KU LEUVEN

UNIVERSITY OF LEUVEN
Faculty of Engineering Technology
Campus Group T Leuven, Belgium

International Programmes in Engineering Technology

KU Leuven. Inspiring the outstanding.

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UNIVERSITY OF LEUVEN

Faculty of Engineering Technology

Campus Group T Leuven, Belgium

International Programmes in Engineering Technology

DURATION

Bachelor's programmes:
3 years (full-time), 180 ECTS

Pre-Master's programmes:
1 year (full-time), 60 ECTS

Master's programmes:
1 year (full-time), 60 ECTS

APPLICATION DEADLINE

1 March 2017 (for non-EEA citizens)*
1 June 2017 (for EEA citizens)*

**: EEA = European Economic Area*

ACADEMIC CALENDAR

1st semester: 3rd week of September → end of January (exams in January)

2nd semester: 2nd week of February → July (exams in June)

BEYOND ENGINEERING

Belgium. No other country offers a more authentic European experience. Belgium is the beating heart of the continent and home to Brussels, the capital of Europe. Only a stone's throw away, in the beautiful city of Leuven, you'll find another one of Belgium's gems: the Faculty of Engineering Technology at KU Leuven.

KU Leuven's Campus Group T is the only campus in the faculty that offers full English-language academic bachelor's and master's programmes in engineering technology in the fields of elektromechanics, elektronics and ICT, chemistry and biochemistry.

"Beyond Engineering" is our motto. On our campus, you gain expertise in engineering technology, but you also learn and experience how to be creative, both in your thinking and in your endeavours. You develop distinct enterprising skills and insight into the systems that influence nature, culture, and society.

Beyond Engineering. It is the art of no longer seeing things as separate, but rather as part of a whole system in which everything is connected. It is the art of coping with the paradoxes of nature and culture.

You will quickly find yourself at home on our campus, which is home to a truly international community of outstanding engineering students from Europe, China, India, Ethiopia, Southeast Asia, and beyond.

A degree in engineering technology from KU Leuven opens doors to the whole of Europe, where you can continue your studies or begin a challenging career.

Bert Lauwers
Dean of the Faculty of Engineering Technology

Koen Eneman
Campus Chair

DISCOVER KU LEUVEN

Founded in 1425, the University of Leuven (KU Leuven) has been a centre of learning for almost six centuries. Today, it is Belgium's largest and highest-ranked university as well as one of the oldest and most renowned universities in Europe.

As a leading European research university and co-founder of the League of European Research Universities (LERU), KU Leuven offers a wide variety of programmes in English supported by high-quality interdisciplinary research. Within the field of science, engineering and technology, KU Leuven offers five academic educational profiles organised in five faculties: Science, Engineering Science, Bioscience Engineering, Engineering Technology and Architecture. Boasting an outstanding central location in the heart of Europe, KU Leuven offers a truly international experience, high-quality education, world-class research and cutting-edge innovation.

FACULTY OF ENGINEERING TECHNOLOGY

The Faculty of Engineering Technology groups together all programmes in (bio)engineering technology offered at KU Leuven.

Whereas the faculty was established in 2012 as part of a wider reorganisation of the higher education system in Flanders, its degree programmes have a long tradition of excellence in engineering technology. The faculty is part of KU Leuven's Science, Engineering and Technology Group.

7 Campuses

The Faculty of Engineering Technology organises its degree programmes in a unique way: you have your choice of bachelor's and master's programmes at no less than 7 campuses spread over Flanders. This multi-campus model not only leads to strong regional ties and an extended network of organisations and companies, but also to the development and smooth exchange of expertise. This converges to make the faculty a dynamic and future-oriented platform for education and research.

English and Dutch

In 2016, the Faculty of Engineering Technology counted more than 7000 students and 600 faculty members. Alongside its English-language programmes, the faculty also organises bachelor's and master's programmes in Dutch, including programmes in civil engineering, nuclear technology, food technology, and more.

Campus Group T in Leuven is the only campus where you can follow the engineering technology curriculum entirely in English.

In September 2017, the technology campus in Ostend will move to a new high tech campus in Bruges

Via the Erasmus Mundus student mobility programme, you can follow the **European Master of Science in Food Science, Technology and Business** at the Technology Campus Ghent.

www.fet.kuleuven.be/biftec

INTERNATIONAL CAMPUS

The Faculty of Engineering Technology maintains close ties with universities around the world. At Campus Group T, more than 20% of the engineering students are international students. They represent 65 different nationalities from all over the world. This international network extends not just to Europe but also to China, Southeast Asia, India, Ethiopia, and beyond.

Europe

As an Erasmus student with an EU scholarship, you can carry out part of your training (from three months to a full academic year) at Campus Group T. To that end, collaboration and exchange agreements have been concluded with universities in Italy, Spain, the United Kingdom, Portugal, Norway, Finland, Germany, France, Sweden and other countries in the European Economic Area.

China

Over the past 20 years, collaboration agreements have been concluded with no fewer than 10 top universities from all over China.

- **International Dual Degree Programme in Engineering Technology**
  The International Dual Degree Programme in Engineering Technology is aimed at Chinese students who have already gone through one or two years of engineering training. The programme enables these students to continue their studies in English at our Leuven campus and obtain a bachelor's and/or master's degree in engineering technology.

- **The China Journey is the annual study trip to China taken by third-stage students**
  The 17-day itinerary includes stops in Beijing, Guilin, Shanghai, Xi'an, Chongqing, Chengdu, Hangzhou, and Suzhou. Students visit companies, universities, and cultural sites. Together with their fellow students and guides, they are hosted on the campuses of our partner universities in these cities, where they have the opportunity to meet their Chinese counterparts. Over the past ten years, the China Journey has given more than 2,000 engineering students and lecturers a thorough introduction to China.
  www.fet.kuleuven.be/groupt/chinaproject

Southeast Asia

Thailand acts as the pivotal point of the greater Mekong region, together with countries like Vietnam, Laos, Cambodia, Myanmar, and the Chinese province of Yunnan. Collaboration agreements have already been concluded with 10 universities from this region in the framework of the International Dual Degree Programme in Engineering Technology.

