

# MASTER OF SCIENCE IN ELECTRICAL ENGINEERING (ELECTRONIC CIRCUITS AND SYSTEMS)

120 ECTS CREDITS - LANGUAGE: ENGLISH

The Faculty of Engineering and Architecture (FEA) offers most of its Master's Programmes in Engineering in English. This underlines the faculty's international ambition, as well as the importance of international education and multiple language skills for students.

## INHOUD

The Master of Science in Electrical Engineering offers an in-depth training in the domains of electrical and electronics engineering. Students can choose a focus on either Electronic Circuits and Systems (ECS) or Communication and Information Technologies (CIT).

The main focus is on the analysis, design, fabrication and testing of smart devices and the internet-of-things. An electrical engineer shapes the strong evolution towards an environment in which everything is 'smart', and in which all these smart devices are connected and can exchange information. Examples are smart cities, smart mobility, smart health care, smart grids, smart buildings, wearable electronics, robotics, sensor systems, devices improving safety and security, etc. The Master of Science in Electrical Engineering is the only programme that covers the hardware aspects of all these smart devices.

The programme concentrates on analogue and digital systems and communication networks, covering both hardware and software aspects but with a clear focus on electronic components and design at the circuit and system level. Both on an individual basis and as part of a team, Masters of Electrical Engineering are capable of efficiently and methodically developing complex electronic (communications) systems for a broad field of applications, starting from the conception and analysis over the design, implementation, testing and up to the management of such systems.

Our designs are based on a firm theoretical foundation and technological knowledge, and are conceived by making appropriate use of state-of-the-art computer-aided design tools. Given the acquired research attitudes and competences, Masters of Electrical Engineering are able to support creative or innovative (r)evolutions in industry and in academic research. As is the case for all Master of Science in Engineering programmes, this programme also provides a sufficiently broad non-specialist knowledge in other engineering disciplines and in several economical, legal, deontological and societal aspects.

In addition to the theoretical base, each year contains practical projects which are gradually enhancing the student's skills in effectively collaborating in teams and acting as skilled team leaders in an industrial research environment.

## STRUCTUUR

The programme consists of two phases: the first three-year programme leads to a Bachelor of Science in Engineering degree. The subsequent two-year programme awards a Master of Science in Electrical Engineering degree.

Throughout the master's programme, each student may choose to either deepen or broaden their scope by compiling a personalised curriculum based on a wide range of elective courses, or by including a (broadening) Minor into their curriculum.

## ARBEIDSMARKT

The Master of Science in Electrical Engineering focuses specifically on research and development, as well as on creation and design in the field of electronics, information and communication technology (ICT). Many companies only accept electrical engineers for the development of the smart systems they are producing and are therefore constantly looking for our highly trained students.

Electrical engineers are mainly responsible for the design and development of data, image and speech processing systems, measurement and sensor technology, robot design, as well as the future ICT infrastructure, including wired, wireless, satellite and vehicular communication systems. Our graduates thrive in large multinational electronics, ICT and telecommunication companies, as well as a wide range of small and medium-sized enterprises active in the forefront of technology or consultancy. Their degree is highly appreciated for the broad scope of the programme and its strong bond to state-of-the-art research.

The balanced mix between hardware and embedded software enables new graduates to play key roles in the development of hardware for smart devices, the future internet, and the internet-of-things and to have an impact on very important evolutions in society such as green electronics, smart health care and ambient assisted living.

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## TOELATINGSVOORWAARDEN VOOR HOUDERS VAN EEN VLAAMS DIPLOMA

### 1 Rechtstreeks:

- Bachelor in de ingenieurswetenschappen, afstudeerrichting: elektronica en informatietechnologie
- Bachelor in de ingenieurswetenschappen, afstudeerrichting: elektrotechniek
- Bachelor in de ingenieurswetenschappen: elektrotechniek

### 2 Rechtstreekse toelating voor het volgen van een brugprogramma (horizontale instroom):

#### a opleidingen nieuwe structuur:

- Master in de industriële wetenschappen: elektronica en ICT: elektronica
- Master in de industriële wetenschappen: elektronica en ICT: ICT
- Master in de industriële wetenschappen: elektronica-ICT (zonder afstudeerrichting)
- Master in de industriële wetenschappen: elektronica-ICT, afstudeerrichting: ingebedde systemen
- Master in de industriële wetenschappen: elektrotechniek
- Master in de industriële wetenschappen: energie
- Master of Electronics and ICT Engineering Technology

