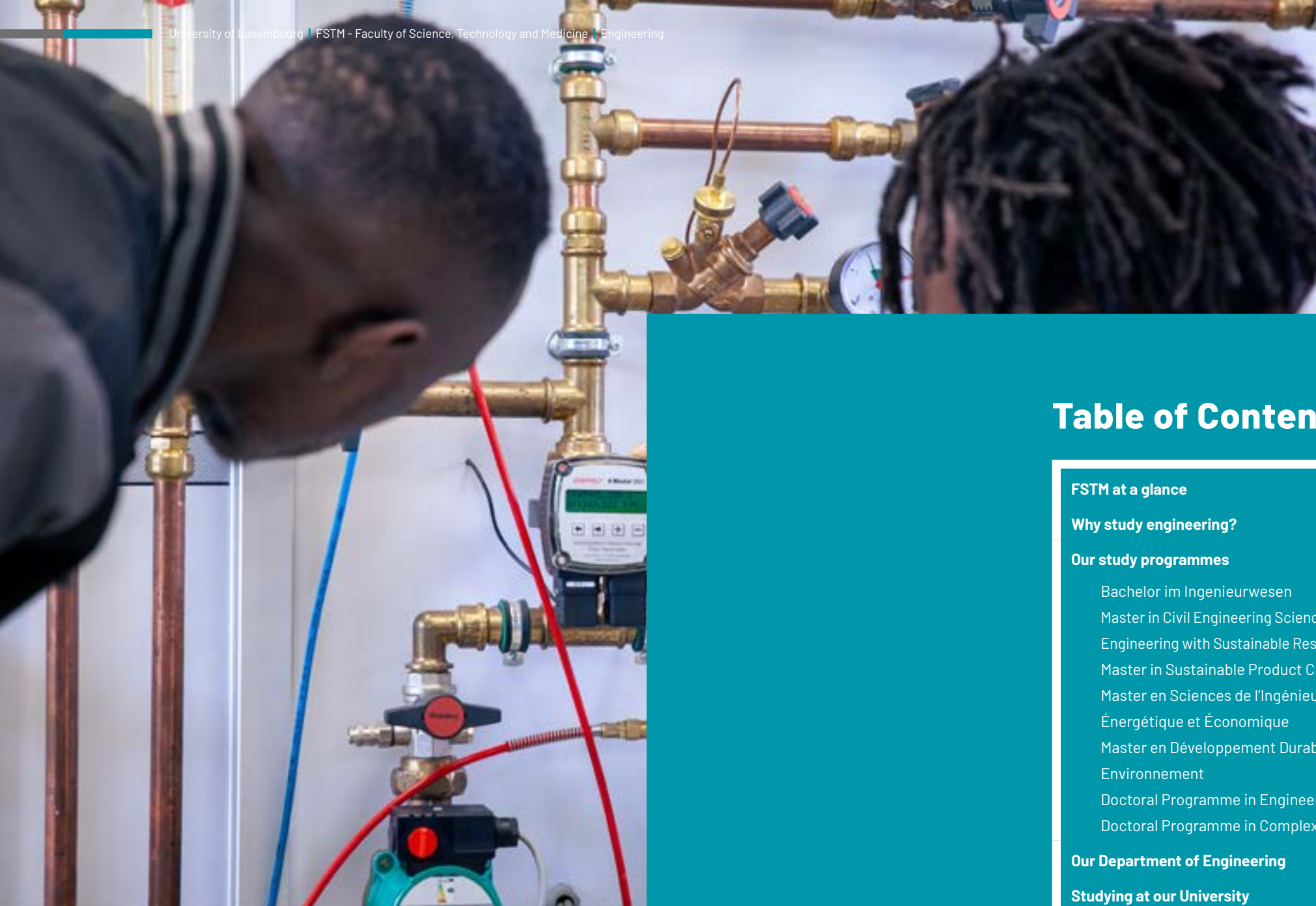


□ FACULTY OF SCIENCE,
TECHNOLOGY AND
MEDICINE



Bachelor,
Master and PhD

Engineering



We develop talents

FSTM has a key mission: attract and train the talents that Luxembourg and the world will need in the STEM fields (Science, Technology, Engineering and Mathematics) as well as in Medicine.

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The Faculty of Science, Technology and Medicine (FSTM) at a glance

The Faculty of Science, Technology and Medicine (FSTM) contributes multidisciplinary expertise in the fields of Mathematics, Physics, Engineering, Computer Science, Life Sciences and Medicine. Through its dual mission of teaching and research, the FSTM seeks to generate and disseminate knowledge and train new generations of responsible citizens, in order to better understand, explain and advance society and environment we live in.



1

Faculty

5

Departments

3

Campus sites



5

Disciplines

39

Study programmes

3

Official languages



2000

Students

130

Countries

56 %

International students





Why study Engineering?

