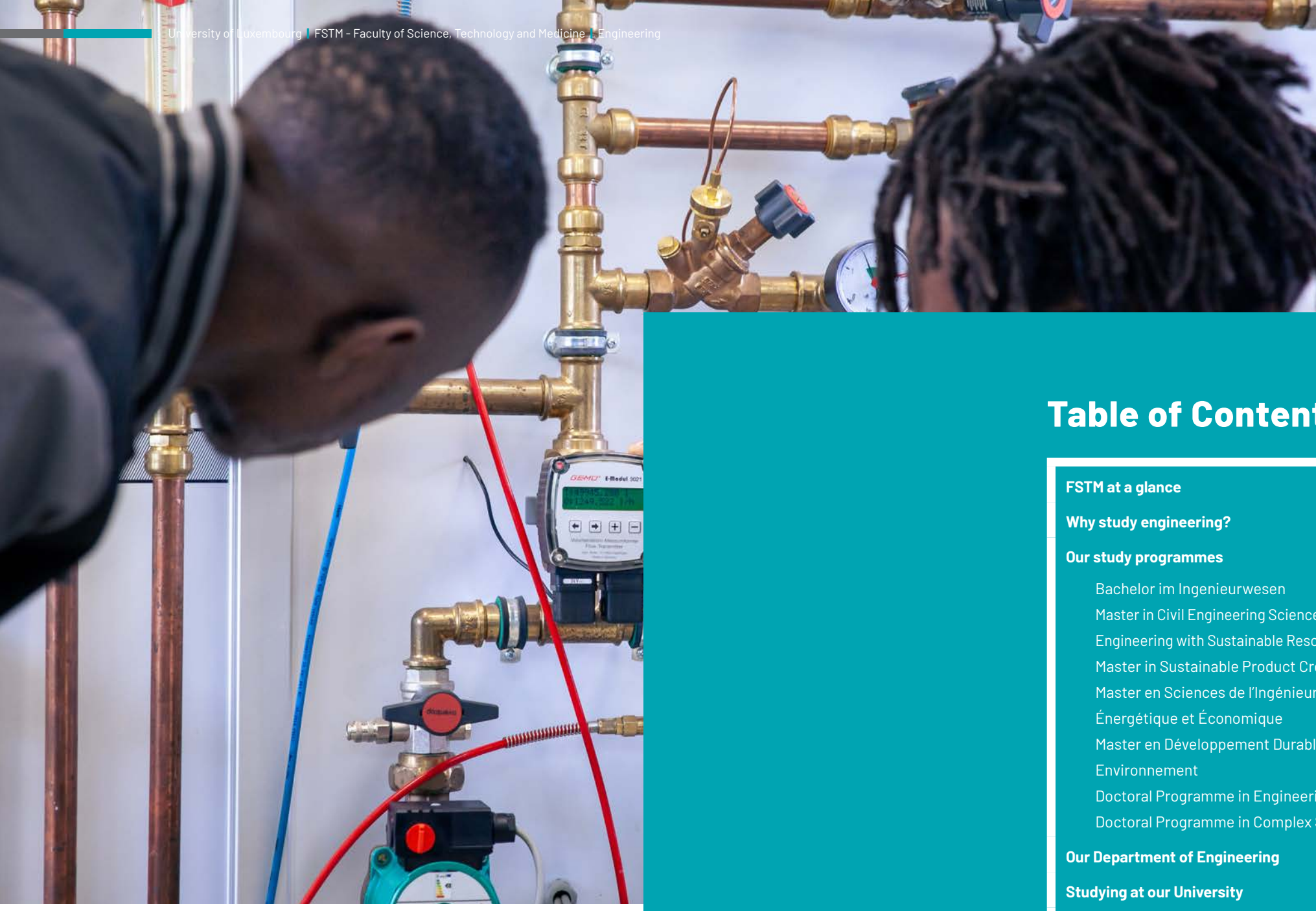
FACULTY OF SCIENCE,
TECHNOLOGY AND
MEDICINE

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 Health and Life sciences.