India

In India, Campus Group T collaborates with three partner universities to facilitate the exchange of students, professors, and knowledge in the framework of the International Dual Degree Programme in Engineering Technology.

Ethiopia

Campus Group T strengthened its international network in Ethiopia by including five partner universities. The collaboration not only encompasses the exchange of lecturers, but also the further development of the infrastructure and the professionalisation of the teaching staff.

A full list of our partner universities is available at **www.fet.kuleuven.be/groupt**.

YOUR PROFILE: THE 5E ENGINEER

Five organising themes span the entire curriculum: engineering, enterprising, educating, environmenting and ensembling. These themes inform, reinforce, and build on one another. Taken together, they epitomise the 'Beyond Engineering' mindset.

ENGINEERING

Engineers create by using technologies and their underlying basic sciences. They are familiar with a multidisciplinary approach.

ENTERPRISING

Engineers have vision. They set themselves a mission, gather others around it, and get it done effectively through innovation, audacity, and leadership.

EDUCATING

Engineers are capable of making things that make people better. They are able to inspire and coach others and are equipped to build relationships and ideas as well as things.

ENVIRONMENTING

Engineers are acutely aware of the environment in which they work. They are constantly evaluating the ethical, ecological, aesthetic, and economic impact of their actions within a globalising, ever-evolving, technologically advancing world.

ENSEMBLING

Engineers see the coherence of things, the 'big picture'. By differentiating, integrating, and approaching all things from all angles, they acquire deeper insights and enjoy ever-richer experiences.

Engineering, enterprising and educating are intimately connected to engineers' societal role: to design and build things starting from a strong vision and always with an eye to improving people's lives. Environmenting involves an acute awareness of the various interwoven aspects – nature, culture, technology – that shape this societal role. Finally, ensembling allows engineers to transcend their traditional role to observe and approach things from a 'big-picture' perspective.

In essence, engineers find intelligent solutions to technological problems. 5E engineers, are more than technology experts. They have distinct entrepreneurial skills and are capable of coaching both themselves and others. 5E engineers are aware of their place in the world and the impact they have on nature and culture. Finally, they are big-picture thinkers with the ability to see complex problems from a systemic, integrated perspective.

5E engineering cannot be learned simply through study or individual work. It is a matter of developing and fine-tuning an ensemble of qualities over the entire course of your studies and career. Collaboration, cross-professional experience, diversity, and a plurality of worldviews are crucial to the 5E engineering vision. This extraordinary vision requires an extraordinary programme. The principles underlying the engineering curriculum at Campus Group T create a learning and working environment that encourages on-going personal and professional development.

King Philippe of Belgium unveils new Solar Car

On 2 July 2015, the students of the Postgraduate Programme in Innovation and Entrepreneurship in Engineering Technology (Faculty of Engineering Technology) welcomed King Philippe of Belgium. Two teams of students presented their projects.

Punch Powertrain Solar Team

Sixteen students designed and built a new high-performance solar car for the World Solar Challenge in Australia.

Formula Electric Belgium Team

Engineering students from the Formula Electric Belgium Team introduced the king to their high-speed electrical racing car for the International Formula Student Competition.

BACHELOR'S PROGRAMME

Structure

A bachelor's programme in engineering technology consists of 3 programme stages with a total weight of 180 ECTS. The bachelor's programme comprises:

- a common programme of 3 semesters;
- a specific programme of 3 semesters designed for the chosen specialisation.

COMMON PROGRAMME

In the first, second and third semester you are provided with general basic, scientific-technological knowledge and skills drawn from the following domains:

- Energy and Physics
- Matter and Chemistry
- Life and Biology
- Information and Mathematics
- Management and Communication

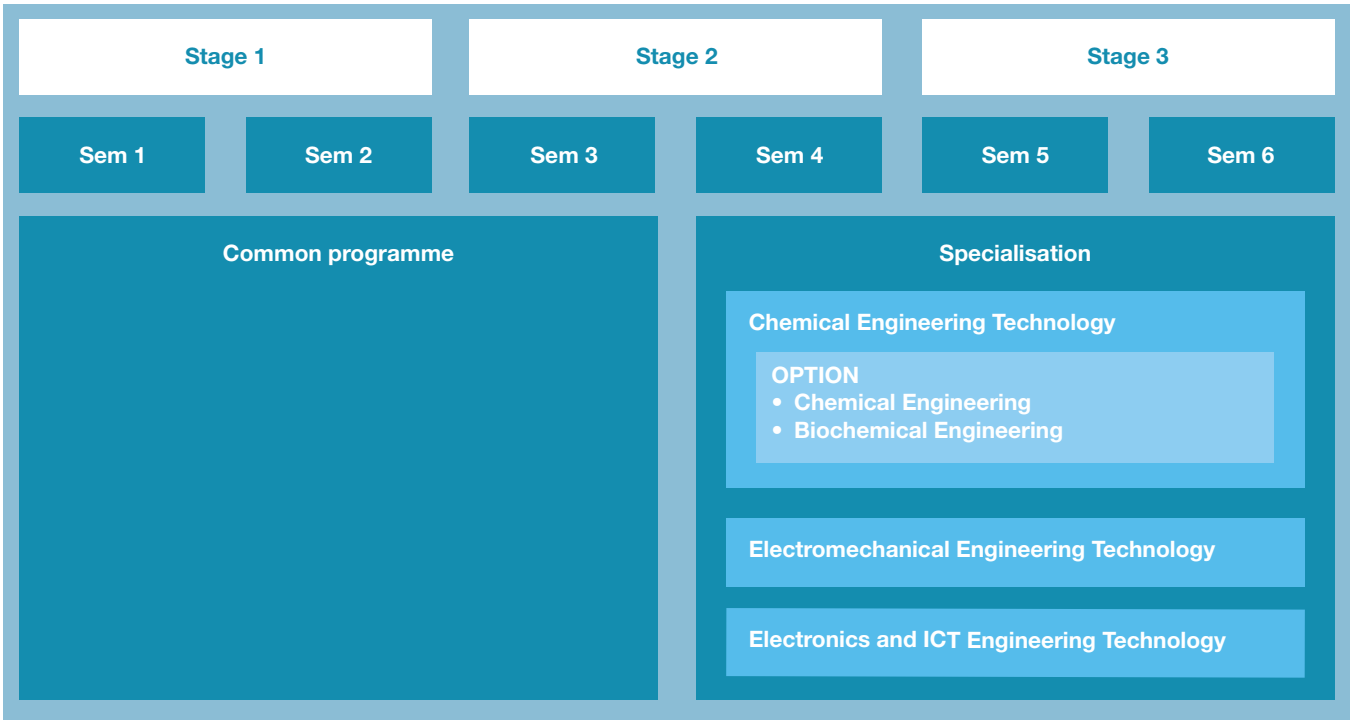
The course units provide the necessary theoretical and practical knowledge and skills to carry out analyses and apply new ideas during on-the-job experiences.

