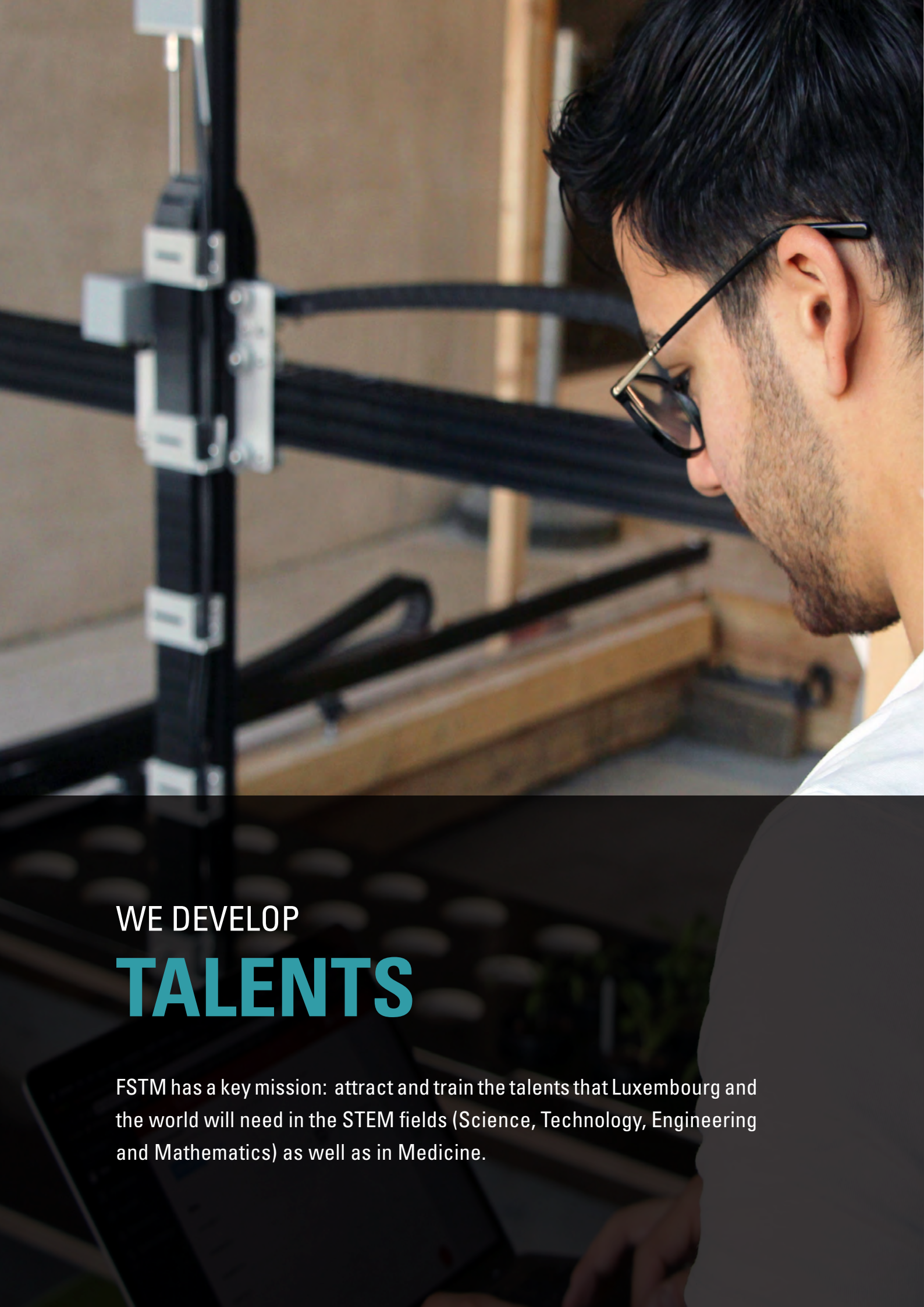




COMPUTER SCIENCE

**"THOSE WHO CAN IMAGINE ANYTHING,
CAN CREATE THE IMPOSSIBLE."**

ALAN TURING



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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.