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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.

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University of Luxembourg | FSTM - Faculty of Science, Technology and Medicine | Engineering

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Disciplines

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Official languages

2 500
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 people[1]. 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 technique[1]. 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

University of Luxembourg | FSTM - Faculty of Science, Technology and Medicine | Engineering

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

3 YEARS

Bachelor im Ingenieurwesen

180 ECTS

MASTERS

2 YEARS

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 - Éfficacité Énergétique et Économique

120 ECTS

Master en Développement Durable - Énergie et Environnement

120 ECTS

DOCTORAL EDUCATION

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
- 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	2
Digitaltechnik	3
Elektrotechnik	5
Informatik	5
Mathematik	6
Measurement Technology	3
Physics	5
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	**30**
Semester 6	
Bachelor thesis	12
Elektrische Energieverteilung Vertiefung	2
Leistungselektronik (& dezentrale Systeme)	5
Prototyp Mikroelektronik	4
Real world data acquisition and processing	3
Regelungstechnik	4
Wahlfächer	
Project Management	2
Propriété intellectuelle et veille technologique	2
Total	**30**

Energie und Umwelt

Programm

KURSE	ECTS
Semester 1	
CAD	5
Elektrotechnik	5
Informatik	5
Mathematik	6
Physics	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
Spezialisierung - Gebäudeenergie und Umweltthemen (7 ECTS min)	
Législation	3
Siedlungswasserwirtschaft	5
Städtebau & Landesplanung	5
Workshop Energiepass	3
Spezialisierung - Nachhaltige Energietechnologien	
Electrical energy production, transportation and distribution	3
Wärmeübertragung	4
Total	**31**
Semester 6	
Bachelor thesis	12
Brennstoffe - Verbrennung - Abgasreinigung	4
Energy systems	5
Spezialisierung - Gebäudeenergie und Umweltthemen	
Abfallwirtschaft & Altlasten	4
Gebäudetechnik	5
Spezialisierung - Nachhaltige Energietechnologien	
Chemische Thermodynamik und Reaktionskinetik	5
Thermal Labs	4
Wahlfächer	
Project Management	2
Propriété intellectuelle et veille technologique	2
Total	**30**

Bauingenieurwesen

Programm

KURSE	ECTS
Semester 1	
Baukonstruktion	5
CAD	5
Informatik	5
Mathematik	6
Physics	5
Technische Mechanik	5
Total	**31**
Semester 2	
Bauphysik	4
Baustoffkunde	6
Workshop 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
Spezialisierung - Konstruktives Bauingenieurwesen	
Advanced Structural Analysis	5
Massivbau	5
Stahlbau	5
Tragwerkslehre & Computer Aided Engineering	5
Wahlfach Infrastrukturwesen	5
Spezialisierung - Infrastrukturwesen	
Siedlungswasserwirtschaft	5
Städtebau und Landesplanung	5
Trafic 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
Wahlfächer	
Abfallwirtschaft & Altlasten	4
Baubetrieb	4
Cartographie & GIS	3
Einführung Ingenieurholzbau	3
Project Management	2
Propriété intellectuelle et veille technologique	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
Wahlfächer	
Total	**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	
Pratktische 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
Physics	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
Wahlfächer	
Digital rapid prototyping	5
Thermal Labs	4
Project Management	2
Propriété intellectuelle et veille technologique	2
Total	**30**

Digitales Ingenieurwesen

Programm

KURSE	ECTS
Semester 1	
Artificial intelligence for smart technologies	2
Digitaltechnik	3
Elektrotechnik	5
Informatik	5
Mathematik	6
Physics	5
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
Project Management	2
Propriété intellectuelle et veille technologique	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 at a glance

- Duration: 2 year full-time programme/ 4 semesters (120 ECTS)
- Language: English
- Registration fees: 400€/semester
- Available places: 20
- Application period:
  > For EU students: February-July
  > For non-EU students: February-April