Building the future together

DYNAMIC SECTOR

Civil, mechanical, electrical engineering, energy and digital engineering play a prominent role in the Luxembourg economy. In particular, with some 4,600 companies employing 51,300 persons, the building sector is the one with the largest number of companies that employs the most people¹. Structural engineering as well as infrastructure planning are key elements of the building sector. In addition, major players in mechanical, electrical and digital engineering are required in that sector, as well as in the development of renewable energy sources and environmental protection technologies.

INNOVATION

Luxembourg is a country that embraces innovation, evidenced by the range of construction-related clusters and initiatives that are in place. The University of Luxembourg is deeply involved in this development and a leading research institution with a special focus on numerical simulations.

CRUCIAL NEED OF ENGINEERS

Engineers are highly sought at national level in all sectors. Recruitment in the industrial and the construction sector is a real challenge as there is a need not only to replace natural departures but also to hire qualified people in up-to-date technologies. Thus, there is an increased demand for skilled engineers in Luxembourg. For the period 2023-2025, 765 new hires are planned and Bachelor and Master/doctorate degrees are mainly sought in the fields of management and technique¹. Also, in the Greater Region and the European neighbour countries, the employability of young engineers and the perspectives for young graduated engineers are excellent.

¹ Source : *Les qualifications de demain dans l'industrie, 2023*



Excellent opportunities Join our University!

By joining us, you will benefit from many advantages:

EXCELLENT ENVIRONMENT

You will join small classes, benefit from individual supervision and work with state-of-the-art equipment. You will have the chance to learn from internationally renowned professors and experts from the field. You will enjoy a multicultural environment as both students and faculty members come from many different countries.

INVOLVEMENT IN RESEARCH

Early involved in research project, you will work with staff involved in the latest research, gaining in-depth knowledge from experts working at the forefront of the subject. The Department of Engineering (DoE) is an interdisciplinary group active in the classical domains of civil, electrical and mechanical engineering and geophysics.

STRONG LINKS WITH INDUSTRY

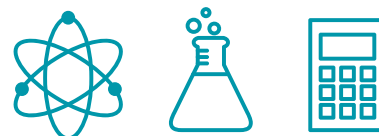
We work closely with the industry, enabling you to acquire knowledge and experience from leading companies, including working with industrial mentors and the opportunity to spend time with them on internships.

Our study programmes overview



**Bachelor im
Ingenieurwesen**

180 ECTS



**Master in Civil Engineering
Sciences - Megastructure
Engineering with Sustainable
Resources**

120 ECTS

**Master in Sustainable
Product Creation**

120 ECTS

**Master en Sciences de
l'Ingénieur - Efficacité
Énergétique et Économique**

120 ECTS

**Master en Développement
Durable - Énergie et
Environnement**

120 ECTS



**Doctoral Programme
in Engineering Sciences**

RESEARCH
+ 20 ECTS

**Doctoral Programme
in Complex Systems Science**

RESEARCH
+ 20 ECTS

Bachelor im Ingenieurwesen

180 ECTS

Der Bachelor im Ingenieurwesen gibt den Absolventen sowohl ein solides Grundlagenwissen als auch praxisnahe Vertiefungen in den jeweiligen Studienrichtungen Elektrotechnik, Energie und Umwelt, Bauingenieurwesen, Maschinenbau sowie Digitales Ingenieurwesen. Das Programm vermittelt daher die notwendigen Fähigkeiten, um entweder mit dem Bachelordiplom schnell in den Arbeitsmarkt einzusteigen oder das Studium mit einem Master an der Universität Luxemburg oder anderswo fortzusetzen.

STÄRKEN

- Auswahl unter 6 Studienrichtungen
- Berufsqualifizierender Bachelor
- Für anschließende Masterstudiengänge geeignet

ZULASSUNGSVORAUSSETZUNGEN (100 PLÄTZE)

- Degree: Diplôme d'études secondaires ou secondaires techniques ou diplôme de technicien avec modules préparatoires
- Sprachkenntnisse: Niveau B2 für Deutsch, B1 für Französisch, B1 für Englisch

PERSPEKTIVEN

- Master in Engineering
- Berufsmöglichkeiten in Ingenieurbüros, in der Industrie, im Bausektor, im Energie- und Umweltbereich, im Elektro- und IT-Bereich, im öffentlichen Dienst



EXAMPLES OF ALUMNI CAREERS

- Junior project manager, Paul Wurth
- Bauingenieur, TR-Engineering
- Ingénieur en génie civil, Creos
- Mechanical engineer, Ateliers Dostert

Programme auf einen Blick

- Dauer: 3 Jahre Vollzeit/6 Semester (180 ECTS)
- Sprachen: Deutsch (60%), Französisch (20%), Englisch (20%)
- Registrierungsgebühren: 400€/Semester (1 & 2) + 200€/Semester (3 bis 6)
- Studienplätze: 100
- Registrierungsfristen:
 - > EU Studenten: Februar-Juli
 - > Nicht-EU Studenten: Februar-April

Zusätzliche Informationen

KONTAKT
beng@uni.lu

CAMPUS
Kirchberg



● beng.uni.lu

Elektrotechnik

Programm

KURSE ECTS

Semester 1

Artificial intelligence for smart technologies	3
Digitaltechnik	3
Elektrotechnik	5
Informatik	5
Mathematik	6
Messtechnik	3
Physique	4