SPECIALISATIONS

In the 4th semester you can choose one of the following majors:

- Electromechanical Engineering Technology
- Electronics and ICT Engineering Technology
- Chemical Engineering Technology with a focus on one of these options
  - Chemical Engineering
  - Biochemical Engineering

In the specialisations various management skills are applied: finance, marketing, operations and project management. In terms of communication, the emphasis is on presentation, reporting, meetings and persuasion skills. Intercultural communication is also included in the curriculum.



Engineering Experience: introduction to Engineering Design

'Engineering Experiences' are true learning experiences. They are open and cross-disciplinary assignments that make you familiar with the engineering practice.

In the first bachelor's stage, you are introduced to engineering design. Each team of 6 students has to design and build a machine that can shoot a ball towards a specific goal.

You will have to go through the complete design process: from brainstorm over concept development and technical drawing to the production, the testing, and the demonstration of the machine.

Depending on the distance between the machine and the goal, you will have to pre-set the right parameters. Using a mathematical model, you can calculate the impact of variables such as drag, loss of energy, and friction.

"I am especially impressed by the 'Engineering Experiences'. These cross-disciplinary projects allow you to take on challenging assignments as a team and become familiar with the reality of engineering practice – not only technical knowledge, but also project management, leadership, communication, and social skills. Another major advantage is the international environment and atmosphere. It creates a platform to meet and to get to know people from different parts of the world. It isn't easy, but determination, hard work, commitment, and the help of the professors and the other students will help you through."

(Hassen Ridwan Tahir, student from Ethiopia)

STUDYING AT CAMPUS GROUP T: DOUBLE BLISS

He is from the northeast of China. She is from the southwest. He started his engineering studies at Xi'an Jiaotong University. She started hers at South-West Jiaotong University in Chengdu. The chance of bumping into each other in China is practically non-existent.

But then they each decided to continue their engineering studies at Campus Group T in the framework of the International Dual Degree Programme. Dai Mo and Weng Zheng hit it off immediately. Last spring they got married in Shanghai.

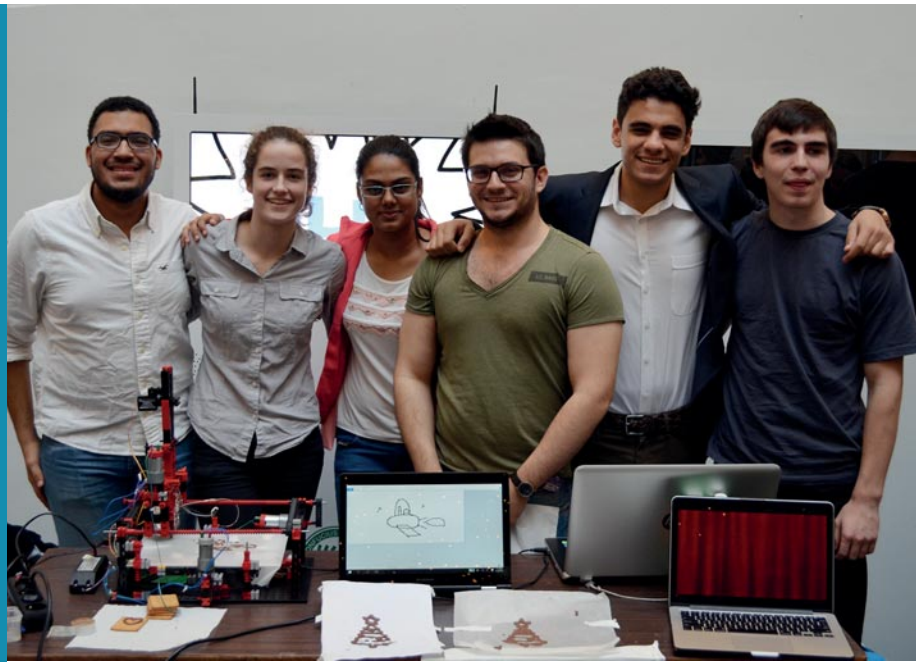
Dai Mo and Wang Zheng have even more in common. In Leuven, they both graduated in Biochemical Engineering Technology. Back in China, they both went to work for Unilever Shanghai. Mo is active in the marketing department, where she seeks out the needs and expectations of potential customers. Zheng is at the other end of the production cycle – new product R&D. Mo's world is the market, Zheng's the laboratory.