#### b opleidingen oude structuur:

- Industrieel ingenieur in elektronica

#### Extra info toelatingsvoorwaarden (Vlaams diploma)

Studenten met de volgende academische bachelordiploma's kunnen niet meer instromen in de opleiding via een voorbereidingsprogramma:

- Een niet onder rechtstreekse toelating vermeld diploma van Bachelor of Science in de ingenieurswetenschappen
- Bachelor of Science in de industriële wetenschappen: elektronica-ICT (alle)
- Bachelor of Science in de industriële wetenschappen, afstudeerrichting: elektronica-ICT
- Bachelor of Science in Engineering Technology, afstudeerrichting Electronics Engineering
- Bachelor of Science in de ingenieurswetenschappen (KMS) (1)

Zij kunnen wel een pakket vrijstellingen aanvragen binnen de opleiding Bachelor of Science in de ingenieurswetenschappen: elektrotechniek/Bachelor of Science in de ingenieurswetenschappen, afstudeerrichting elektrotechniek, die rechtstreeks toegang verleent tot deze masteropleiding. Neem voor meer informatie contact op met: [studietrajectIR.ea@ugent.be](mailto:studietrajectIR.ea@ugent.be).

(1) **Ter informatie:** 'Bachelor of Science in de ingenieurswetenschappen (KMS)': Dit is een

bachelordiploma van de Koninklijke Militaire School (federale instelling). De bachelor- en masteropleidingen die de KMS mag aanbieden zijn vastgelegd in de Wet van 25 november 2004 tot wijziging van de wet van 11 september 1933 op de bescherming van de titels van het hoger onderwijs, wat de door de Koninklijke Militaire School verleende academische graden betreft.

Artikel II.257 van de Codex hoger onderwijs stipuleert: "De Vlaamse regering kan de gelijkwaardigheid bepalen van de kwalificaties en de specificaties van de bachelor- en mastersdiploma's uitgereikt in de Franse Gemeenschap c.q. door de Koninklijke Militaire School te Brussel met de kwalificaties en de specificaties van de bachelor- en mastersdiploma's uitgereikt in de Vlaamse Gemeenschap."

## ADMISSION REQUIREMENTS FOR INTERNATIONAL DEGREE STUDENTS

Students who wish to enrol for the Master of Science in Electrical Engineering can enter the programme without any prerequisites if they hold the following diploma: an academic diploma of Bachelor (or Master) of Science in Engineering (university level, minimum of three years), with the main subject in Electrical Engineering or an equivalent to this.

Admission can only be granted after an individual application procedure. The Study Programme Committee will make the final decision whether to accept the application or not. The Study Programme Committee can decide that students need to follow a preparatory course or an individual master's programme, for instance for students with another diploma of Bachelor or Master.

Information on admission requirements and the administrative procedure for admission on the basis of a diploma obtained abroad, can be found on the following page: [www.ugent.be/prospect/en/administration/enrolment-or-registration](http://www.ugent.be/prospect/en/administration/enrolment-or-registration).

The language requirements for this study programme can be found on: [www.ugent.be/lanaguerequirements](http://www.ugent.be/lanaguerequirements)

## PRACTICAL INFORMATION

### Study programme

[studiekiezer.ugent.be/master-of-science-in-electrical-engineering-electronic-circuits-and-systems-en/programma](http://studiekiezer.ugent.be/master-of-science-in-electrical-engineering-electronic-circuits-and-systems-en/programma)

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## Information sessions

### Graduation Fair

[afstudeerbeurs.gent/en/students/further-studies](https://afstudeerbeurs.gent/en/students/further-studies)

### Open Days

### Application deadline

For students who **need a visa**: 1st of April

For students who **do not need a visa**: 1st of June

[Read more](#)

### Tuition fee

More information is to be found on: [www.ugent.be/tuitionfee](https://www.ugent.be/tuitionfee)

[studietrajectir.ea@ugent.be](mailto:studietrajectir.ea@ugent.be)

### Contact (for international degree students)

International Relations Officer

+32 9 264 36 99

[international.ea@ugent.be](mailto:international.ea@ugent.be)