Total 29

Semester 2

Elektronik & Photonik	5
Elektrotechnik	4
Industrial workshop	3
Informatik	4
Leistungselektronik	3
Mathematik	6
Mikroprozessor	4
Telekommunikation	2

Total 31

Semester 3

CAO - Schaltungssimulation	4
Elektronik & Photonik	3
Elektrotechnik	3
Mathematik	6
Mikroprozessor	4
Regelungstechnik	5
Technik der Netze	5

Total 30

Semester 4

Mobilitätssemester 30

Total 30

Semester 5

Business management	4
Digital design	4
Electrical energy production, transportation and distribution	3
Elektrische Maschinen	4
Leistungselektronik	6
Signale und Systeme	4
Technik der Netze	5

Wahlfächer

Automatisierungstechnik	5
Estimation approaches in advanced engineering systems	4

Total required 30

Semester 6

Bachelor thesis	12
Elektrische Energieverteilung	2
Vertiefung	
Leistungselektronik (& dezentrale Systeme)	5
Prototyp Mikroelektronik	4
Real world data acquisition and processing	3
Regelungstechnik	4

Total 30

Energie und Umwelt

Programm

KURSE	ECTS
Semester 1	
CAD	5
Elektrotechnik	5
Informatik	5
Mathematik	6
Physique/Chemie	5
Technische Mechanik	5
Total	31
Semester 2	
Bauphysik	4
Design project based learning	3
Mathematik	6
Technische Mechanik	5
Thermodynamik	5
Werkstoffkunde	6
Total	29
Semester 3	
Erneuerbare Energien	3
Fluid mechanics	4
Gebäudetechnik	5
Mathematik	6
Raumplanung & Verkehrsplanung	4
Thermodynamik	5
Wasserinfrastruktur	2
Total	29
Semester 4	
Mobilitätssemester	30
Total	30

Semester 5	
Automatisierungstechnik	5
Business management	4
Energy systems	5
Finite Elemente Methode für thermische Anwendungen	5
Regelungstechnik	5
<i>Spezialisierung - Gebäudeenergie und Umweltthemen (7 ETCS min)</i>	
Législation	3
Siedlungswasserwirtschaft	5
Städtebau & Landesplanung	5
Workshop Energiepass	3
<i>Spezialisierung - Nachhaltige Energietechnologien</i>	
Electrical energy production, transportation and distribution	3
Wärmeübertragung	4
Total	31
Semester 6	
Bachelor thesis	12
Brennstoffe - Verbrennung - Abgasreinigung	4
Energy systems	5
<i>Spezialisierung - Gebäudeenergie und Umweltthemen</i>	
Abfallwirtschaft & Altlasten	4
Gebäudetechnik	5
<i>Spezialisierung - Nachhaltige Energietechnologien</i>	
Chemische Thermodynamik und Reaktionskinetik	5
Hydraulische Maschinen	4
Total	30

Bauingenieurwesen

Programm

KURSE	ECTS
Semester 1	
Baukonstruktion	5
CAD	5
Informatik	5
Mathematik	6
Physique/Chemie	5
Technische Mechanik	5
Total	31
Semester 2	
Bauphysik	4
Baustoffkunde	6
Design project based learning	3
Mathematik	6
Technische Mechanik	5
Vermessungskunde	5
Total	29
Semester 3	
Législation	3
Massivbau	3
Mathematik	6
Raumplanung & Verkehrsplanung	4
Stahlbau	3
Structural analysis	5
Technische Mechanik	5
Wasserinfrastruktur	2
Total	31
Semester 4	
Mobilitätssemester	30
Total	30

Semester 5	
Bodenmechanik	3
Hydromechanik	2
<i>Spezialisierung - Konstruktives Bauingenieurwesen</i>	
Advanced Structural Analysis	5
Massivbau	5
Stahlbau	5
Tragwerkslehre & Computer Aided Engineering	5
Wahlfach Infrastrukturwesen	5
<i>Spezialisierung - Infrastrukturwesen</i>	
Siedlungswasserwirtschaft	5
Städtebau und Landesplanung	5
Traffic infrastructure design	5
Wahlfach Konstruktives Bauingenieurwesen	5
Wasserbau & Wasserwirtschaft	5
Total	30
Semester 6	
Bachelor thesis	12
Bauwirtschaft	4
Building information modelling	5
Grundbau / Baugruben	5
<i>Wahlfächer</i>	
Abfallwirtschaft & Altlasten	4
Baubetrieb	4
Cartographie & GIS	3
Einführung Ingenieurholzbau	3
Project Management	2
Umwelttechnik	2
Verkehrsbau	2
Total	29