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

30
Study programmes

3
Official languages

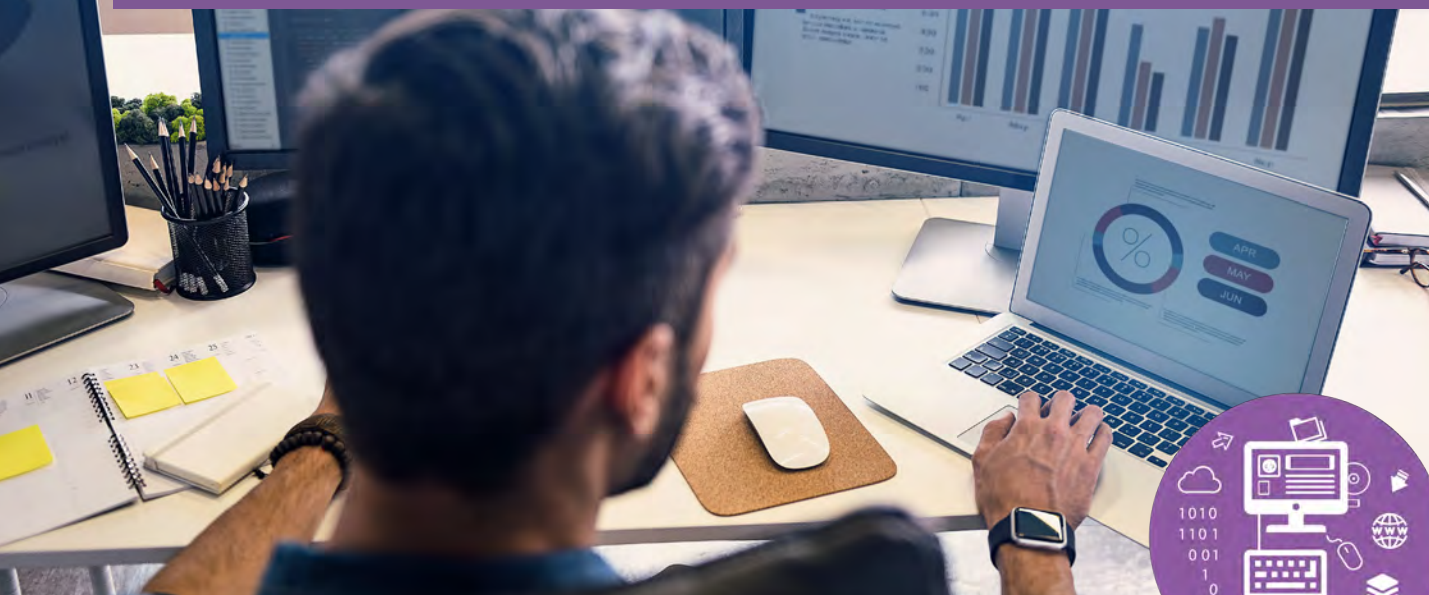


1,900
Students

130
Countries

56%
International students

Computer Science?



Booming ICT sector: Luxembourg waits for you!

The Information and Communication Technologies (ICT) sector has grown significantly over the last ten years in Luxembourg with an annual growth of 7.4% per year between 2009 and 2013¹. In 2017, the ICT sector employed nearly 5% of the active population in Luxembourg, in other words nearly 20,000 people². This is one of the highest rates in OECD countries. In addition, there are ICT professionals who are employed in other sectors such as finance, industry and commerce.

The dynamic of this sector could be explained by an attractive tax system, good regulatory proactivity, state-of-the-art infrastructure and a genuine sectoral policy. Since 2008, Luxembourg offers an attractive framework for intellectual property management and domain names. It has also become an ideal global centre for the distribution of digital audiovisual content, such as music downloads, video-on-demand as well as digital radio and television transmissions.



In 2014, the government launched the initiative Digital Letzebuerg to unify and strengthen the country's digitalisation. In this context, different projects have been launched to integrate digitalisation in academia (EduSphere, Future Hub) and industry (Fit4Start, Fit4Digital, SMB Digitalization). In 2018, the European Commission decided to host the EuroHPC, the joint structure for the European strategic project in high performance computing (HPC) in Luxembourg. In 2019, Luxembourg has acquired its own supercomputer.

Luxembourg has succeeded in attracting major international players, such as Amazon, eBay, Google, PayPal or Skype, as well as many other companies specialised in online video game or digital book. In addition, Luxembourg includes highly efficient local players in electronic security (LuxTrust) and high-speed connectivity (Post Luxembourg, Data Center Luxembourg, etc.).

¹ Source: Brochure « Économie du Luxembourg : ouverte, dynamique, fiable », Luxinnovation, September 2017
² Source: Inspection Générale de la Sécurité Sociale (IGSS), 2017



Crucial need of ICT staff: get a Bachelor or more!

Luxembourg lacks specialists to fill the increased demand for skilled ICT professionals. 62% of companies report difficulties with filling positions that require ICT skills¹. Companies have high training requirements. "BAC +2" is the minimum. University graduates are the most sought-after: 56.6% job offers require a Master degree or PhD, 28.4% require a Bachelor degree².

For the period 2020-2022, 979 new hires are planned for Luxembourg as: software/web developer, consultant, systems administrator, helpdesk support technician, project/product manager, tester, business analyst, information security administrator, application architect, software engineer².

¹ Source: Europe's Digital Progress Report (EDPR), 2017

² Source: Report: « Les qualifications de demain dans le domaine des TIC », 2020

"In order to realise the digitalisation of both industry and services, Luxembourg will need a multitude of skills and talents."

Xavier Bettel
Prime Minister of
Luxembourg, 2017

Excellent ICT training: join our university!

By joining us, you will benefit from many advantages:

COMPLETE TRAINING OFFER

We offer multilingual Bachelor, Master, doctoral and vocational training programmes in computer science with applied or research orientation.

EFFICIENT METHODOLOGY

Our courses provide you with a thorough understanding of the fundamentals and their application, emphasising rigour and practical relevance. Multidisciplinary approach is privileged promoting knowledge sharing and exchange of experiences. In addition, project work is central: you will work in teams.

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.

CLOSE COLLABORATION WITH RESEARCH

Early involved in research project, you will work with staff conducting latest research, gaining in-depth knowledge from experts working at the forefront of the subject. The Department of Computer Science (DCS) conducts fundamental and applied research in the area of computer, communication and information sciences.

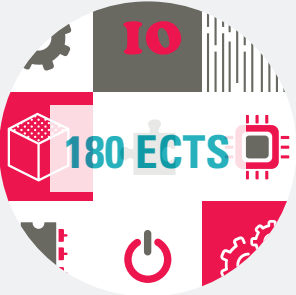
STRONG LINKS WITH INDUSTRY

We work closely with 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.

Thus, Luxembourg offers unique opportunities to study and work in the field of computer science. Join the University of Luxembourg now!

Overview

BACHELORS (3 years)



Bachelor in Computer Science



Bachelor in Applied Information Technology



Bachelor in Applied Information Technology - Continuing Education Programme

MASTERS (2 years)



Master in Information and Computer Sciences



Interdisciplinary Space Master



Master en Développement et Validation du Logiciel



Master in Information System Security Management



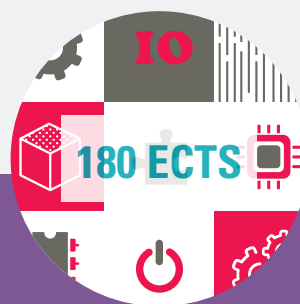
Master in Technopreneurship

DOCTORAL EDUCATION



Doctoral Programme in Computer Science and Computer Engineering





Bachelor in Computer Science

This Bachelor offers a computer science study programme aimed to bring you the theoretical and practical skills needed to successfully pursue your studies in Master in Computer Science both at the University of Luxembourg or in the best international universities or schools.