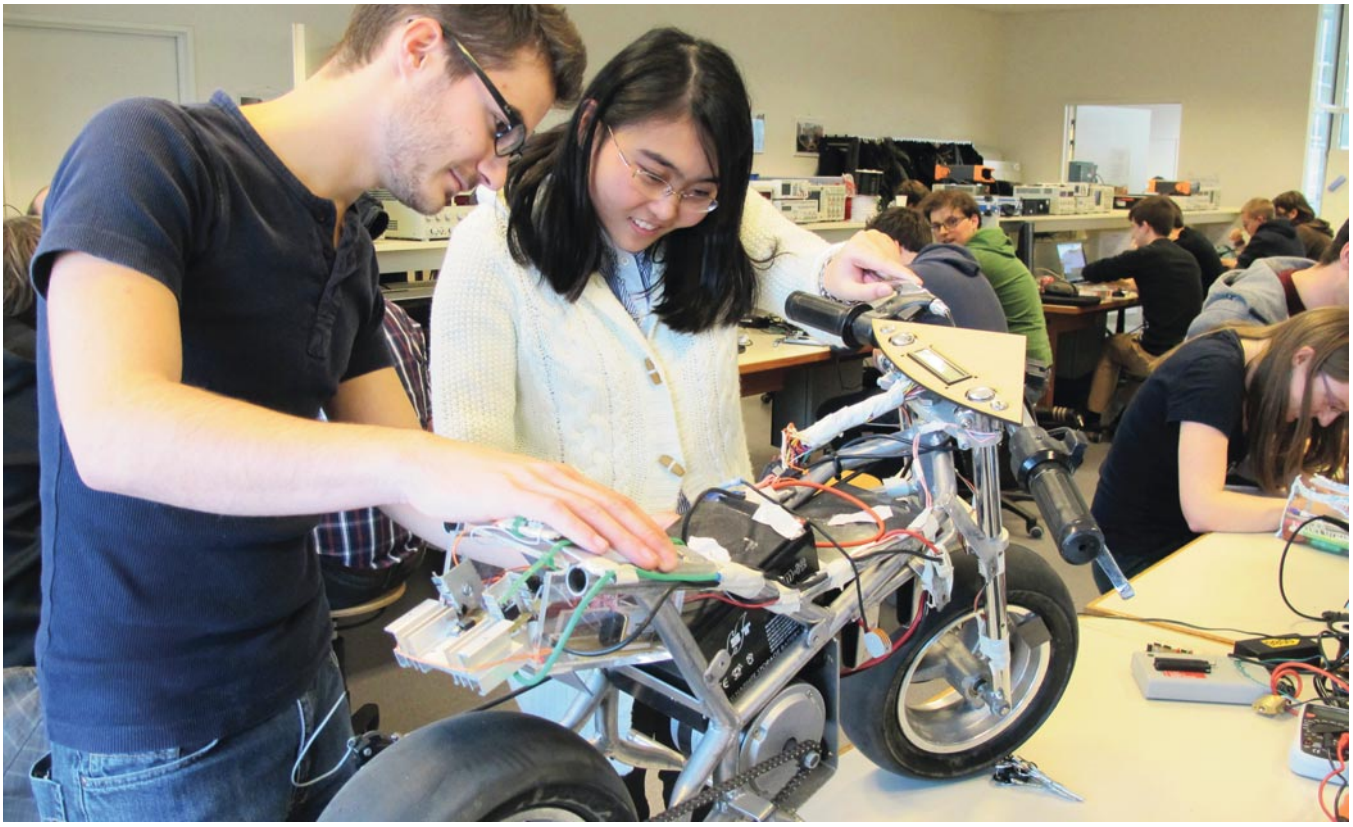
Promising career

"We – and our fellow Chinese students – have greatly benefited from a KU Leuven degree", says the young couple. "We would never have been able to achieve careers at the companies in which we now work if we had remained in China. My fellow students from Campus Group T are now working in China for large multinationals such as BMW, Oracle, Proctor & Gamble, Unilever – you name it. We work at the same level and carry out the same jobs as graduates from Oxford, Princeton, and Stanford. Furthermore, a job with a multinational offers various additional advantages, not only in terms of financial benefits but also in terms of opportunities, networking, further training, and general personal and professional development."

INTERNATIONAL TEAM PRESENTS THE FIRST-EVER 3D CHOCOLATE PRINTER

Building a robot that works on sensors and is controlled by a PC. That, in a nutshell, is the assignment given to the second bachelor stage students in their first semester. At the final day of the project, the best teams present their result. The Chocolate Robot Team of Hannah Davidoff (USA), Youssef el Laithy (Egypt), Vladyslav Neshta (Ukraine), Jesheena Appalsawmy (Mauritius), Ibrahim Issa (Egypt) and George Athanassoulis Makris (Greece) was proclaimed as the winner with the first-ever 3D chocolate printer built with fischertechnik tools.





Programme

BACHELOR OF SCIENCE IN ENGINEERING TECHNOLOGY — **180 ECTS**

FIRST STAGE	60
COURSE	ECTS
ENERGY TECHNOLOGY/PHYSICS	**17**
• Dynamics of a Particle	5
• Statics of Rigid Bodies	3
• Physics of Extended Bodies	3
• Electricity and Magnetism	6
MATTER TECHNOLOGY/CHEMISTRY	**7**
• Chemistry and Chemical Technology	7
LIFE TECHNOLOGY/BIOLOGY	**5**
• Biological and Emergent Systems	5
INFORMATION TECHNOLOGY/MATHEMATICS	**18**
• Calculus	6
• Linear Algebra and Geometry	4
• Computers and Programming	3
• Electronic Circuits	5
MANAGEMENT/COMMUNICATION	**6**
• Management I: Introduction to Management/Engineers and Enterprises	3
• Communication I: Aspects of Professional Communication/Presentation Skills	3
HOLISTIC ENGINEERING EXPERIENCE	**7**
• Engineering Experiences 2: Introduction to Engineering Design	4
• Philosophy of Technology and Engineering	3

■ Lectures ■ Exercises and seminars ■ Learning Experiences and practical sessions

Ahmad has a passion for technology. He has been living in Brussels for three years now, and after completing secondary school, he went looking for an engineering programme with an excellent reputation among international students. His search brought him to KU Leuven - Campus Group T, the only engineering campus in Belgium that offers full degree programmes taught in English in a varied, multicultural environment.

Ahmad found his way around very quickly. “Not only because of the very international environment”, he explains, “but also because of the way the programme is conceived. You are constantly challenged to prove yourself, to show that you know how to go about doing things, that you can collaborate with others in the labs or in projects, and that you are sharp – in short, that you can organise and manage yourself. You learn how to develop yourself and set goals. That way, studying to become an engineer is also a test of character. You gain mental strength and you learn how to approach and solve problems. And you are constantly gaining self-confidence and trust in your own abilities.