Europäisches Baumanagement

Programm

KURSE	ECTS
Semester 1: Université de Lorraine	
Baubetrieb	2
Baukonstruktionslehre	2
Baustoffkunde	3
Englisch	3
Festigkeitslehre	2
Fremdsprachen	4
Interkulturelles Management	2
Mathematik	6
Statik	4
Topographie	2
Total	30
Semester 2: Université de Lorraine	
Englisch	3
Festigkeitslehre	3
Fremdsprachen	4
Grundbau	3
Interkulturelles Management	2
Mathematik	6
Stahlbetonbau	3
Stahlbau	3
Technisches Zeichnen CAD und BIM	3
Total	30
Semester 3: Université du Luxembourg	
Baubetrieb	3
Baukonstruktion	5
Gebäudetechnik	5
Législation	3
Raumplanung & Verkehrsplanung	4
Technische Mechanik	5
Wasserinfrastruktur	2
<i>Wahlfächer</i>	
Total required	30
Semester 4: Université du Luxembourg	
Baubetrieb	4
Bauphysik	4
Baustoffkunde	6
Bauwirtschaft	4
Einführung Ingenieurholzbau	3
Gebäudetechnik	5
Technische Mechanik	5
Total	31
Semester 5: HTW Saarbrücken	
Praktische Studienphase	22
Projekt	8
Total	30
Semester 6: HTW Saarbrücken	
Baubetrieb	4
Deutsches Zivilrecht	2
Englisch	2
Fremdsprachen	4
Interkulturelles Management	2
Projektmanagement	4
Schalungstechnik	2
Seminar Bauwesen	2
Wahlpflichtmodule	8
Total	30
Semester 7: HTW Saarbrücken	
Arbeitsschutz und Sicherheitstechnik	2
Bachelorarbeit	12
Bauvertragsrecht	2
Englisch	2
Facility Management	2
Fremdsprachen	4
Interkulturelles Management	2
Öffentliches Baurecht	2
Öffentlichkeitsarbeit und Baustelle	2
Total	30

Maschinenbau

Programm

KURSE	ECTS
Semester 1	
CAD	5
Elektrotechnik	5
Informatik	5
Mathematik	6
Physique/Chemie	5
Technische Mechanik	5
Total	31
Semester 2	
Design project based learning	3
Informatik	4
Mathematik	6
Technische Mechanik	5
Thermodynamik	5
Werkstoffkunde	6
Total	29
Semester 3	
Fertigungstechnik	5
Fluid mechanics	4
Machine design	5
Mathematik	6
Regelungstechnik	5
Technische Mechanik	5
Total	30
Semester 4	
Mobilitätssemester	30
Total	30
Semester 5	
Business management	4
Electrical energy production, transportation and distribution	3
Finite Elemente Methode für dynamische Anwendungen	5
Machine design	9
Oelhydraulik	4
Thermodynamik	5
Total	30
Semester 6	
Bachelor thesis	12
Machine design	7
Fertigungstechnik	5
Robotik	3
<i>Wahlfächer</i>	
Digital rapid prototyping	5
Hydraulische Maschinen	4
Total	30

Digitales Ingenieurwesen

Programm

KURSE ECTS

Semester 1

Artificial intelligence for smart technologies	3
Digitaltechnik	3
Elektrotechnik	5
Informatik	5
Mathematik	6
Physique	4
Technische Mechanik	5

Total 31

Semester 2

Informatik	4
Mathematik	6
Mikroprozessor	4
Technische Mechanik	5
Thermodynamik	5

Wahlfächer

Elektrotechnik	4
Telekommunikation	2

Total 30

Semester 3

Business management	4
CAD	5
Gebäudetechnik	5
Mathematik	6
Regelungstechnik	5
Technik der Netze	5

Total 30

Semester 4: Université du Luxembourg

Mobilitätssemester 30

Total 30

Semester 5

Automatisierungstechnik	5
Cloud based applications	4
Database management	4
Digital design	4
Machine design	5
Software engineering	3
Technik der Netze	5

Wahlfächer

Energy systems	5
Estimation approaches in advanced engineering systems	4
Signale und Systeme	4

Total 30

Semester 6

Bachelor thesis 12

Wahlfächer

Building information modelling	5
Cartographie & GIS	3
Energy systems	5
Interaction design	4
Real world data acquisition and processing	3
Robotik	3
Workshop project management	2

Total 29



Master in Civil Engineering Sciences

Megastructure Engineering with Sustainable Resources 120 ECTS

This Master enables students to acquire deeper knowledge in civil engineering with a specific focus on planning and constructing larger megastructures while using resources sustainably. Sustainability is increasingly important and the well-trained modern civil engineer must be able to judge and optimise civil structures and buildings while taking into account reduced consumption of construction materials and natural resources. This dual focus on megastructures and sustainability sets us apart from other masters of civil engineering.