STRENGTHS

- Pedagogy based on acquisition by practice through research and development projects
- Scientific quality to enhance your interest and strengths in science and technology for the future
- Applied multilingualism for effective integration into the Luxembourgish or international labour market
- Programme designed from the international standard ACM / IEEE CS 2013

ADMISSION REQUIREMENTS

- Luxembourgish diploma of general secondary school or foreign diploma recognised as equivalent by the Luxembourg Ministry of Education
- Language: B2 in English

CAREER OPPORTUNITIES

- Master in Computer Science

PROGRAMME AT A GLANCE

- **Duration:** 3 year full-time programme/ 6 semesters (180 ECTS), including 1 mobility semester in a foreign country
- **Languages:** English (95%) & French or German (5%)
- **Registration fees:**
 - 400€/semester (1 & 2)
 - 200€/semester (3 to 6)
- **Application period:**
 - For EU students: February - August
 - For non-EU students: February - April

ADDITIONAL INFORMATION

CONTACT
bics@uni.lu

CAMPUS
Belval

bics.uni.lu



PROGRAMME

Courses	ECTS
Semester 1	
Analysis for applications	5
Bachelor semester project	5
Discrete mathematics	5
Linear algebra	5
Programming fundamentals	5
Web Development	5
Total	30

Semester 2	
Bachelor semester project	10
Computing infrastructures	4
Linear algebra	4
Network and communication	4
Programming fundamentals	4
Theoretical computer science	4
Total	30

Semester 3	
Algorithms and complexity	4
Bachelor semester project	10
Discrete mathematics	4
Information management	4
Programming fundamentals	4
Security	4
Total	30

Semester 4	
Bachelor semester project	10
Information management	4
Intelligent systems	4
Online course	4
Programming languages	4
Theoretical computer science	4
Total required	30

Semester 5	
Bachelor semester project	10
Computational science I	4
Computational science II	4
Human-computer interaction	4
Web Development	4
Natural language processing	4
Online course	4
Software engineering	4
Total required	30

Semester 6	
Bachelor semester project	10
Intelligent Systems	4
Computational science	4
Data science for humanities	4
Online course	4
Security	4
User Centered Design	4
Software engineering	4
Total required	30



"I chose this Bachelor because of the University's international setting, high standards of scholarship, dynamic research and dedication to future lives of significance. I wanted to learn the fundamentals of the revolutionary aspect dominating our everyday lives. I really enjoyed the collaboration between with knowledgeable researchers on various scientific and technical projects. This teamwork increases project management skills which are vital for business organisations."

Desislava Marinova, graduate



Bachelor in Applied Information Technology

This Bachelor offers an excellent, general education in information technology (IT). It aims at giving students operational skills that are relevant to potential employers and so allow a quick integration into the professional world. It provides students with the basic theoretical and applied knowledge in core IT areas but also the practical thinking to apply these technologies in the industry. This focus on an applied qualification combines theoretical components of a traditional study in computer science with a focused approach giving students real-world skills and applicable concepts geared toward their chosen career path.

STRENGTHS

- A 3 year professional study programme designed to meet companies' needs
- Progressive specialisation towards a profession in computer science
- One semester internship in a company

ADMISSION REQUIREMENTS

- Luxembourgish diploma of secondary school or technical secondary school or Luxembourgish technician diploma with access to higher education or foreign diploma recognised as equivalent by the Luxembourg Ministry of Education
- Languages: B2 in English and B1 in French

CAREER OPPORTUNITIES

- Network administrator, IT developer, software engineer, webmaster in all business sectors
- Master in Computer Science



"The BINFO is built around interaction between students and teachers, and it's very easy to approach teachers. The programme's connections with industry gives students a lot of job opportunities after graduation and even during the Bachelor."

François-Xavier Flotterer, graduate

PROGRAMME AT A GLANCE

- **Duration:** 3 year full-time programme/ 6 semesters (180 ECTS), including 1 mobility semester in a foreign country + 1 internship semester in a company
- **Languages:** English (80%) & French (20%)
- **Registration fees:**
 - 400€/semester (1 & 2)
 - 200€/semester (3 to 6)
- **Application period:**
 - For EU students: April - August
 - For non-EU students: February - April

ADDITIONAL INFORMATION

CONTACT

binfo@uni.lu

CAMPUS

Belval

binfo.uni.lu



PROGRAMME

Courses	ECTS
Semester 1	
Calculus	4
Introduction à l'informatique	4
Mathématiques discrètes	4
Operating systems	4
Programming	8
Statistiques	3
Technical English	3
Total	30

Semester 2	
Algorithms	4
Gestion de projets	3
Introduction to graphics	4
Linear algebra	3
Mathématiques discrètes	3
Probabilités	3
Programming	5
Real world data acquisition and processing	3
Technical English	2
Total	30

Semester 3	
Algorithms	4
Database management	4
Droit pour informaticiens	3
Modelling with UML	3
Networks	4
Operating systems	4
Programming	4
Software engineering	4
Total	30

Semester 4	
Algorithms	4
Database management	4
Interaction design	4
Introduction à la vie professionnelle	3
Network	3
Psychologie du travail en groupe	3
Software engineering project	5
Software testing	4
Total	30

Semester 5	
Design patterns	4
Introduction à la vie professionnelle	2
Web programming	4
Selection of 5 courses in the list below:	
Banking information technologies	4
Big data	4
Business software systems	4
Cloud computing	4
Data analysis with R	4
Distributed systems and middleware	4
Introduction to IT security	4
Java for enterprise applications	4
Total	30

Semester 6	
Bachelor project	27
Bachelor project defense	3
Total	30



180 ECTS

Bachelor in Applied Information Technology - Continuing Education Programme

This Bachelor, developed in partnership with the Life-long Learning Center of the Chambre des Salariés (CSL), offers a two-year programme for a continued professionalisation in IT that responds to the expectations of employers and employees who want to validate and re-enforce their professional skills in the IT domain. The Bachelor is designed to conciliate professional life and learning with the organisation of evening courses during the week and individual or project-based learning activities.

