



University of Twente
Enschede - The Netherlands

UK

Master of Science Programme

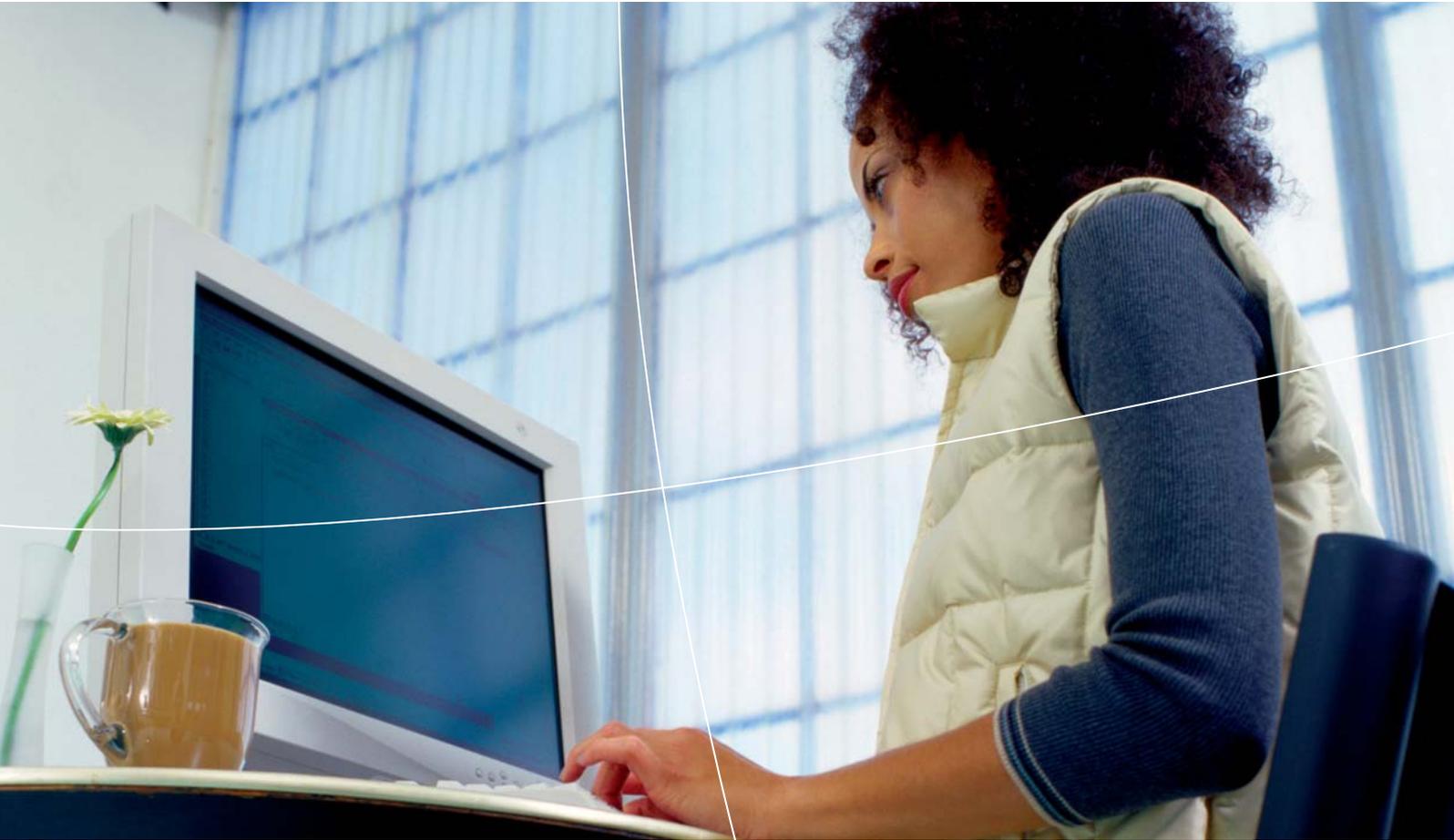
Industrial Engineering and Management



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THE MASTER DEGREES
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IMPROVE YOUR POSITION



Industrial Engineering and Management Master of Science

Products and services in today's world become increasingly advanced and sophisticated. Business processes are needed to develop, sell, manufacture, purchase and maintain these products and services and to provide information to users. The design and management of these business processes is crucial. This is true not only for manufacturing processes, but also for company and inter-company logistics and processes for the exchange of information, in health care, the government and financial services. Design and management not only aim to improve productivity, but also to achieve improvements in terms of other performance indicators, e.g. quality, service and degree of risk. The use of ICT is a central aspect of process improvement and management.