SECOND STAGE	60
COURSE	ECTS
COMMON CORE	**49**
ENERGY TECHNOLOGY/PHYSICS	**12**
• Thermodynamics	5
• Electromagnetism	4
• Strength of Materials	3
MATTER TECHNOLOGY/CHEMISTRY	**8**
• Technology of Materials	5
• Chemistry for Polymers	3
LIFE TECHNOLOGY/BIOLOGY	**3**
• Biotechnology	3
INFORMATION TECHNOLOGY/MATHEMATICS	**13**
• Object-oriented Programming	5
• Signals and Systems	5
• Statistics	3
MANAGEMENT/COMMUNICATION	**6**
• Management II/Marketing and Financial Management/Management Game	3
• Communication II: Scientific Writing/Intercultural Communication	3
HOLISTIC ENGINEERING EXPERIENCE	**7**
• Society, Technology & Engineering	3
• Engineering Experience 3: (Computer-based Control)	4
SPECIALISATION: ELECTROMECHANICAL ENGINEERING	**11**
• Electrical Engineering	4
• Dynamics of Rigid Bodies	4
• Engineering Experience 4: Electromechanical Engineering	3
SPECIALISATION: ELECTRONICS AND ICT ENGINEERING	**11**
• Microprocessors & Data Acquisition	5
• Sensors	3
• Engineering Experience 4: Electronics and ICT Engineering	3
SPECIALISATION: CHEMICAL ENGINEERING (options Chemical and Biochemical Engineering)	**11**
• Biochemistry	4
• Industrial Chemistry	4
ELECTIVE COURSES	
• Engineering Experience 4 – Chemical Engineering	3
• Engineering Experience 4 – Biochemical Engineering	3

Lectures Exercises and seminars Learning Experiences and practical sessions

THIRD STAGE	60
COURSE	ECTS
COMMON CORE	**9**
MANAGEMENT/COMMUNICATION	**6**
• Management III: Operations and Project Management	3
• Communication III: Negotiation and Meeting Skills/Persuasion	3
HOLISTIC ENGINEERING EXPERIENCES	**3**
• Religions	3
SPECIALISATION: ELECTROMECHANICAL ENGINEERING	**51**
• Aspects of Industrial Automation	3
• Components of Industrial Automation	5
• Control Theory	3
• Mechanical Design	4
• Machine Parts	6
• Manufacturing Technology	6
• Material Selection	3
• Electrical Machines	4
• Electrical Installations	3
• Thermomechanical Machines	5
• Heat Transfer	3
• Engineering Experience 5: Electromechanical Engineering	6
SPECIALISATION: ELECTRONICS AND ICT ENGINEERING	**51**
• Analog Electronics	6
• Digital Systems	4
• Microprocessors	5
• System Software	5
• Software Development	5
• Data Communication and Computer Networks	6
• Electronic Design	6
• Digital Signal Processing	4
• Electric Motors and Actuator Systems	3
• Engineering Experience 5: Electronics and ICT Engineering	7
SPECIALISATION: CHEMICAL ENGINEERING (options Chemical and Biochemical Engineering)	**51**
• Environmental Technology	5
• Applied Mechanics and Thermodynamics	4
• Process Control	5
• Fermentation & Bioconversion	5
OPTION CHEMICAL ENGINEERING	
• Analytical Chemistry	6
• Chemical Engineering Computing	3
• Polymer Engineering	5
• Physical Chemistry	5
• Unit Operations	6
• Engineering Experience 5: Chemical Engineering	7
OPTION BIOCHEMICAL ENGINEERING	
• Analytical Chemistry	4
• Biochemical and Biomedical Research Methods	5
• Microbiology	5
• Molecular and Cellular Biology	5
• Unit Operations	6
• Engineering Experience 5: Biochemical Engineering	7

■ Lectures ■ Exercises and seminars ■ Learning Experiences and practical sessions

MASTER'S PROGRAMMES

Objectives

The master's programmes aim to provide you with:

- general academic training;
- advanced knowledge and skills in engineering, enterprising, educating, 'environmenting' and 'ensembling' and, more specifically, the chosen option;
- the required research competencies and training necessary to a competent starter after having completed the master's programme, in other words, to prepare you for the autonomous practice of science and technology, for the application of the acquired knowledge and skills in the engineering profession, and for plotting a lifelong learning and development track.

Preparatory programme

A preparatory programme is an individualised study pathway. It is created for new students who do not have the appropriate academic background in the major they wish to study.

The curriculum of the preparatory programme is designed to strengthen the academic knowledge and skills of these students. It is made up of the prerequisite courses required for the master's programme.

Programmes

You can choose between four different master's programmes in engineering technology. In each master's programme, you choose an innovative technological option in the discipline. Preferably, you select the technology option that fits best with the topic of your master's thesis.

Electromechanical Engineering Technology

- Clinical Engineering
- Intelligent Manufacturing
- Intelligent Mechanics
- Intelligent Mobility

Chemical Engineering Technology

- Sustainable Process & Materials Engineering

Electronics and ICT Engineering Technology

- Intelligent Electronics
- Internet Computing

Biochemical Engineering Technology

- Medical Bioengineering

UMICORE ISAAC: GREEN INNOVATION MEETS PERFORMANCE

On 30 June 2016, the Formula Electric Belgium Team revealed its new electric race car. In October 2015, 37 students from KU Leuven and University College Thomas More started with the design of a new competitive electric race car. Nine months later, they presented the fastest electric bolide that accelerates in 2.7 seconds from 0 to 100 km/hr. The car consists of more than 4000 single parts built by the students.

The biggest structural part is the light-weight monocoque to which the suspension, wheels, pedals, and an aero package are attached. For the first time an aero package with diffuser, rear and front wing was produced to give Umicore Isaac enough downforce. The team also developed a brand new 120 hp engine with a high performance, turning the car into a 'bomb on wheels'. During the summer the students participated in the Formula Student Electric Competitions in Silverstone (UK), Hockenheim (Germany), and Barcelona (Spain).

Umicore ISAAC

FORMULA ELECTRIC BELGIUM

MASTER OF SCIENCE IN ELECTROMECHANICAL ENGINEERING TECHNOLOGY (60 ECTS)

Mechanical design and energy conversion are the cornerstones of this programme. Mechanical design begins with an idea, which is then shaped into a graphical design and executed into a finished product through a choice of materials, simulation, and production techniques. Energy conversion is aimed at all aspects of energy efficiency in this process and ranges from electrical controls and automation to thermal power plants, combustion engines, etc. Depending on your interest, your engineering profile can range from technological expert to company manager.

www.kuleuven.be/ma/misemel

CLINICAL ENGINEERING

This option gives insight into the inspiring domain of medical technology. After being introduced in the world of biomechanics, and relying on your strong background in mechanics and electricity, you explore the technology of medical devices. Topics are surgical robotics and medical equipment in general.

