

# MASTER OF SCIENCE IN ELECTROMECHANICAL ENGINEERING

MAIN SUBJECTS: ELECTRICAL POWER ENGINEERING – CONTROL ENGINEERING AND AUTOMATION – MECHANICAL ENERGY ENGINEERING – MECHANICAL CONSTRUCTION – MARITIME ENGINEERING

MINORS: OPERATIONS MANAGEMENT – ENVIRONMENT AND SUSTAINABLE DEVELOPMENT – BIOSYSTEMS – AUTOMOTIVE PRODUCTION ENGINEERING – COMPUTER SCIENCE ENGINEERING – ELECTRONICS AND ICT – MATERIALS ENGINEERING – CHEMICAL ENGINEERING – MATERIALS PHYSICS – CONTROL ENGINEERING AND AUTOMATION – PHOTONICS ENGINEERING – POWER ENGINEERING

120 ECTS CREDITS – LANGUAGE: ENGLISH – DEGREE: MASTER OF SCIENCE

## COURSE CONTENT

Electromechanical engineering is a collection of engineering disciplines around the themes motion, force and energy. The world of electromechanical engineering encompasses development, design, manufacturing, testing and control of tools, machines, vehicles and other electrical or mechanical systems, as well as research on these topics. The Master of Science in Electromechanical Engineering is a two-year degree programme intended to prepare students for a future technical leadership role in industry. The programme offers in-depth training in all aspects of electro-mechanical engineering and its economic and social implications based on a profound scientific basis. Graduates will have acquired an attitude of scientific synthesis, analytical reasoning as well as scientific and technical independency. Training in research skills provides mastery in developing, implementing and monitoring technical and scientific innovations.

## COURSE STRUCTURE

The programme consists of a general module, main subject modules, elective courses and a dissertation. The general module contains courses on all subjects related to Electromechanical Engineering, ranging from electrical drives over machine manufacturing to management skills. Students can choose one out of five main subject modules with specialist courses on different subjects of interest.

- The main subject **Electrical Power Engineering** handles all aspects of generation, distribution and use of electrical energy, with special attention to electrical machines and drives and electrical power systems.
- The main subject **Mechanical Energy Engineering** concerns energy conversion and energy use in thermal systems, engines, machines and all kinds of industrial equipment.
- The main subject **Mechanical Construction** focuses on design, manufacturing and maintenance of machines and mechanical equipment.
- The main subject **Control Engineering and Automation** is about control and automation applied to mechanical and electrical systems and processes in general.
- The main subject **Maritime Engineering** treats the design, construction and operation of maritime systems such as ships and offshore constructions.

Through elective courses, students broaden their knowledge and skills in technical and non-technical subjects. The master's dissertation is a final step in the learning process. It aims at training the ability to independently perform scientific research.

## CAREER PERSPECTIVES

Masters in Electromechanical Engineering graduating in one of the five main subjects are employed in all branches of industry. Both in government agencies and private companies their field of activity is broadly varied: electrical energy production and distribution, electrical and mechanical equipment manufacturing, metal industry, building construction, transport, consultancy, banking and insurance.

Graduates in Electrical Power Engineering are employed by electrical utilities and electrical equipment manufacturers. Their activities are situated in the development, design and control of machines and equipment for generation and distribution of electric energy (alternators, transformers, high voltage lines) and for use of electrical energy (electric drive technologies, mechatronics) and in the operation of electrical transmission and distribution networks.

Graduates in Mechanical Energy Engineering work in development and design of various types of machinery and mechanical equipment where energy conversion and energy efficiency is of main concern, e.g.: internal combustion engines, steam, gas, wind and hydraulic turbines, compressors, fans, steam boilers and HVAC&R installations.

Students who opted for the main subject Mechanical Construction find work in companies developing machines and mechanical constructions for all industrial sectors. This comprises mechanical design (materials selection, component selection, lifetime analysis), production methods (machining, forming ...) and construction methods (welding, fastening...). Particular attention goes to safety, sustainability and cost related aspects.

Graduates in Control Engineering and Automation are employed in development and design of equipment and systems for automation, control and supervision in process industry, energy production, electrical and mechanical equipment manufacturing and all other industrial sectors.