The Industrial Engineering and Management (IE&M) master's degree programme focuses on the development and management of company and inter-company processes.

This focus has a long standing scientific history going back to the start of the Industrial Revolution. The IE&M programme is shaped by the rapid changes taking place in various research areas, economic changes and the arrival of new groundbreaking technology. IE&M students learn about the latest scientific theories on analysis and optimization and their practical application. This wealth of knowledge optimally supports decisions taken on the design and management of commercial processes. The aim is to gain a better understanding of the relation between process development, process control and relevant performance indicators.

If you are interested in advising companies, financial services or health care organizations on how they can achieve process improvements and, consequently, enhance performance, or if you can appreciate the incredible potential of ICT, the IE&M master's degree programme may be right for you.



Programme structure

The two-year IE&M master's degree programme is taught entirely in English and consists of 120 European Credits (EC). You start the master programme with two equalisation courses as an optimal preparation to the rest of the IE&M programme. The content of these courses depends on your background. After the equalisation courses, all IE&M master's students follow five common courses. Each course is 5 EC.

Common courses:

- Simulation
- Empirical Research and Data Analysis
- Management and Organization of Technological Innovation
- Management of Technology, general
- Organization and Strategy

Once you have successfully completed these courses, you can specialize in one of four tracks:

- Production and Logistic Management (PLM)
- Information Technology and Management (ITM)
- Health Care Technology and Management (HCTM)
- Financial Engineering and Management (FEM)

In addition to the common courses, you will complete track specific courses. After successfully completing the common and track-specific courses, you complete the IE&M master's programme with the masterthesis (30 EC) as part of which you select a topic and conduct research either at the UT or as part of a commissioned research assignment for an external organization. Graduates are awarded the title of 'Master of Science' (MSc).

Tracks

Within the Industrial Engineering and Management Master's degree programme you can specialize in one of four tracks.

■ Production and Logistic Management (PLM)

The PLM track focuses on the design and control of manufacturing and supply chain processes from raw materials to end products. This track's courses emphasize theory and its applications, complemented where possible using software from our commercial processes simulation laboratory (Business Process Laboratory).

As part of the PLM track, you will complete various courses, for example:

- Warehousing
- Discrete Optimization of Business Processes
- Supply Chain and Transport Management
- Reliability Engineering and Maintenance Management
- Advanced Production Planning
- Reverse Logistics and Re-manufacturing
- New Production Concepts
- Production and Logistics IS

Career prospects

As a PLM track graduate, you have a solid academic foundation for a career in production or logistic management. Logistic managers try to manage the flow of goods and the consequences for internal (i.e. production and supply) and external (i.e. supply of raw materials and delivery of end products) logistics. Logistic managers must be familiar with the processes and underlying technologies, purchasing and outsourcing, planning and IT systems. This field requires professionals who know and understand production and logistic models.



■ Information Technology and Management (ITM)

A prominent tool in industrial engineering and management is the use of advanced ICT to structure and control company and inter-company processes. The ITM track prepares you to supervise the redesign of business processes to maximize the potential of ICT, both internally and with respect to external organizations.

As part of the ITM track, you will complete various courses, for example:

- Introduction of IT in Organizations
- Foundations of IT Applications and Infrastructure
- E-strategizing
- ICT Management
- IS Design Methodologies
- Business Case Development for IT Projects
- Production & Logistics IS
- Business Process Integration Lab

Career prospects

As an ITM track graduate, you can start your career with any organization in positions involving information analysis and information management. You provide an understanding of the commercial aspects of IT projects. You can eventually be promoted to such positions as IT director or senior IT consultant.

■ Health Care Technology and Management (HCTM)

In addition to its focus on the management of health care organizations, the HCTM track places special emphasis on the organization and management of primary processes in this sector. This includes a prominent role for the technological aspects in and within hospitals. Besides, the HCTM track pays attention to organizational aspects of the development and

implementation of biomedical engineering. Processes affecting the creation of goods and services are analyzed using quantitative and qualitative methods.

As part of the HCTM track, you will complete various courses, for example:

- Discrete Optimization of Business Processes
- Optimization of Healthcare Processes
- International Health Strategy and the Hospital of the Future
- Health and Health Systems
- The Nature of Hospital Work and Healthcare Workers
- E-health Strategies
- Management of Technology in Healthcare
- Hospital Economics

Career prospects

As an HCTM track graduate, you are trained to increase the efficiency, yield and safety of organizations. This requires knowledge and an understanding of the medical and managerial aspects involved.