OBJECTIVES

- Increase skills in programming and methods for the design and analysis of IT systems
- Provide basic fundamental IT skills (mathematics, concepts of IT systems) as well as competences in special areas (mobile applications, banking IT, enterprise application programming, software testing...)
- Reinforce the capacity of students to independently adapt and extend their expertise about future developments in the IT domain

AUDIENCE

The programme addresses IT professionals and everyone who wants to reinforce their skills in IT and validate their professional experience in the IT domain.

ADMISSION REQUIREMENTS

- Bac+2 with minimum 3 years of experience or diploma of secondary school or technician diploma with minimum 6 years of experience
- Pre-selected candidates must get at least 100 ECTS recognised by the University's commission as validation of professional experience
- Languages: B2 in English and B1 in French

CAREER OPPORTUNITIES

- Developer, IT analyst, services administrator, web application manager
- Master in Information System Security Management at the University of Luxembourg

In collaboration with:



PROGRAMME AT A GLANCE

- **Duration:** 2 year part-time programme/ 4 semesters (80 ECTS)
- **Languages:** English (70%) & French (30%)
- **Registration fees:** 6,500€ for the 4 semesters
- **Application period:**
 - For EU students: April - August
 - For non-EU students: February - April

ADDITIONAL INFORMATION

CONTACT

binfo-cep@uni.lu

CAMPUS

Kirchberg



binfo-cep.uni.lu

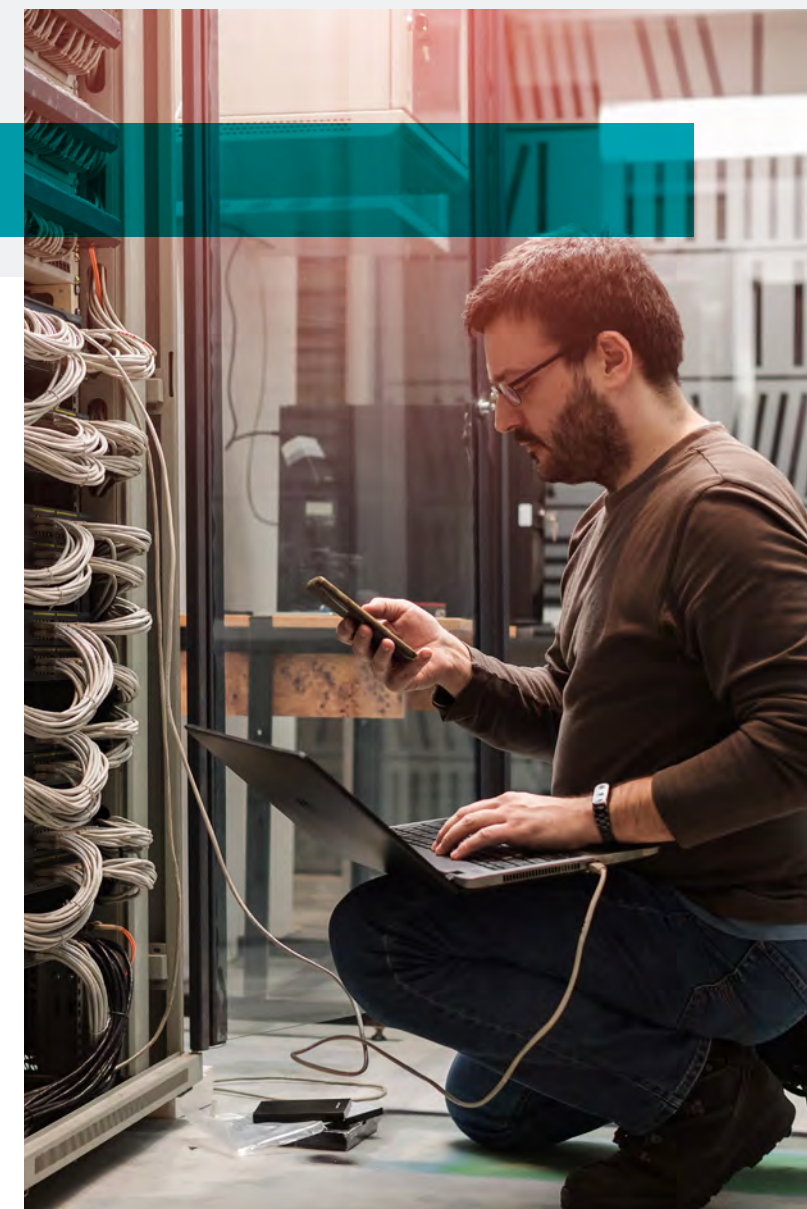
PROGRAMME

Courses	ECTS
Semester 3	
Databases	6
Introduction to programming	6
Mathématiques générales	4
Réseaux informatiques	4
Total	20

Semester 4	
Algorithms and data structures	4
Analyse et conception des logiciels	6
Mathématiques discrètes	4
Operating systems	6
Total	20

Semester 5	
Algorithms and data structures	4
Analyse et conception des logiciels	6
GUI programming	4
Web programming	6
Total	20

Semester 6	
Blockchains	4
Java for enterprise applications	6
Mobile application development	6
Software testing	4
Total	20





Master in Information and Computer Sciences

This Master enables students to acquire deeper knowledge in computer science by understanding its abstract and interdisciplinary foundations, focusing on problem solving and developing lifelong learning skills.

Students can specialise in the following areas:

- Artificial intelligence
- Communication systems
- Information security
- Reliable software systems

STRENGTHS

- Flexible specialisation options
- Early involvement in research projects
- Individual mentoring and courses taught in small groups
- Internationally renowned professors
- International cooperation agreements with universities and industries

ADMISSION REQUIREMENTS

- Bachelor degree in computer science or related field
- Language: B2 in English

CAREER OPPORTUNITIES

- Luxembourg is a major financial centre with ever increasing needs for highly qualified IT staff
- Other employment opportunities in the public sector, local industries and public research institutes
- PhD in computer science



"I would recommend this programme because of the various opportunities for research and study. I found that I learned a lot because of the style of teaching and the open-mindedness of everyone around."