INTELLIGENT MANUFACTURING

This option includes exposure to the latest production techniques, the way production systems operate, and the intrinsic relationship between production and other business processes, especially in the design process. Special attention is paid to the possibilities that computer-based systems offer in this context. Moreover, you learn to operate in the tension between technology, economics, the environment, and ergonomics.

INTELLIGENT MECHANICS

This option relates to designing, developing, and optimising automated mechanical machines. Based on a strong background in electricity and mechanics, you delve more deeply into aspects such as advanced design methods, electronic operations, controls, measures and drives, data communication, and visualisation methods.

INTELLIGENT MOBILITY

This option deals with the sustainable application of smart mobility solutions. Its application area is very broad and diverse, but one example is electric or hybrid cars fitted with intelligent recharging systems. Another is vehicles that can warn each other about accidents or traffic jams. Intelligent Mobility also has to do with choosing materials and/or production methods that have the smallest ecological impact possible. The optimal gearing of transportation systems to one another is yet another aspect of this focus.*

MASTER OF SCIENCE IN ELECTROMECHANICAL ENGINEERING TECHNOLOGY	60
COURSE	ECTS
COMMON CORE	**44**
• Finite Element Based Design	4
• Advanced Automation	5
• Dynamic Aspects of Machine Construction	4
• Drive Sysems	4
• Pathways to Sustainability: Core Issues and Challenges	3
• Management and Communication	4
• Master's Thesis	20
OPTION CLINICAL ENGINEERING	**16**
• Dynamics and Biomechanics	5
• Medical Equipment & Regulatory Affairs	6
• Robotics and Surgical Instrumentation	5
OPTION INTELLIGENT MECHANICS	**16**
• Computer-aided Modelling and Simulation	5
• Embedded Control Systems	6
• Robotics and Surgical Instrumentation	5
OPTION INTELLIGENT MANUFACTURING	**16**
• Advanced Manufacturing	5
• Manufacturing Optimisation and Dimensional Quality Control	5
• Computer Integrated Manufacturing	6
OPTION INTELLIGENT MOBILITY	**16**
• Transportation and Mobility Management	4
• Vehicle Design and Technology	6
• Autonomous Vehicles	3
• Applied Sustainability Assessment	3

MASTER OF SCIENCE IN ELECTRONICS AND ICT ENGINEERING TECHNOLOGY (60 ECTS)

This master's programme prepares you for correctly assessing the workings and impact of various technologies. You learn to analyse, design, and implement analogue and digital electronic systems as well as complex information and communication systems.

Upon completion of the programme, you are an engineer with a broad foundation of general skills and technical knowledge. You are also familiar with the fascinating world of information processing that plays a crucial role in many social sectors. Often, you will also play a key role in the development of a variety of digital media applications ranging from modern consumer products (positioning and navigation systems, smartphones, digital audio, and video) to custom stand-alone or networked applications.

www.kuleuven.be/ma/miseel

INTELLIGENT ELECTRONICS

Intelligent Electronics refers to the combination of hardware and software used to develop and implement so-called embedded systems (cell phones, MP3 players, digital cameras, etc.). You learn to take into consideration limitations in the areas of I/O possibilities, memory, speed, and energy consumption.

INTERNET COMPUTING

Internet Computing follows the trend of a more broadly distributed approach to developing computer applications. The advantages include high reliability, scalability, high performance, easy maintenance, low cost price, etc. Examples of such applications are:

- web-based and internet applications such as search robots and voice-over IP
- e-commerce
- enterprise resource management
- user applications in the area of info-/edu-/entertainment

MASTER OF SCIENCE IN ELECTRONICS AND ICT ENGINEERING TECHNOLOGY	60
COURSE	ECTS
COMMON CORE	**41**
• Multimedia	5
• Wireless Communication	4
• Pathways to Sustainability: Core Issues and Challenges	3
• Management and Communication	4
• Master's Thesis	20
OPTIONAL COURSES	
You either follow the course below or other KU Leuven courses worth at least 5 ECTS and ask for the programme coordinator's approval.	
• Ubiquitous Computing Systems	5
OPTION INTELLIGENT ELECTRONICS	**19**
• Control Systems	4
• Power Electronics	6
• Programmable Logic	5
• Embedded System Design	4
OPTION INTERNET COMPUTING	**19**
• Human-Computer Interaction	4
• Web Apps	6
• Distributed Application	4
• Media Processing	5

"I was a student guide during Group T's study tour in China in the spring of 2012. Later, I became a member of the Solar Team. The Solar Team is made up of seventeen engineering students who work together to design, build, and pilot a high-performance solar car for the Australian World Solar Challenge, the unofficial world championship for solar-powered cars.

In the Solar Team, I was responsible for business relations. An important job, considering the great involvement of companies in the solar project, both in R&D and in sponsorship. The greatest added value of studying at Group T is working in a team, something with which Chinese students are less familiar, especially when it comes to international teams. But once that obstacle is overcome, doors and perspectives open that you didn't even know existed before coming to Leuven!"

(Xu Suihong, student from China)

MASTER OF SCIENCE IN CHEMICAL ENGINEERING TECHNOLOGY (60 ECTS)

This master's programme provides in-depth, interdisciplinary training in biochemical engineering as practiced in various contexts and sectors. In addition to fundamental (bio)chemical/scientific coursework, the curriculum includes coursework in socio-economics (management, economics) and biotechnology (engineering, separation techniques, fermentation technology, molecular biology, industrial biochemistry and microbiology, environmental technology, etc.). Extensive cross-campus elective offerings as well as a master's thesis (carried out in a research and/or industrial context) allow you to tailor your curriculum to suit your interests and career goals.

On completion of the master's programme, you will have been trained to lead and coordinate industrial production units and research, analysis, and screening laboratories in technical-commercial, administrative, and educational environments. The chemical sector (petrochemical, synthetic, pharmaceutical, etc.) offers a broad and fascinating field of work. You can also set up applied research and design activities on a self-employed basis.

www.kuleuven.be/ma/miscel

SUSTAINABLE PROCESS AND MATERIALS ENGINEERING

In this option, emphasis is placed on sustainable processes and materials engineering.