■ Financial Engineering and Management (FEM)

The FEM track involves the application of common industrial engineering and management methods to the less traditional fields of banking and insurance. In addition, concepts from the financial world are introduced in areas more traditionally known as manufacturing fields. The growing complexity of financial contracts, blurring distinction between financial product suppliers as a result of, for instance, mergers between banks and insurance companies, and the emerging markets for 'new' products (e.g. electricity, milk quota or emission rights) have increased the demand for quantitative risk management tools. As part of this track, you will also learn how to analyze and manage financial risks by implementing financial products and re-engineering business processes.

As part of the FEM track, you will complete various courses, for example:

- Introduction to Investment Theory
- Statistics and Probability
- Mathematical Finance
- Financial Econometrics
- Risk Management
- Business Taxation
- Financial Accounting
- Management Control for Financial Institutions

Career prospects

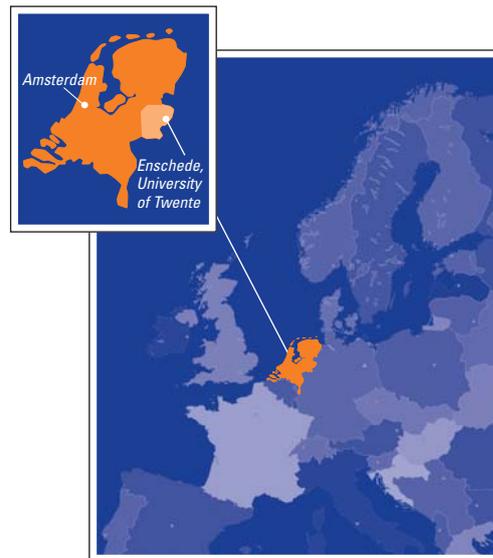
As an FEM track graduate, you can identify and quantify risks using financial engineering tools. Touching on such areas as business administration, economics and mathematics, the track's curriculum does not focus solely on specialized jobs in financial engineering and risk management, but also prepares students for a broad range of business finance positions in – but not limited to – the financial sector. Opportunities abound!!

Admission criteria

Holders of a Bachelor of Science degree in Industrial Engineering and Management from a Dutch university are eligible for admission. The IE&M admissions committee decides if applicants with a different Dutch bachelor's degree in a related field of study are eligible for admission and if it is necessary to first complete a pre-master's programme (max. 20 EC) to be eligible for admission. The admissions committee determines the content of the pre-master's programme on the basis of previous education.

The admissions committee will assess applicants with a bachelor's degree from a non-Dutch university on an individual basis. The assessment is based on:

- A NUFFIC credential evaluation;
- Proof of your skills in mathematics and statistics;
- Proof of your skills in scientific research knowledge;
- Academic record(s);
- Letter of motivation;
- Two letters of recommendation;
- Proof of your English proficiency: IELTS-test;
- CV/resume;
- If applicable; any additional information required by the admissions committee.



If you would like to find out whether you are eligible for admission, and you are curious about the possible composition of your pre-master's programme, complete the application form at our website www.graduate.utwente.nl. This is entirely without obligation. You will be informed about your admission within 6 to 8 weeks. If you register well in advance (no more than 3 months before the start of the pre-master's programme), then we will see to it that you are informed about your admission on time.

Tuition fee

Full-time students from a country that belongs to the European Economic Area (EEA)* pay an annual tuition fee of € 1,519 (+index). Full-time non-EEA students will be charged € 6,320 (+index).

*The EEA-countries are Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.



The Industrial Engineering and Management Master's degree programme is accredited by the Nederlands-Vlaamse Accreditatieorganisatie (NVAO). Therefore the programme indicates to international qualifications.

Graduate.utwente.nl

The IE&M Master's degree programme is a dynamic programme. As a result, the tracks offered may differ from year to year. Regularly consult our website www.graduate.utwente.nl for the latest developments.

The website also presents information on such aspects as: tracks, courses, admission requirements, the pre-master's programme and registration. If you have specific questions regarding this master's degree programme, please contact the IE&M programme information desk by e-mail at master@utwente.nl or by phone on +31 (0)53 489 5 489.

The University of Twente is a co-signatory of the Code of Conduct for the Recruitment of Foreign Students. Information about the Code and the accompanying procedure for complaints is available on www.internationalstudy.nl

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