Lidia-Andra Lezza, graduate

PROGRAMME AT A GLANCE

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

ADDITIONAL INFORMATION

CONTACT

mics@uni.lu

CAMPUS

Belval

mics.uni.lu



PROGRAMME

Courses	ECTS
Semester 1	
Basic algebraic structures	3
Communication theory	3
Distributed systems	3
Foundations of computing	3
Information security basics	3
Intelligent systems - Agents and reasoning	3
Intelligent systems - Information retrieval and learning	3
Intelligent systems - Problem solving	3
Networking	3
Principles of software development	3
Total	30

Semester 2	
Selection of 6 courses among:	
Algorithms for numbers and public-key	5
Algorithmic decision theory	5
Big data analytics	5
Dependable systems	5
Formal methods	5
Information theory and coding	5
Intelligent agents	5
Introduction to static program analysis	5
Knowledge discovery and data mining	5
Network feedback systems	5
Optimisation for computer science	5
Principles of security engineering	5
Quality of service in computer networks	5
Symmetric key cryptography and security of communications	5
Software vulnerabilities: exploitation and mitigation	5
Total: 6 optional courses	30

Semester 3	
Advanced project management	3
Intellectual property	3
Selection of 6 courses among:	
Advanced database topics	4
Autonomous robot software	4
Coding theory	4
Computer vision and image analysis	4
Cryptocurrencies and the cryptographic blockchain	4
Empirical software engineering	4
Fault and intrusion tolerance	4
Intelligent agents	4
Machine learning	4
Management of information security	4
Model-driven software development	4
Open network security	4
Parallel and grid computing	4
Selected topics in network and system security	4
Security modelling	4
Security protocols	4
Selected topics in AI	4
Software engineering environments	4
Technical systems modeling and simulation	4
Testing and validation	4
Ubiquitous computing	4
Total: 2 mandatory + 6 optional courses	30

Semester 4	
Master thesis	30
Total	30



Interdisciplinary Space Master

120 ECTS

This Master is an innovative balance of business and technology teaching and learning. It provides solid knowledge in all aspects of the space value chain, along with space engineering expertise. In addition, the course will provide business and management tools enabling students to start their own space companies or contribute in non-technical areas of existing companies.

STRENGTHS

- Interdisciplinary training
- Problem-based learning approach
- Strong links with national stakeholders including industry

ADMISSION REQUIREMENTS (20 PLACES)

- Bachelor's degree in physics, mathematics, electrical, mechanical or aerospace engineering (academic), computer science, or other natural science or equivalent experience. Candidates with a Bachelor's degree in another domain but with several years of experience in space, aerospace, mechanical, electrical, industrial, or robotics engineering are also encouraged to apply.
- Grades of 85% or higher in their technical courses
- Language: B2 in English

CAREER OPPORTUNITIES

- Employment opportunities in technical or administrative areas in the whole space sector
- Engineer, consultant in the space sector
- PhD in Computer Science or Engineering



"The programme provides students with a fundamental background in space engineering and informatics, but also introduces the basic business, finance and legal aspects of space companies and projects. As such, graduates are well prepared to work in established space companies and start-ups, or even to create their own space business in Luxembourg."

Holger Voos, course director

In collaboration with:



LUXEMBOURG
SPACE AGENCY



PROGRAMME AT A GLANCE

- **Duration:** 2 year full-time programme/ 4 semesters or 4 year part-time/8 semesters (120 ECTS)
- **Language:** English
- **Registration fees:** 2,000€/semester
- **Available places:** 20
- **Application period:**
 - For EU students: February-August
 - For non-EU students: February-April

ADDITIONAL INFORMATION

CONTACT

ism@uni.lu

CAMPUS

Kirchberg and Belval

ism.uni.lu



PROGRAMME

Courses	ECTS
Semester 1	
CubeSatLab / Design	1
Satellite communications and security	5
Space informatics	5
Spacecraft subsystem design and engineering	5
Space policy, law and ethics	3
Space project management	3
Space resources fundamentals	3
Space robotics	5
Total	30

Semester 2	
Guidance, navigation and control for space systems	5
Autonomous space systems lab	5
Space business	4
Space Mission Engineering and Spacecraft Design	3
Space resource utilization technologies	3
CubeSatLab / Design	3
Law, science and technology	3
Space economics	3
Entrepreneurial space finance	1
Total	30

Semester 3	
Computer Vision & Image Analysis Course	5
Machine learning	4
Space robotics	3
Working in space	3
CubeSatLab Build	3
GNSS: theory and applications	3
Entrepreneurship	3
Practical aspects of taking technology to a start up	3
ISM Projects	3
Total	30

Semester 4	
Master thesis	30
Total	30



Master in Information System Security Management

This Master allows professionals to increase their knowledge and develop their skills to analyse, interpret and provide adequate solutions in the field of information security.

STRENGTHS

- Individual coaching and courses taught in small groups
- Internationally renowned professors
- Multidisciplinary approach promoting knowledge sharing and exchange of experiences
- Participation in the Information Security Education Day (ISED)
- Programme supported by two professional associations: CLUSIL and CPSI



ADMISSION REQUIREMENTS (15 PLACES)

- Bachelor and 3 years of experience in a related field or Master in a related field
- Language: B2 in English

CAREER OPPORTUNITIES

- Information security manager

In collaboration with:



PROGRAMME AT A GLANCE

- **Duration:** 2 year part-time programme/ 4 semesters (60 ECTS)
- **Language:** English
- **Registration fees:** 6,400€ for the entire programme
- **Available places:** 15
- **Application period:**
 - For EU students: February - July
 - For non-EU students: February - April

ADDITIONAL INFORMATION

CONTACT

missm@uni.lu

CAMPUS

Belval

missm.uni.lu



PROGRAMME

Courses	ECTS
Semester 1	
Analyse and risk management	2
Information security management systems	2
Legal and regulatory aspects	3
Risk analysis practises	1
Security technologies	2
The job of information security manager	1
Theory of organisations and change	2
Total	13

Semester 2	
Communication, processing and persistence of information	2
Enforcement of legal provisions	2
Enterprise architecture and strategy	3
Financial management	1
IT management	1
Security technologies	2
Specificities of financial sector	2
Total	13

Semester 3	
Communication, processing and persistence of information	4
Compliance insurance	2
Human risks	2
Project management	2
Security policy	2
Threats, attacks and parries	2
Total	14

Semester 4	
Continuity management	1
Digital archiving	3
Human communication	2
Professional project	14
Total	20



"This Master immediately appealed to me because it offers an unusual mix of skills in the three main information security topics, namely management, techniques, and most of all, the human aspects. Working at the heart of local market issues within a relational framework is very rewarding. Even today, it remains a source of inspiration for me. Finally, this Master is an ideal place to meet other professionals. An experience to be lived and full of meaning."