Additional information

CONTACT
mces@uni.lu

CAMPUS
Kirchberg (main) & Belval

mces.uni.lu

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
Project management methods for construction projects	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
Total	**30**

"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: 400€/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	
Fundamentals of network 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	
Manufacturing systems	3
Product planning and marketing for engineers	3
Programming for engineers	4
Robotics	4
Elective 1: Mechanics	
Advanced control	3
Advanced engineering materials	4
Additive manufacturing technology	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
Design for Circularity	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
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
- Possibilty 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:

UNIVERSITÉ DE LORRAINE

htw saar

Umwelt-Campus Birkenfeld

EXAMPLES OF ALUMNI CAREERS

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

Programme at a glance

- Duration: 2 year full-time programme/ 4 semesters (120 ECTS)
- Languages: English and French
- Registration fees: 400€/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

meee.uni.lu

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 Bosch-Buderus	1,5
Total	**25**
Semester 4	
Master thesis	30
Total	**30**

"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, Energieagence

Master en Développement Durable
Energie et Environnement

120 ECTS

Ce Master, developpé en co-diplômation par l'Université du Luxembourg et l'Université de Liège, permet aux étudiants d'acquérir les compétences necessaires 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:

LIÈGE université

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: 1ère année Université de Liège, 2ème année Université du Luxembourg
- Places disponibles: 20
- Périodes d'inscription:

> Étudiants UE: Février - août
> Ètudiants 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, etat, 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 multisciplinary 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: 400€/semester
- Number of doctoral candidates: 60

Additional information

CONTACT
dpes@uni.lu

CAMPUS
Belval and Kirchberg

dpes.uni.lu

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Doctoral Programme in Complex Systems Science

Complex systems are networks of interconnected components whose interactions produce unpredictable and emergent behaviours, such as those found in ecosystems, financial markets, and the brain. Understanding these systems requires interdisciplinary approaches combining mathematics, computer science, and domain-specific knowledge. Our programme offers comprehensive training in complex systems science, equipping PhDs with the skills to analyse and model these systems and apply their insights to fields like health, engineering, social sciences, and beyond.

STRENGTHS

- Multi-disciplinary, method-centric training based on strong fundamentals with wide application areas
- Supervision by world-leading professors
- Close collaborations with over 30 companies worldwide
- Strong, mathematical underpinning, and computer science bases transferable to a wide variety of fields and jobs
- Publications in world-leading journals, open-source code release, data
- Joint activities with the local start-up ecosystem

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 Würth
- 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: 400€/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

- 27 professors, lecturers and research scientists
- 31 post-docs
- 65 doctoral candidates
- 15 technical and administrative staff

FUNDING AND COLLABORATIONS

- €9.5 million in 24 new projects with industry and public institutions
- €4 million in 9 new European projects

PUBLICATIONS (2024)

- 108 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 four thematic axes:

CIVIL, ENVIRONMENTAL & GEOSPATIAL ENGINEERING

We are in an era where our World is impacted by two major and interconnected challenges: (i) climate and environmental changes and natural resources consumption and waste; (ii) the increasing occurrence of severe natural events and disasters. To face theses challenge, we must develop the necessary structures and infrastructure to guarantee the sustainable living of our modern civilization and develop methods to understand the impact and in turn protect the environment as well as to mitigate climate change. The groups develop innovative and original solutions for smart cities & circular economy especially for the reduction of carbon emissions, material consumption and waste, the environmental and overall increase the systems' efficiency and resilience. Digital twin solutions are developed with the final target of advancing the digital models to reach the Digital Metaverse for the natural and built environment.

COMPUTATIONAL ENGINEERING & SCIENCE

This field has been in the last years a major driver of research excellence for the department, by covering multiple disciplines and create bridges between many domain-specific applications (e.g., aerospace, bioengineering, renewable energy, health, environment and many more). Research carried within the field enables the development of many if not all the common strategic developments of the department through theoretical physics-based, data-driven model-predictive and simulation approaches, Artificial Intelligence/Machine Learning approaches, Big data analytics, hybrid intelligence, meta-modelling, multi-scale modelling, etc. Building on the established international standing of the group, and the various collaborations created with other departments, faculties and centres, the research area is a key enabler for promoting and further nurturing the interdisciplinary vision of the department.