Graduates from Maritime Engineering have a multidisciplinary knowledge to approach problems related to design, construction and operation of ships and floating structures in general and on their behaviour in particular. There is a demand for graduates in government agencies, port authorities, shipping companies, inspection and classification societies, dredging and related sectors. Their professional activities are very diverse and internationally oriented.

**Note that the Maritime Engineering programme is only offered by Ghent University in Flanders.**

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## TOELATINGSVOORWAARDEN VOOR HOUDERS VAN EEN VLAAMS DIPLOMA

### Rechtstreeks:

- Ba ingenieurswetenschappen: werktuigkunde-elektrotechniek
- Ba ingenieurswetenschappen: afstudeerrichting werktuigkunde, nevenrichting elektrotechniek
- Ba ingenieurswetenschappen: afstudeerrichting elektrotechniek, nevenrichting werktuigkunde
- Ba ingenieurswetenschappen: afstudeerrichting werktuigkunde-elektrotechniek

### Rechtstreeks: (naar brugprogramma – 120 studiepunten)

- Ma industriële wetenschappen:
  - elektromechanica
  - elektrotechniek
  - energie
  - industrieel ontwerpen
- Ma in Electromechanical Engineering Technology

### Via voorbereidingsprogramma: (max. 90 studiepunten)

- (andere) Ba ingenieurswetenschappen (incl. Ba ingenieurswetenschappen: architectuur)
- Ba bio-ingenieurswetenschappen
- Ba fysica en sterrenkunde
- Ba fysica
- Ba wiskunde
- Ba industriële wetenschappen: elektromechanica
- Ba industriële wetenschappen: afstudeerrichting elektromechanica
- Ba in Engineering Technology: afstudeerrichting Electromechanical Engineering
- Ba nautische wetenschappen
- Ba ingenieurswetenschappen (KMS)
- Ma nautische wetenschappen

### TAAL

Je voldoet aan de taalvoorwaarden op basis van je Vlaams diploma.

## PRAKTISCHE INFORMATIE

### Studieprogramma:

<https://studiegids.ugent.be>

> faculteiten > opleidingstypes > ga naar de opleiding van je keuze

### Alternatieve trajecten

Meer informatie over voorbereidings- en brugprogramma's op [www.ugent.be/ea](http://www.ugent.be/ea)

volg > alles voor toekomstige studenten > voor wie al een diploma heeft

### Infomomenten

#### Masterbeurs

[www.ugent.be/masterbeurs](http://www.ugent.be/masterbeurs)

#### Infosessie

5 mei 2020 – 16 u., Campus Boekentoren, Auditorium E

Jozef Plateastraat 22, Gent

[www.ugent.be/nl/studeren/masteropleidingen](http://www.ugent.be/nl/studeren/masteropleidingen)

### Contact

Trajectbegeleiding:

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

### Meer info

Afdeling Studieadvies – Campus Ufo, Ufo,

Sint-Pietersnieuwstraat 33, 9000 Gent, T 09 331 00 31

[studieadvies@ugent.be](mailto:studieadvies@ugent.be) – [www.ugent.be/studieadvies](http://www.ugent.be/studieadvies)

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## ADMISSION REQUIREMENTS FOR INTERNATIONAL DEGREE STUDENTS

Students who wish to enrol for the Master of Science in Electromechanical 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 three years), with the main subject in Electromechanical 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 who hold another diploma of Bachelor or Master.

### LANGUAGE

More information regarding the required knowledge of English:  
[www.ugent.be/languagerequirements](http://www.ugent.be/languagerequirements)

## PRACTICAL INFORMATION

### Study programme

[www.ugent.be/coursecatalogue](http://www.ugent.be/coursecatalogue)  
> by Faculty > Programme types > select your programme

### Application deadline for international students

- for students who need a visa: 1st of March
  - for students who do not need a visa: 1st of June
- [www.ugent.be/deadline](http://www.ugent.be/deadline)

### Enrolling institution

Ghent University

### Tuition fee

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

Last update: January 2020.

### Contact

Faculty of Engineering and Architecture  
International Relations Officer – Degree students  
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T +32 9 264 36 99 – [internationalplateau.ea@ugent.be](mailto:internationalplateau.ea@ugent.be)