Raphaël Taban, graduate



Master en Développement et Validation du Logiciel

Ce Master, dispensé entièrement en ligne, offre une formation innovante de haut niveau dans le domaine du test et de la validation des logiciels. Il vise à former des cadres de l'informatique capables d'appréhender la conception et le développement de logiciels avec différents paradigmes de programmation, et de maîtriser les compétences liées à leur validation, ce qui permet d'établir un niveau de confiance dans les éléments produits.

ATOUTS

- Double diplôme de l'Université du Luxembourg et de l'Université de Franche Comté
- Formation exclusivement à distance et en ligne
- Equipes de recherche au sein des deux universités internationalement reconnues
- Complémentarité des apports des deux universités: automatisation des tests, test fonctionnel, test non-fonctionnel
- Stage en entreprise

CONDITIONS D'ADMISSION (15 PLACES)

- Licence en informatique ou diplôme de niveau inférieur avec expérience professionnelle dans le domaine
- Langue: B2 en français

DEBOUCHÉS

- Analyste-programmeur /Analyste-testeur informatique
- Ingénieur d'étude et développement informatique
- Ingénieur de test
- Architecte d'environnement de test
- Ingénieur d'intégration applicative

In collaboration with:

**UNIVERSITÉ DE
FRANCHE-COMTÉ**

PROGRAMME EN UN COUP D'ŒIL

- **Durée:** 2 ans à temps plein /4 semestres (120 ECTS)
- **Langue:** français
- **Frais d'inscription:** 443€
- **Nombre de places disponibles:** 15
- **Périodes d'inscription:** mai à septembre

INFORMATION ADDITIONNELLE

CONTACT

mdvl@uni.lu

CAMPUS

A distance

mdvl.uni.lu



PROGRAMME

Cours	ECTS
Semestre 1	
Approche formelle de développement	3
Bases de données avancées	6
Evaluation de programmes	6
Méthodes et pratiques agiles	3
Modélisation et programmation orientées objet	6
PHP/MySQL	6
Total	30

Semestre 2	
Anglais	6
Architectures logicielles à objet	6
Fondement du test	6
Ingénierie des exigences	6
Réseau	6
Total	30

Semestre 3	
Automatisation et infrastructure pour le test	6
Cybersécurité	3
Ingénierie dirigée par les modèles	3
Programmation fonctionnelle avancée	6
Test non fonctionnel	6
Théorie des graphes et combinatoire	6
Total	30

Semestre 4	
Démarche avancée pour le test	6
Spécifier et vérifier	3
Test à partir de modèles	3
Stage en entreprise	18
Total	30





Master in Technopreneurship

Technopreneurship: mastering smart ICT, standardisation and digital trust for enabling next generation of ICT solutions

This Master is extremely innovative. On one hand, it provides students with a base of knowledge on topics reflecting current issues and those at the cutting edge of smart ICT, and on the other hand, it serves as a catalyst for growth in the ICT industry by offering practical examples and case studies illustrating the use of technical standardisation as a tool to give common technical language, build trust, and foster effectiveness in smart ICT.

OBJECTIVES

This Master degree aims for the students to transfer smart secure ICT knowledge directly into technical innovation, through the prism of the competitive and innovative tool of technical standardisation, during their internship in collaboration with their company.

The Master covers various smart ICT technologies, such as cloud computing, Internet of Things, Big Data, artificial intelligence, blockchains and distributed ledger technologies, while addressing digital trust aspects related to these technologies (smart secure ICT).

AUDIENCE

The Master is mainly designed for professionals in the Smart ICT driven economy sectors, technopreneurs and anyone fulfilling the conditions for admission.

ADMISSION REQUIREMENTS (15-20 PLACES)

- Bachelor degree and 3 years of experience or Master degree in computer science, applied mathematics, engineering, law, economy, and related fields
- Good level of English (IELTS with at least 5.5 or TOEFL with at least 213 for computer based test, 79 for Internet based test and 550 for paper based test)

CAREER OPPORTUNITIES

Technology officer, consultant emerging technologies, digital strategy consultant, smart ICT consultant, innovation manager, standards manager, project manager, head of innovation, head of digital strategy and technopreneur.

In collaboration with:

ILNAS



PROGRAMME AT A GLANCE

- **Duration:** 2 year part-time programme/ 4 semesters (60 ECTS)
- **Language:** English
- **Registration fees:** 6400€ for the entire programme
- **Available places:** 15-20