STRENGTHS

- Focus on complex projects and sustainability
- Collaboration with industry
- Involvement in research activities

ADMISSION REQUIREMENTS (20 PLACES)

- Degree: Bachelor in civil engineering or related field
- Language: B2 in English
- GRE test

STUDY & CAREER OPPORTUNITIES

- Civil engineer, structural engineer, consultant, manager
- PhD in engineering



EXAMPLES OF ALUMNI CAREERS

- Project sales engineer, Astron Buildings
- Structural engineer, INCA Ingénieurs Conseils
- R&D engineer, ArcelorMittal

Programme

COURSES ECTS

Semester 1

Circular economy in the construction sector	3
Concrete structures	5
Finite element analysis of structures	5
Life cycle assessment and eco design	3
Methods in digital building - BIM	4
Steel & composite structures - high rise buildings	5
Thin walled structures	5

Total required 30

Semester 2

Energy efficiency of buildings	4
Engineering surveying	5
Managerial accounting	3
Structural dynamics	4
Sustainable water and resources management	5
Transport systems analysis	4
Transport systems - project	2
Underground structures (Advanced soil mechanics)	3

Total required 30

Semester 3

Advanced project / Case study	9
Composite structures & fire design	5
Numerical soil mechanics	4
Prestressed concrete structures	5
Scientific writing and presentation skills	3
Steel & composite structures - bridges	4

Total required 30

Semester 4

Master thesis	30
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Total 30

Programme at a glance

- Duration: 2 year full-time programme/ 4 semesters (120 ECTS)
- Language: English
- Registration fees: 200€/semester
- Available places: 20
- Application period:
 - > For EU students: February-July
 - > For non-EU students: February-April

Additional information

CONTACT

mces@uni.lu

CAMPUS

Belval and Kirchberg



mces.uni.lu

"I highly recommend this Master for the combination of qualified and experienced teachers, personalised follow-up and strong links with local partners. This programme is highly demanding in terms of work and involvement but it will be worth the effort."

Patrick Pereira Dias,
Civil engineer, Schroeder & Associés



Master in Sustainable Product Creation

120 ECTS

This Master enables students to acquire a comprehensive, deep knowledge of all steps of the product creation process, from market segment specification, product planning, product design and manufacturing to product usage, service and recycling. The courses cover mechanical and electrical aspects. This Master perfectly balances academic education with industrial applicability of cutting-edge content.

STRENGTHS

- Combination of mechanical engineering and mechatronic issues within sustainable product creation
- Focus on lean and sustainable use of all resources
- Insights into electrical engineering and computer networking to integrate industry 4.0 and IoT skills

ADMISSION REQUIREMENTS (25 PLACES)

- Degree: Bachelor in mechanical engineering, automatics and robotics, aviation and space exploration, biomedical engineering, mechatronics, electronics and telecommunications, electrical engineering, power engineering or other related fields
- Language: B2 in English

STUDY & CAREER OPPORTUNITIES

- Mechanical engineer, design engineer, teacher, consultant, manager, researcher
- PhD in engineering



EXAMPLES OF ALUMNI CAREERS

- Mechatronics project engineer, Goodyear
- Project engineer, Airbus
- Design engineer, Husky Technologies
- Process engineer, DuPont

Programme at a glance

- Duration: 2 year full-time programme/ 4 semesters (120 ECTS)
- Language: English
- Registration fees: 200€/semester
- Available places: 25
- Application period:
 - > For EU students: February-August
 - > For non-EU students: February-April

Additional information

CONTACT

mspc@uni.lu

CAMPUS

Belval and Kirchberg



mspc.uni.lu

Programme

COURSES

ECTS

Semester 1

Assembly and testing technologies	4
Life cycle assessment and eco design	3
Programming for engineers	4
Project management	4
Supply chain and logistics	4

Elective 1: Mechanics

Assessment of finite element calculations	3
CAD and CAE	4
Machine design	4

Elective 2: Electrical and Computer Engineering

Communication theory	3
Networking	3
Sensors and signal processing	3
Technical energy systems modelling and simulation	4

Total required (if Elective 1) 30
Total required (if Elective 2) 32

Semester 2

Managerial accounting	3
Product planning and marketing for engineers	3
Programming for engineers	4
Robotics	4

Elective 1: Mechanics

Advanced control	3
Advanced engineering materials	4
Digital factory planning	3
Laser technology for manufacturing	4
Machine design exercise	3

Total required (if Elective 1) 31

Semester 2

Elective 2: Electrical and Computer Engineering

Information theory and coding	5
Networked feedback systems	5
Quality of service in computer networks	5

Total required (if Elective 2) 29

Semester 3

Advanced project / Case study	12
Integrated management systems	3
Operational excellence	2
Scientific writing and presentation skills	3

Elective 1: Mechanics

Electrical energy production, transportation and distribution	3
Energetics of the blast furnace	3
Sensors and signal processing	3

Elective 2: Electrical and Computer Engineering

Artificial intelligence	5
Estimation approaches in advanced engineering systems	4

Total required (if Elective 1) 29
Total required (if Elective 2) 29

Semester 4

Master thesis	30
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Total 30

Master en Sciences de l'Ingénieur

Efficacité Énergétique et Économique

120 ECTS



This Master enables students to acquire deeper knowledge in thermodynamics, mathematics and modern technologies needed to assess energy-related issues. The course combines technical elements with units from economical sciences and business administration in the aim of providing the full range of skills required for approaching technically and commercially energy related problems.