ENERGY TECHNOLOGY & ELECTRICAL ENGINEERING

The area applies an interdisciplinary approach for the design and management of a modern energy supply concept. This includes addressing the energy consumption aspects and challenges in e.g. wastewater and transport management, building-, heating- and cooling technology. Moreover, modern communication and sensor technologies, big data management and artificial intelligence are also required to ensure the most efficient energy supply possible. Thanks to its interdisciplinary approach, the department offers expertise in the fields of biogas and biofuels, building energy technology, thermal- and electrical energy and other alternative energy technologies. The first step towards networked energy technology has already been taken by establishing the Chair for Process Technology with a focus on hydrogen technology, sponsored by the company Paul Wurth. The new recruitment strategy will add expertise in the fields of renewable energies, in particular geothermal energy, energy transmission and storage and, above all, energy sector coupling to the existing know-how, to make a decisive contribution to Luxembourg's energy transition towards a sustainable energy supply system.

PRODUCTION, MANUFACTURING & MATERIALS ENGINEERING

Digitalization is rapidly advancing within production and manufacturing technology, primarily fuelled by the automation and robotization of industrial processes. We are on the threshold of a technological revolution, which manifests itself in the concept of Industry 4.0. The speed of change we are experiencing is overwhelming and presents us with remarkable challenges. These new challenges involve new competencies and related research and education in fields such as Artificial Intelligence, advanced robotics, 3D printing and sustainable design, Digital Twins in manufacturing, innovative production systems (including sensors, data collection, and data-driven and AI-powered analysis), and digitalization of the manufacturing processes. These new fields are included in vital areas of the University's research mission, namely Digital Transformation and Sustainable and Societal Development.