ADDITIONAL INFORMATION

CONTACT

mtech@uni.lu

CAMPUS

Luxembourg City and Belval

mtech.uni.lu



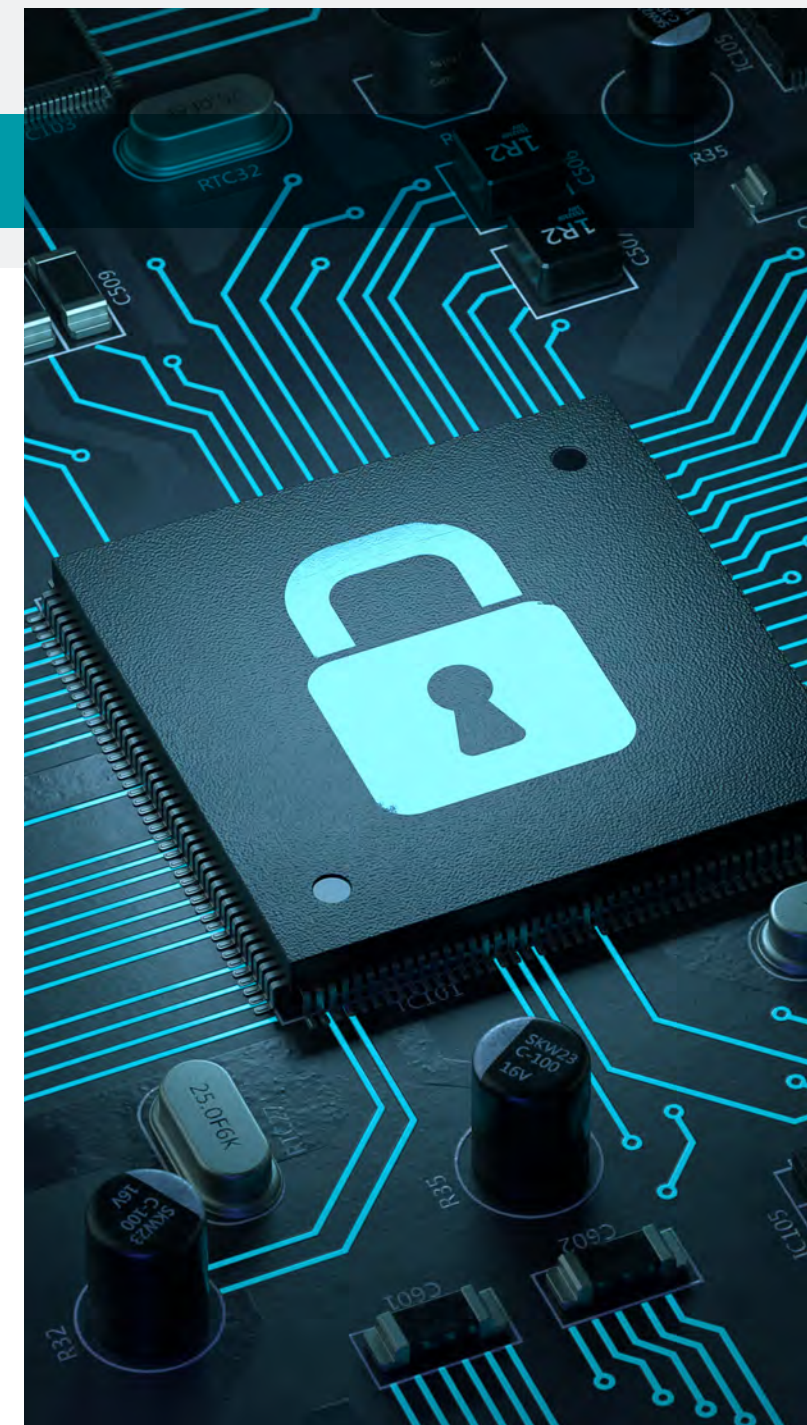
PROGRAMME

Courses	ECTS
Semester 1	
Smart ICT technologies	5
Smart secure ICT and innovation	1
Technical standardisation	3
Total	9

Semester 2	
Security for smart ICT	5
Smart ICT technologies	5
Total	10

Semester 3	
Digital intelligence	2
Legal aspects	2
Management of business and technical innovation	3
Trust architectures for smart ICT	4
Total	11

Semester 4	
Master thesis	30
Total	30





Doctoral Programme in Computer Science and Computer Engineering

This programme provides an excellent environment for pursuing doctoral studies in computer science and computer engineering at an internationally competitive level and in broad interdisciplinary application.

In collaboration with:



RESEARCH TOPICS

- Telecommunications
- Intelligent and adaptive systems
- Security and cryptography
- Software and systems

ADMISSION REQUIREMENTS

- Master in computer science, operations research, mathematics, physics or in engineering sciences with a speciality in computer science
- Candidates with a background in computational finance or bioinformatics may also be accepted, based on their motivation and potential for interdisciplinary research

CAREER OPPORTUNITIES

Teaching & research opportunities in:

- Information technology
- Information/cyber-security
- Space systems
- Safety, security and privacy-critical systems
- AI/Machine learning

PROGRAMME AT A GLANCE

- Supervision by leading researchers
- Advanced courses & Invited lectures
- Doctoral seminars, summer/winter schools
- Disciplinary and transferable skills courses (20 ECTS)
- Number of doctoral candidates: 183

ADDITIONAL INFORMATION

CONTACT

csce@uni.lu

CAMPUS

Belval

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"The Doctoral School in Science and Engineering provides a research-oriented doctoral programme, friendly and diverse academic community, and supervision from the world-class researchers. In my opinion, one of the highlights of the school is frequent seminars which are given by prestigious visiting researchers and the school faculty. I would also highlight excellent school amenities and great support for participation in academic conferences and training. I enjoyed every moment of my time there and I would highly recommend this doctoral programme to any aspiring student."

Marjan Skrobot, graduate



Department of Computer Science

The Department of Computer Science (DCS) conducts fundamental and applied research in the area of computer, communication and information sciences. The goal is to push forward the scientific frontiers of these fields in close collaboration with the Interdisciplinary Centre for Security, Reliability and Trust (SnT). In addition, the DCS is in charge of the 2 Bachelors, 5 Masters and 1 doctoral programme in computer science.