STRENGTHS

- International approach to energy issues
- Possibility to obtain a double diploma with Hochschule für Technik und Wirtschaft des Saarlandes (HTW Saar), Université de Lorraine, Nancy or Umwelt-Campus Birkenfeld (UCB)
- Partnerships with the European investment Bank (EIB) and industrials (Bosch, Buderus, DGNB, Paul Wurth)

ADMISSION REQUIREMENTS (20 PLACES)

- Degree: Bachelor in engineering or related field
- Languages: B2 in English and French

STUDY & CAREER OPPORTUNITIES

- Energy engineer, consultant, manager, researcher
- PhD in engineering

In collaboration with:



htw saar



EXAMPLES OF ALUMNI CAREERS

- Energy engineer, Kronospan
- Energy manager, Veolia
- Project engineer, Paul Wurth
- Maintenance engineer, a+p kieffer

Programme

COURSES

ECTS

Semester 1

Case studies in finance	4
Computational fluid dynamics	3
Contrôle de gestion	4
Introduction to numerical methods for continuous optimization	5
Energetics of the blast furnace	3
Production et distribution de l'énergie électrique	3
Thermodynamics	5
Urban planning + certification DGNB	3

Total 30

Semester 2

Cost accounting for engineering managers	4
Efficience énergétique des bâtiments	4
Energy efficiency of buildings	7
Financial reporting & compliance	4
Gestion intelligente de l'énergie	3
Heat and mass transfer	5
Introduction aux décisions financières de l'entreprise	4
Policy, assessment and evaluation of energy projects on European level	3

Total required 34

Semester 3

Advanced control of electrical energy	3
Efficience énergétique des bâtiments	3
H2 combustion engines/turbines	3
Hydrogen systems	4
Initiation to project work: techno-economical energy project	4
Integrated energy systems	5
Introduction to the TRNSYS simulation programme	1,5
Large solar thermal systems	1,5
Bosch-Buderus	

Total 25

Semester 4

Master thesis	30
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Total 30

Programme at a glance

- Duration: 2 year full-time programme/ 4 semesters (120 ECTS)
- Languages: English and French
- Registration fees: 200€/semester
- Available places: 20
- Application period:
 - > For EU students: February-August
 - > For non-EU students: February-April

Additional information

CONTACT

meee@uni.lu

CAMPUS

Belval and Kirchberg



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"I opted for this Master as it combines the engineering science and economics, which are both of immense relevance nowadays. Students are taught not only how to solve any energy-related issue but also how to evaluate it from the financial point of view. The possibility to spend one semester abroad is a great opportunity to learn more about another country."

Elena Sobon-Mühlenbrock,
Environmental consultant, Energieageance



Master en Développement Durable Energie et Environnement

120 ECTS

Ce Master, développé en co-diplômation par l'Université du Luxembourg et l'Université de Liège, permet aux étudiants d'acquérir les compétences nécessaires pour appliquer une approche environnementale aux questions énergétiques et bâtiments durables. En outre, la mobilité des étudiants et enseignants permet une approche internationale de la question de l'énergie ainsi qu'une opportunité d'apprentissage des langues étrangères.

ATOUTS

- Double diplôme de l'Université du Luxembourg et de l'Université de Liège
- Combinaison de cours techniques, sciences naturelles et humaines
- Approche multidisciplinaire et internationale

CONDITIONS D'ADMISSION (20 PLACES)

- Diplôme: Bachelor ou Master en sciences exactes ou humaines
- Langues: B2 en français et en anglais

OPPORTUNITÉS DE CARRIÈRE ET DE FORMATION

- Expert en énergie, consultant, enseignant, chercheur
- PhD en ingénierie

In collaboration with:



EXEMPLES DE CARRIÈRE DES ALUMNI

- Circular economy engineer, LSC Engineering group
- Project adviser, European Innovation Council
- Quality consultant, Contern
- Conseiller en énergie, myenergy

Programme en un coup d'œil

- Durée: 2 ans à temps plein / 4 semestres (120 ECTS)
- Langues: français (85%), anglais (15%)
- Frais d'inscription: 1^{ère} année Université de Liège, 2^{ème} année Université du Luxembourg
- Places disponibles: 20
- Périodes d'inscription:
 - > Étudiants UE: Février - août
 - > Étudiants non UE: Février - avril

Information complémentaire

CONTACT

mdd@uni.lu

CAMPUS

Arlon (BE), Belval et Kirchberg (LU)



mdd.uni.lu

Programme

COURS ECTS

Semestre 1 : Université de Liège

Analyse des systèmes appliquée à l'environnement	2
Biodiversité et sociétés	4
Économie, énergie et environnement	2
Environnement sol	4
Fondement de droit / politique de l'environnement	3
Gestion intégrée de l'énergie	4
Gestion intégrée et participative des ressources en eau	4
Introduction à l'anthropocène	2
Qualité de l'air: pression, état, réponse	4

Total 29

Semestre 2 : Université du Luxembourg

Circular economy in construction sector	3
Energy efficiency of buildings	7
Gestion intelligente de l'énergie	3
Initiation to project work	2
Policy, assessment and evaluation of energy projects on European level	3
Sustainable water and resource management	4
Thermodynamics	5
Transport systems analysis	4