The guiding principle is to develop (knowledge of) reliable technologies that meet today's process and materials needs in a sustainable way. This implies the efficient use of materials and energy, taking into account their impact on the environment. The focus is thus centred on the sustainable design, development, and manufacturing of products and systems on the one hand, and the development, properties, characterisation, production, and processing of (new) materials on the other.

MASTER OF SCIENCE IN CHEMICAL ENGINEERING TECHNOLOGY	60
COURSE	ECTS
COMMON CORE	**41**
• Unit Operations II	5
• Applied Sustainability Assessment	3
• Advanced Analytical Chemistry	3
• Electrical Engineering	3
• Management and Communication	4
• Pathways to Sustainability: Core Issues and Challenges	3
• Master's Thesis	20
OPTION SUSTAINABLE PROCESS AND MATERIALS ENGINEERING	**19**
• Advanced Materials Technology	6
• Reactor and Process Technology	4
• Optional Courses	9

TWO TEAMS OF CAMPUS GROUP T WIN THE ECORACE CHALLENGE 2016

The Ecorace Challenge is a competition for ecological boats built by university students. The organisers of the race have the ambition to promote inland navigation and shipping as a safe, sustainable, and environment-friendly means of transport in Belgium.

Seven teams participated in the Ecorace Challenge 2016. Two teams of KU Leuven - Campus Group T obtained the final victory.

The KU Leuven Ecochallenge Team was awarded as the most innovative team and as all-round winner. The students managed to build a boat that can carry liquid cargo as well as dry bulk goods.

The KU Leuven Navex e-Boat Team won the first prize with its business plan.

MASTER OF SCIENCE IN BIOCHEMICAL ENGINEERING TECHNOLOGY (60 ECTS)

This master's programme provides in-depth, interdisciplinary training in biochemical engineering as practiced in various contexts and sectors. Particular areas of focus include food science, biomedical sciences, pharmaceutical sciences, and environmental sciences. In addition to fundamental (bio)chemical/scientific coursework, the curriculum includes coursework in socio-economics (management, economics) and biotechnology (engineering, separation techniques, fermentation technology, molecular biology, industrial biochemistry and microbiology, environmental technology and bioreactor design). Extensive cross-campus elective offerings as well as a master's thesis (carried out in a research and/or industrial context) allow you to tailor your curriculum to suit your interests and career goals.

On completion of this master's programme you will have been trained to lead and coordinate industrial production units and research, analysis, and screening laboratories in technical-commercial, administrative, and educational environments. The food and biotechnology sector, the environmental sector, pharmaceutical industry, and life sciences offer a broad and fascinating field of work.

www.kuleuven.be/ma/misbel

MEDICAL BIOENGINEERING

This option relates to biotechnological developments in the medical sector. Knowledge of human physiological systems and medical engineering techniques form the foundation of developments in the area of artificial organs, tissue engineering, biomaterials, bioelectronics, and new diagnostic techniques (microarray technology, PCR technology).

MASTER OF SCIENCE IN BIOCHEMICAL ENGINEERING TECHNOLOGY	60
COURSE	ECTS
COMMON CORE	**47**
• Molecular Biological Techniques & Bioinformatics	5
• Unit Operations II	5
• Quality Control and Assurance	5
• Food Technology	5
• Management and Communication	4
• Pathways to Sustainability: Core Issues and Challenges	3
• Master's Thesis	20
OPTION MEDICAL BIOENGINEERING	**13**
• Physiological Systems & Anatomy	4
• Medical Bioengineering	5
• Optional Course	4

ADVANCED MASTER'S PROGRAMMES

Additional master's degree

Do you want to add another degree to your master's degree? KU Leuven gives you many options to choose from. The university offers 26 advanced master's programmes in English and 1 in Spanish. The curricula are strongly linked to top research domains of KU Leuven. Programmes usually take 1 year (60 CTS) or 2 year (120 ECTS)

www.kuleuven.be/ma

ADVANCED MASTER IN WELDING ENGINEERING

The advanced **Master in Welding Engineering** is indispensibale for engineering seeking to work as Responisble Welding Coordinators. The faculty offers the programme at Technology Campus De Nayer Sint-Katelijne-Waver, certified as an Authorised Training Body for International Welding Engineering.

www.fet.kuleuven.be/welding-engineering

CHINA CAREERS DAY AT CAMPUS GROUP T

The fifth edition of the China Careers Day was held on 17 October 2016 at Campus Group T in Leuven. The China Careers Day is an initiative of the Belgian-Chinese Chamber of Commerce. It offers an informal platform for China-related enterprises and for job and internship seekers to get in contact with each other. Entrepreneurs and employers can meet graduates and students coming from a wide range of universities and find the perfect candidate for their China-related activities.

www.bcecc.be

POSTGRADUATE PROGRAMMES

Postgraduate programme in Innovation and Entrepreneurship in Engineering

Work experience and professional skills are more important than ever for engineers. With the Postgraduate Programme in Innovation and Entrepreneurship in Engineering you will be given the opportunity to gain unique work experience through innovative projects in a stimulating environment. Furthermore, you can focus on your own interests and the skills you want to develop. By doing so you stimulate your entrepreneurial and innovation skills and further specialisation in a particular domain. Your customised programme will strengthen your profile and career opportunities.

You can choose from three types of innovation projects:

- In-company project: one or two innovative projects are carried out by one or two students within an (international) organisation or non-profit organisation (Community Service Engineering Track) or students opt to realise a project in technology management Engineering (Enterprising Track);
- Team project: you work intensively on an innovative project on campus together with a group of students (for example a solar car or the development of environment-friendly solutions);
- Start-up project: enterprising students can write, during an entire academic year, a business plan around their own idea with a view to start a company.

The postgraduate programme consists of 60 credits. You follow the postgraduate programme during or after your master's degree. A combination of a master's programme and a post-graduate programme is recommended when participating in a team project. The Community Service Engineering Track and the Enterprising Track are fully in English.

More information on the programme and innovation projects can be found here: **www.innovationentrepreneurship.be**.