DCS at a glance

MEMBERS

- 22 professors
- 62 post-docs and 56 doctoral candidates
- 15 technical and administrative staff

FUNDING AND COLLABORATIONS



PUBLICATIONS

- 56 peer-reviewed articles in scientific journals (2020)

ADDITIONAL INFORMATION



CONTACT

dcs@uni.lu

CAMPUS

Belval

dcs.uni.lu



Research areas

INTELLIGENT AND ADAPTIVE SYSTEMS

- Intelligent agents
- Computational intelligence
- Computational/applied logic
- Human-computer interaction
- Social robotics
- Data science
- High performance computing
- Artificial intelligence, AI ethics, machine learning
- Legal informatics
- Space informatics

INFORMATION SECURITY

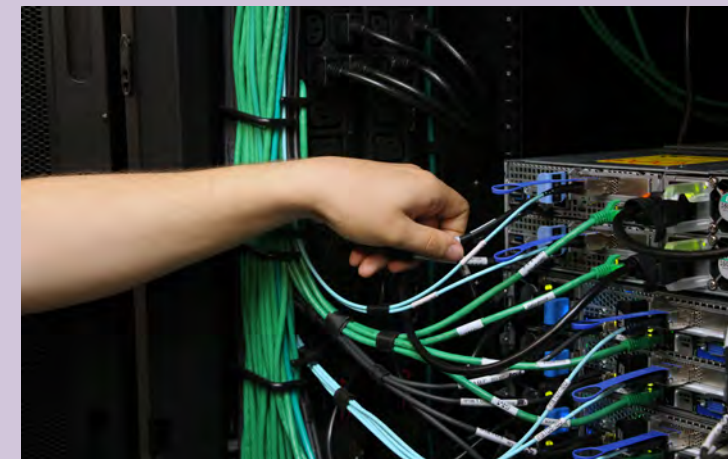
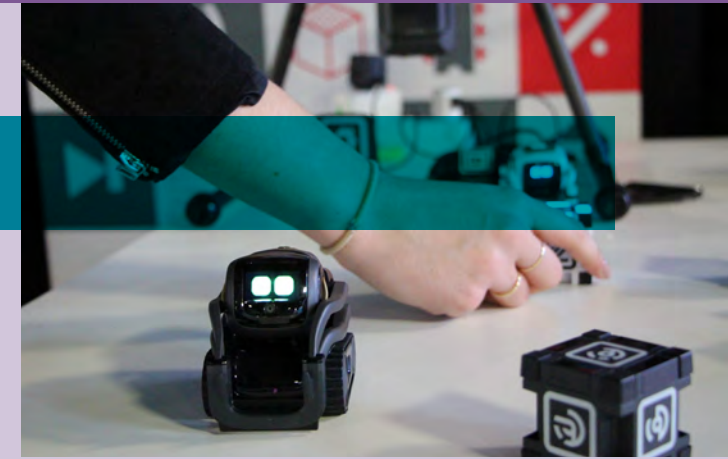
- Symmetric and public key cryptography
- Efficient software and hardware implementation of cryptography
- Side-channel analysis of smartcards & embedded devices
- Security protocols
- Network, mobile and embedded systems security
- Privacy and anonymity
- Verifiable voting systems, E-democracy
- Cloud computing, reputation based systems
- Cryptocurrencies, blockchain & distributed ledger technologies
- Mathematics of security
- Socio-technical aspects of security and trust
- Quantum information assurance

COMMUNICATIVE SYSTEMS

- Secure communication protocols
- Network and systems security, 5G and beyond, IoT
- Collaborative socio-technical systems
- Virtual and augmented reality
- Vehicular communication (V2X, in car, C-ITS)
- Reliable distributed energy-systems
- Buffered PV Integration in Utility Grids
- Distributed anonymity and privacy
- Machine learning and adaptive networking
- Network science

SOFTWARE AND SYSTEMS

- Software modelling, testing and validation
- Software engineering for AI and data science
- Devops and agile development technologies
- Real-time embedded systems
- Software security
- Proactive computing oriented systems
- Data-intensive systems



Studying at our University

Young, dynamic and international



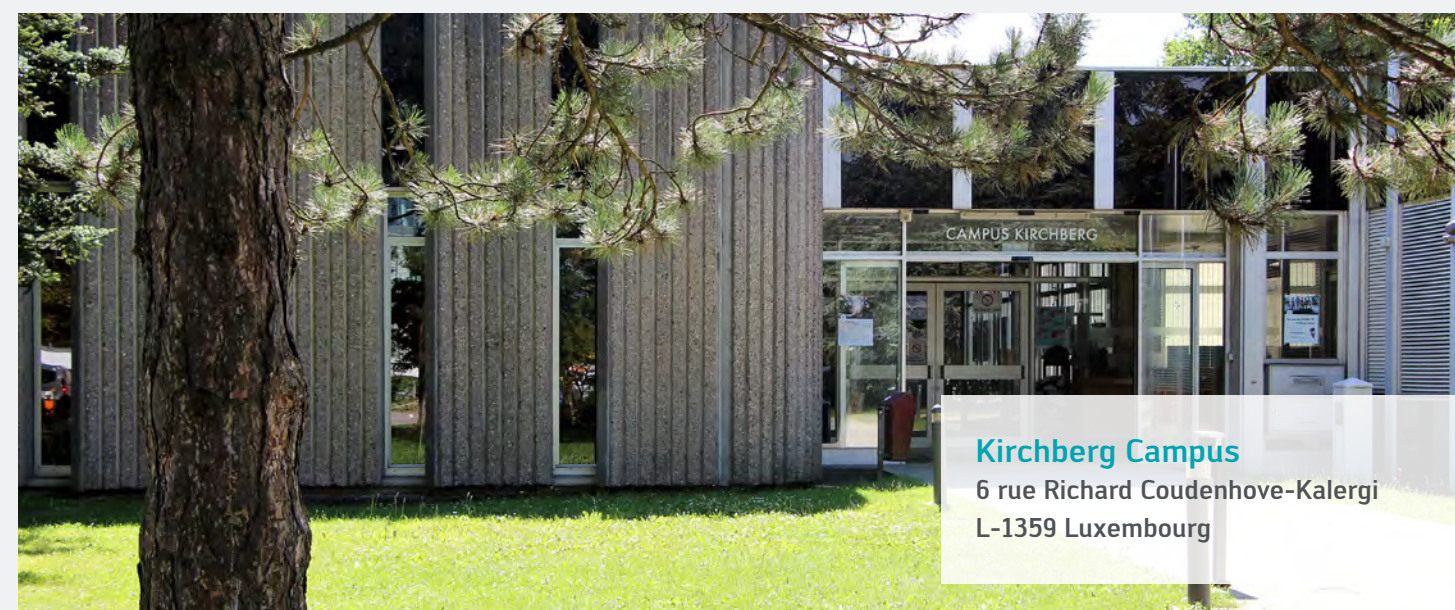
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