Total 31

Semestre 3 : Université de Liège

Analyse technico-économique des systèmes énergétiques	4
Introduction aux risques environnementaux et sanitaires	5
Production décentralisée et stockage de l'énergie	3
Théories et gestions des transitions écologiques	5
Valorisation des énergies renouvelables	5

Options (2 cours à choisir)

Dimensionnement et simulation des systèmes énergétiques du bâtiment	4
Gestion quantitative et qualitative des eaux souterraines	4
Modélisation de la dispersion atmosphérique	4
Optimisation énergétique du bâtiment et intégration des énergies renouvelables	4
Outils d'analyse et d'aide à la décision pour une gestion intégrée des ressources en eau	4
Politiques et actions publiques	4
Réseaux d'énergie : les systèmes d'énergie électrique et les réseaux de chaleur	4
Systèmes de production agricole et sécurité alimentaire	4

Total requis 30

Semestre 4 : Université du Luxembourg ou de Liège

Master thesis	25
Stage	5

Total 30

Doctoral Programme in Engineering Sciences

This programme offers research training in the disciplines civil, environmental and geospatial engineering as well as in energy, mechanical, manufacturing, electrical and communications engineering at an internationally competitive level following a multidisciplinary scientific approach to the ever increasing complexity of modern engineering.

STRENGTHS

- Personal supervision by internationally leading scientists
- Immediate integration into research groups and projects
- Broad offer to transferable skills training
- State of the art laboratories and equipment

ADMISSION REQUIREMENTS

- Degree: Master in engineering sciences or related field
- Language: B2 in English

CAREER OPPORTUNITIES

- Postdoctoral researcher, research scientist, research associate, associate professor
- Engineer, analyst, scientist



EXAMPLES OF ALUMNI CAREERS

- Business development manager, Bosch
- Professor, Hochschule Trier
- Team manager, European Patent Office
- Senior manager, SES
- Associate manager, Tesla Automation
- Senior GNSS scientist, TrustPoint

Programme at a glance

- Duration: 3 to 4 years
- Language: English
- Registration fees: 200€/semester
- Number of doctoral candidates: 60

Additional information

CONTACT
dpes@uni.lu

CAMPUS
Belval and Kirchberg



dpes.uni.lu

Doctoral Programme in Complex Systems Science

Data and computational sciences are multidisciplinary fields based on the idea that mathematics and computer science theories are used to address application domains within engineering, the natural sciences, the social sciences and the humanities.

STRENGTHS

- Multidisciplinary inclusive training based on strong fundamentals with wide application areas
- Supervision by world-leading professors in their field
- Close collaborations with over 30 companies in the Greater Region and worldwide
- Strong, mathematical underpinning, and computer science bases transferable to a wide variety of fields and jobs
- Frequent publications in multidisciplinary journals

ADMISSION REQUIREMENTS

- Degree: Master in natural sciences, computer science or engineering science
- Language: B2 in English

CAREER OPPORTUNITIES

- Postdoctoral researcher, research scientist, research associate, associate professor
- Data scientist, R&D specialist, engineer, startups creation, geodesy specialist



EXAMPLES OF ALUMNI CAREERS

- Data scientist, Goodyear
- Process engineer, Paul Wurth
- Associate professor, University of Exeter
- Business intelligence engineer, Amazon
- Structural engineer, Lunar Outpost
- Machine learning R&D engineer, MDsim
- Technology engineer, Axens

Programme at a glance

- Duration: 3 to 4 years
- Language: English
- Registration fees: 200€/semester
- Number of doctoral candidates: 32

Additional information

CONTACT
dpcs@uni.lu

CAMPUS
Belval



dpcs.uni.lu



Our department Engineering

DoE at a glance

The Department of Engineering (DoE) is an interdisciplinary group active in the classical domains of civil, electrical and mechanical engineering, as well as geospatial engineering and geophysics. The main focus of research is on the development of technological solutions, the sustainable and economical use of resources, and the offer of competences for the technological requirements of Luxembourg and the Greater Region industrial and public actors. In many cases special emphasis is given to numerical simulation to reduce the required experimental effort, but the validation of models remains an essential asset.

MEMBERS

- 29 professors, lecturers and research scientists
- 40 post-docs
- 68 doctoral candidates
- 15 technical and administrative staff

FUNDING AND COLLABORATIONS (2023)

- €6.4 million in 32 new projects with industry and public institutions
- €3 million in 8 new European projects

PUBLICATIONS (2022)

- 164 peer-reviewed articles in scientific journals

Additional information

CONTACT

doe@uni.lu

CAMPUS

Belval and Kirchberg



doe.uni.lu



Research areas

The department (DoE) carries out research activities around seven thematic axes:

CIVIL AND ENVIRONMENTAL ENGINEERING

Civil Engineering deals with design, construction, and maintenance within the physical and naturally built environment. It considers structures – buildings, bridges, tunnels, industrial constructions. In addition, it is necessary for infrastructure development – urban water management, roads, railroads, etc. Researchers investigate structural and infrastructural engineering using modelling and numerical approaches and taking into account sustainability challenges.

