MASTER OF SCIENCE IN INDUSTRIAL ENGINEERING AND OPERATIONS RESEARCH

MAJORS: MIEOR__1 - MIEOR__2

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.

WHAT

The Master programme combines the disciplines of Industrial Engineering and Operations Research into a single study programme. **Industrial Engineering** (IE) is a branch of engineering that deals with analysing, designing and optimising complex operational systems, with the aim of improving their effectiveness and efficiency, and thus increasing their productivity in a sustainable manner. A unique feature of IE that distinguishes it from other engineering disciplines, is the explicit consideration of the human element as an essential and determining factor in these operational systems.
For designing and managing operational systems, an IE engineer often relies on mathematical models, both deterministic and stochastic in nature, that are then subjected to simulation and optimisation techniques. The whole of these mathematical tools is known under the term **Operations Research** (OR). They comprise mathematical programming, simulation, search algorithms and heuristics, dynamic programming, queueing theory, decision techniques, statistics, stochastic modelling, network analysis, etc... . The combination of these disciplines forms a crucial branch of engineering for companies worldwide.
Internationally, this specific engineering profile is one of the largest engineering domains that effectively prepares students for taking up leading roles by thoroughly training them in technical principles of the design, planning and control of systems in manufacturing and service industries.

STRUCTURE

The programme consists of a general module, main subject modules, elective courses, and a master dissertation.
The general module contains 38 credits of courses that cover the core competences of Industrial Engineering and Operations Research. Students then choose among two main subject modules, with 30 credits of specialist courses in either the domain of **Manufacturing & Supply Chain** or **Transport & Mobility.**
By means of 28 ECTS-credits worth of elective course units, students can further deepen and/or broaden their knowledge and skills in both technical and non-technical subjects. As part of the electives, students can obtain a minor in either **Artificial Intelligence** or **Automotive Production Engineering**, two domains closely related to Industrial Engineering and Operations Research.
The Master's Dissertation covers the final 24 ECTS-credits of the two-year programme.

LABOUR MARKET

Many companies, both small and large, are eager to recruit IEOR engineers. They mainly work on the design and continuous improvement of systems that manufacture products and serve customers and are often also involved in the design of new products and services. IEOR engineers are not only found in industry but also in many organisational systems of society such as government, health care and hospitals, public service, law enforcement, transport and traffic systems, etc....
Notable examples of what IEOR has to offer in today's society can be found on www.iise.org the website of the Institute of Industrial Engineering (IIE) which is the international professional organisation of engineers in this discipline.

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TOELATINGSVOORWAARDEN VOOR HOUDERS VAN EEN VLAAMS DIPLOMA

1 **Rechtstreeks:**
- a opleidingen nieuwe structuur:
  - Een diploma van een opleiding 'Bachelor of Science in de ingenieurswetenschappen' (met uitzondering van 'architectuur')
  - Een diploma van een opleiding 'Master of Science in de ingenieurswetenschappen' leidend tot de titel van 'burgerlijk ingenieur' (met uitzondering van architectuur)
  - Een diploma van een opleiding 'Master of Science in Engineering' leidend tot de titel van 'burgerlijk ingenieur' (met uitzondering van Architecture)
- b opleidingen oude structuur:
  - Een diploma van 'Burgerlijk Ingenieur' (met uitzondering van 'Burgerlijk Ingenieur-Architect')

2 **Na het met succes voltooien van een voorbereidingsprogramma:**

MIN 30 SP - MAX 90 SP
- a opleidingen nieuwe structuur:
  - Bachelor handelsingenieur
  - Bachelor in de bio-ingenieurswetenschappen
  - Bachelor in de fysica
  - Bachelor in de fysica en de sterrenkunde
  - Bachelor in de geografie en de geomatica
  - Bachelor in de informatica
  - Bachelor in de ingenieurswetenschappen (KMS)
  - Bachelor in de ingenieurswetenschappen: architectuur
  - Bachelor in de toegepaste economische wetenschappen: handelsingenieur
  - Bachelor in de toegepaste economische wetenschappen: handelsingenieur in de beleidsinformatica
  - Bachelor in de wiskunde
  - Bachelor of Engineering Technology
  - Een diploma van een opleiding 'Bachelor of Science in de industriële wetenschappen'
  - Een diploma van een opleiding 'Master of Bioscience Engineering'
  - Een diploma van een opleiding 'Master of Science in de bio-ingenieurswetenschappen' leidend tot de titel van 'bio-ingenieur'
  - Master in de fysica
  - Master in de fysica en de sterrenkunde
  - Master in de geografie en de geomatica
  - Master in de ingenieurswetenschappen: architectuur
  - Master in de wiskunde
  - Master in de wiskundige informatica
  - Master of Architectural Engineering
  - Master of Mathematics
  - Master of Physics
- b opleidingen oude structuur:
  - Een diploma van 'Bio-ingenieur'
  - Licentiaat in de informatica
  - Licentiaat in de natuurkunde
  - Licentiaat in de wiskunde

MAX 60 SP
- a opleidingen nieuwe structuur:
  - Master in de toegepaste economische wetenschappen: handelsingenieur
  - Master in de toegepaste economische wetenschappen: handelsingenieur in de beleidsinformatica
  - Master of Business Engineering
- b opleidingen oude structuur:
  - Handelsingenieur

3 **Rechtstreekse toelating voor het volgen van een brugprogramma (horizontale instroom):**
- a opleidingen nieuwe structuur:
  - Een diploma van 'Master in Engineering Technology'
  - Een diploma van een opleiding 'Master of Science in de industriële wetenschappen'
- b opleidingen oude structuur:
  - Een diploma van 'Industrieel Ingenieur' (met uitzondering van Industrieel ingenieur in landbouw en biotechnologie)

ADMISSION REQUIREMENTS FOR INTERNATIONAL DEGREE STUDENTS

Students who wish to enrol for the Master of Science in Industrial Engineering and Operations Research 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

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years), and/or a Master of Science in BioScience 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.

LANGUAGE REQUIREMENTS

Language requirements	Dutch: no language requirements English: CEFR level B2

The language requirements for this study programme can be found on: www.ugent.be/languagerequirements

PRACTICAL INFORMATION

Study programme
studiekiezer.ugent.be/master-of-science-in-industrial-engineering-and-operations-research-en/programma

Information sessions
Graduation Fair
afstudeerbeurs.gent/en/students/further-studies

Enrolling institution
Information on enrolment at Ghent University.

Application Deadline (for International degree students)
For students who **need a visa**: before 1st of April
For students who **do not need a visa**: before 1st of June
Read more

Tuition fee
More information is to be found on: www.ugent.be/tuitionfee

Learning path counsellor
studietrajectir.ea@ugent.be

Contact (for international degree students)
International Relations Officer
+32 9 264 36 99
international.ea@ugent.be