Postgraduate programme Research Valorisation in Engineering Technology

In today's high-tech world, research and innovation have become new elements required in order to ensure industrial success. More than ever companies and organizations must ensure that their product, process or service portfolio is renewed with higher added values. Consequently, there is an increased need for academically qualified people with a problem-solving approach, who have entrepreneurial management skills, who can make a professional contribution to innovative engineering and who can expand the global industrial ecosystem.

The Postgraduate programme in Research Valorisation in Engineering Technology is characterized by a strong focus on valorisation of applied research, implementation thinking and technology-driven entrepreneurial skills.

A specific combined approach with 'technology-driven entre-preneurial skills' on the one hand and 'valorisation of cross-disciplinary applied research' on the other hand are the main elements underpinning the curriculum of the programme. Coached by a research group of the Faculty of Engineering Technology of your choice, you'll have intensive contacts with companies through guest lectures, company visits and project work.

www.fet.kuleuven.be/researchvalorisation

POSTACADEMIC COURSE OFF SHORE WIND ENERGY

The postacademic course offshore wind energy aims to adress all aspects of an offshore wind farm in a thorough and substantiated way. This programme includes the electrical and the mechanical design of wind turbines, the integration of wind energy into the electrical grid, the construction, the maintenance and the risk management of offshore wind farms and how they can be financed. Through the lectures, applications and company visits, you get in touch with experts from the field and you get the chance to expand your network within this interesting sector. This opens perspectives for a career in the wind energy sector. With a view of the sea, this course is offered at Technology Campus Ostend.

www.offshorewindenergy.be

DOCTORAL STUDIES

PhD candidates undertake their doctoral training in Engineering Technology at the Arenberg Doctoral School.

The Arenberg Doctoral School of Science, Engineering and Technology stimulates doctoral researchers in their endeavour to acquire scientific and technological knowledge in a four-year PhD programme. The doctoral school not only provides a stimulating research environment, but also ensures that PhD students optimally develop the personal and professional skills they will need in their further career. PhD students become researchers with professional confidence and pride and develop the ability to conduct research and establish collaborations, both in academia and with external private and public partners. They advance the frontiers of knowledge and combine this scientific endeavour with valuable professional experience.

Research topics span all fields of science and technology, including life sciences, computing and information science, environmental sustainability, human settlements, agriculture, food research, genomics and biomaterials, nanoscience and nanofabrication, advanced materials, energy, and optimisation in engineering.

www.set.kuleuven.be/phd

RESEARCH AT CAMPUS GROUP T

Health Engineering Technology

TECHNOLOGY FOR A BETTER LIFE

How can technology contribute to greater comfort, better health, safety, and more well-being in general? The Campus Group T health engineers look for answers to this question in three research groups.

SMART INSTRUMENTATION

This group concentrates on active bionic systems and biomechanics. This field is concerned with improving the life of elderly and physically challenged people. It develops mechanical or electronic systems to support – or even entirely take over – certain physical functions.

BIOMEDICAL ENGINEERING

This research group develops technologies that use stem cells to generate new human skin or bone tissue.

E-MEDIA LAB

The e-Media Lab develops health technology systems that interact with computers. One recently developed interface communicates with paralysed people via electrodes. Another project uses a computer game to detect dyslexia in five-year-olds.

Sustainable Engineering

KEEPING ECOLOGICAL DAMAGE AT BAY

How can we continue fulfilling the needs of the current generation without endangering the needs of future generations? At Campus Group T twenty researchers – together covering all fields of engineering – work at answering this question in three research groups.

INTELLIGENT MOBILITY

This research group is concerned with sustainable transport and intelligent mobility, i.e. the development of sustainable vehicles (electric, hybrid) and transport systems.

LIFE CYCLE ENGINEERING

This group researches how production in general can operate using more eco-friendly methods such as eco-design, life cycle analysis, and rational energy use.

QUALITY AND DURABILITY

The Quality and Durability group develops intelligent techniques that reduce the amount of waste resulting from the production process to a bare minimum (zero-waste manufacturing).

The sustainable engineering researchers also support student teams such as the Solar Team, the CQS Racing team, Formula Electric Belgium, and the student cooperation CORE. Research is conducted in close collaboration with KU Leuven, NGOs, and partner organisations in Ethiopia and China.

Engineering education

NEW TEACHING AND LEARNING

This research is part of the Leuven Engineering and Science Education Centre (LESEC), a research, expertise, and networking centre within the KU Leuven Science & Technology Group.

In this centre, learning communities develop research-based education in sciences, engineering, technology, and architecture. At Campus Group T research focuses on:

- conceptual learning
- the development of social skills
- experience-based learning

ADMISSION AND APPLICATION

Admission requirements

- **Bachelor's programmes**
  To be admitted to a bachelor's programme, you must have one of the following:
  - a secondary education diploma that is recognised as equivalent pursuant to a law, decree, European directive or international agreement;
  - students studying in countries that are not a member of the Council of Europe will have to take the SAT math level 1 or 2 test.
- **Master's programmes**

  Holders of the following degrees are granted direct admission to the programme:
  - Bachelor of Science in Engineering Technology;
  - Bachelor of Science in Engineering Sciences from a related specialisation.

  Holders of the following degrees are granted admission after completing the preparatory programme:
  - Bachelor of Science in Engineering Technology or Bachelor of Science in Engineering Sciences from a non-related specialisation.

Language requirements

All applicants who have not obtained a previous diploma in a programme taught in English in Australia, Canada, Ireland, NZ, UK or USA must submit a proof of English proficiency of either TOEFL or IECTS.

General admission: **www.kuleuven.be/admissions**

Application procedure

KU Leuven uses an online application system. You can download and submit your application form via **www.kuleuven.be/application**. Students with a Flemish degree can consult **www.kuleuven.be/studentenadministratie**.

- We advise students from outside the EEA to contact Campus Group T's International Office, tel. + 32 16 30 10 04, internationaloffice.groupt@kuleuven.be.

Tuition fee

The tuition fee for the current academic year is € 890 for EEA students and € 6000 for non-EEA students. The tuition fees for future academic years can be slightly higher as a result of indexation. Please consult the website for the most recent information: **www.kuleuven.be/tuitionfees**

Changes may have been made since the printing of this brochure. Please see www.kuleuven.be/internationalprogrammes for any updates.

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LERU

KU Leuven is a founding member of
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