discover the

Studying
at our University
**Young, dynamic
and international**

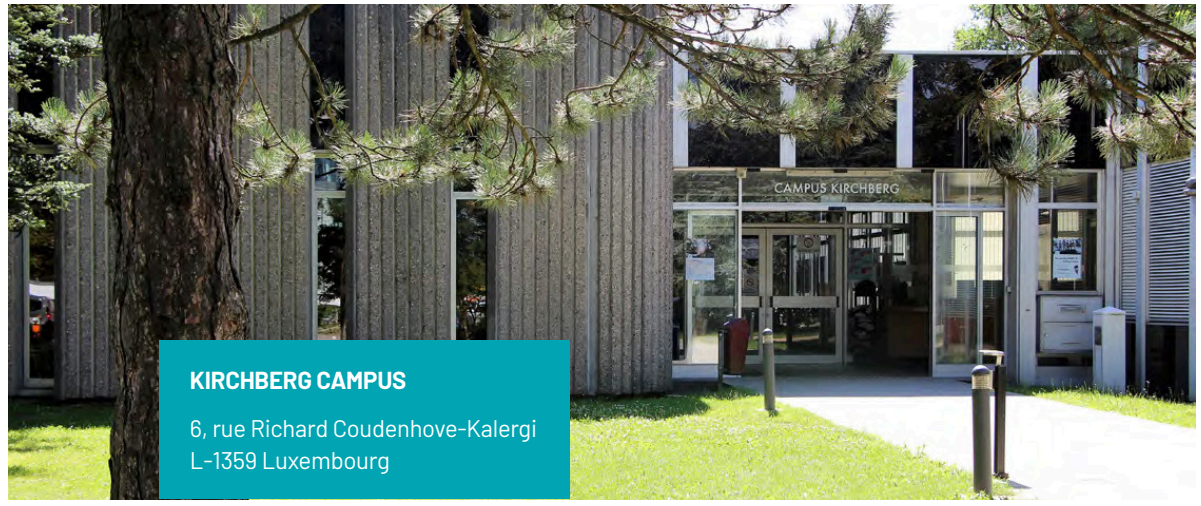
UNIVERSITY OF LUXEMBOURG

With more than 6,200 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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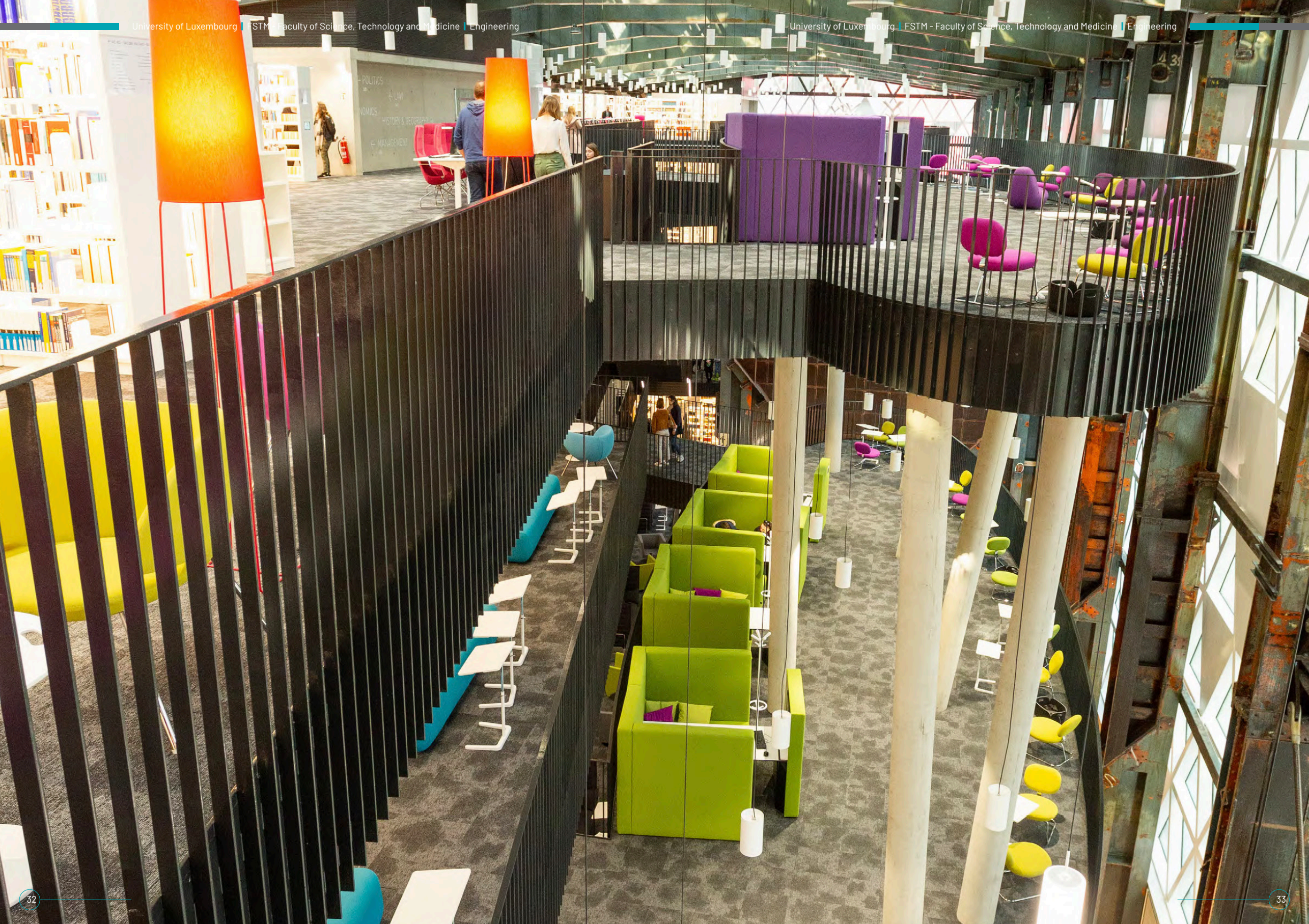