COMPUTATIONAL ENGINEERING AND MODELLING

This area deals with modelling, discretising, predicting, optimising, controlling and thereby understanding the physical world, characterised by increasingly complex technical systems. The discipline aims at extending theories and experimentations with powerful simulation and algorithmic approaches implemented in sophisticated scientific software and executed on high performance computing devices (HPC). It inspires and fosters multidisciplinary research and education, innovation and collaborative opportunities to ensure Luxembourg's international competitiveness and economic growth.

ELECTRICAL AND COMMUNICATION ENGINEERING

Smart power converters, sensing and communication technologies are key for electrical engineering. The DoE electrical team focuses on solving scientific and technological problems related to smart-sensor-based data processing, monitoring as well as mathematical modelling, on the one hand, and on the other hand, the identification of complex systems with unpredictable behaviour for the application to power quality in smart energy grids, biomedical and industrial processes 4.0.

ENERGY TECHNOLOGY AND ENGINEERING

Research focuses on topics including renewable energy production and thermal power plant efficiency, intelligent energy management and resilient grids, energy-efficient buildings and infrastructures, green hydrogen and electromobility. The projects undertaken aim to contribute to the development of eco-cities based on ten "One Planet Living" principles, striving for zero emissions, sustainable materials, water management, biodiversity conservation, zero waste, sustainable mobility, local food production, fair economy, health and well-being, and cultural activities.

GEOPHYSICS AND REMOTE SENSING, GEODESY AND GEOSPATIAL ENGINEERING

Geoscientific and geospatial techniques are used to better understand the environmental processes, digitise the environment, and improve sustainability. Our investigations have led to improve city modelling and transport, identification of the loss of ice mass in Antarctica or the Austrian Alps, atmospheric and sea level changes, or to support the monitoring of our forests' health.

MANUFACTURING AND MATERIAL ENGINEERING

Engineers work on machine design and computer-aided engineering, high-performance manufacturing and engineering of high-performance materials. They use modern computer-aided techniques and tools to help develop the industry of the future and the development of new materials.

MECHANICAL ENGINEERING

Mechanical engineers investigate process engineering/chemical processes, mechanical construction including biomechanics and applied thermodynamics. They use scientific methods to solve both fundamental and applied mechanical engineering issues. This area covers the key aspects of the complete product life cycle.



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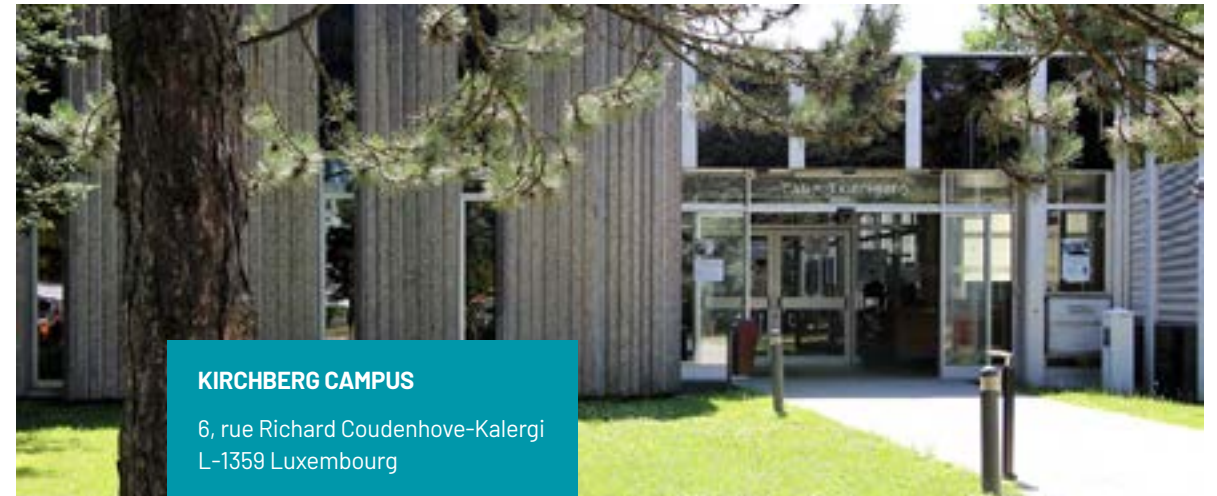
With more than 6,780 students from all over the world, the University of Luxembourg has an international and multilingual character that offers its students a higher research-oriented education.

Three campus sites



BELVAL CAMPUS

2, place de l'Université
L-4365 Esch-sur-Alzette



KIRCHBERG CAMPUS

6, rue Richard Coudenhove-Kalergi
L-1359 Luxembourg



LIMPERTSBERG CAMPUS

162 A, avenue de la Faïencerie
L-1511 Luxembourg





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Contact

University of Luxembourg

Faculty of Science, Technology
and Medicine (FSTM)

fstm.uni.lu

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Stay in touch

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TECHNOLOGY AND
MEDICINE