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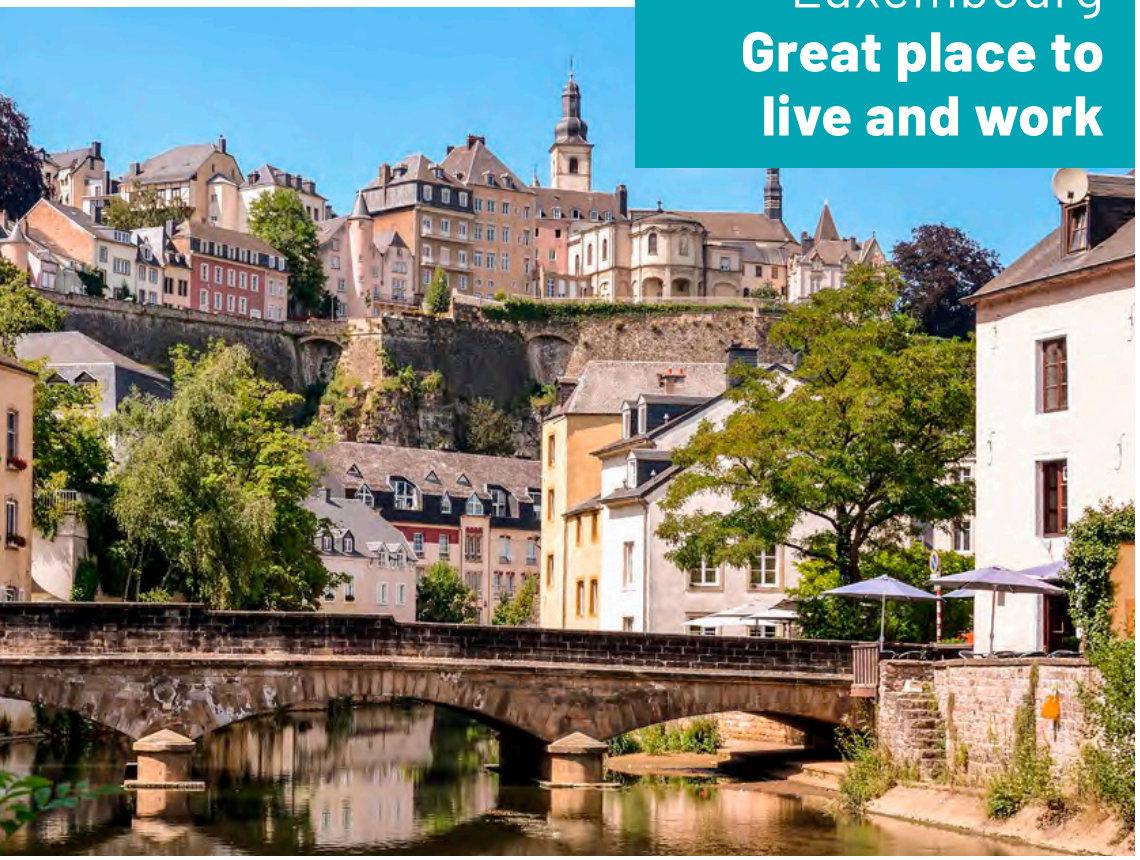

Located in the heart of Europe, the Grand Duchy of Luxembourg boasts a colourful history, stunning landscape, multicultural environment and multilingual population. The thousand year old capital and five regions each have their own unique flavour and discoveries to be made. Experience contemporary and historic culture, explore the country's hiking and cycling trails, and taste world-class cuisine and local wine.

University of Luxembourg | FSTM - Faculty of Science, Technology and Medicine | Engineering

Contact

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03-2025

Stay in touch

FACULTY OF SCIENCE,
TECHNOLOGY AND
MEDICINE