Pre-master 'Industrial Engineering and Management' (IEM) 2025-2026

The master's Programme

The master's programme Industrial Engineering and Management has three specialisations:

- Production and Logistics Management (PLM)
- Health Care Technology and Management (HCTM)
- Financial Engineering and Management (FEM)

Production and Logistics Management (PLM)

This specialisation focuses on the heart of the design and control of manufacturing processes in the supply chain from raw material delivery to delivering end products to customers. PLM is a broad field requiring people with knowledge of and insight in models in production and logistics in the tradition of management science. Modern production and logistic processes are becoming increasingly complex. Product lifetimes are decreasing, the geographic distance between suppliers and buyers becomes increasingly large (globalization) and more and more activities are outsourced. Important issues in supply chain design include:

- Location of production facilities and distribution centres;
- Allocation of resources in production and distribution centres;
- Management of operations in production, warehousing, transport and distribution, purchasing;
- Maintenance of desired service levels to customers;
- Reliability of processes and their interaction with maintenance planning.

Any mismatch in the supply of raw materials, semi-raw materials, components or finished products will lead to overstock or production delays with service consequences.

The Health Care Technology and Management (HCTM) specialisation highlights the issues playing a role in the management of health care organisations. The special emphasis of this specialisation is on the organisational aspects of hospitals from an Industrial Engineering and Management point of view. Furthermore, we focus on the managerial and organisational aspects of the development and implementation of biomedical technology; some of the courses will be given along with the master's degree programme in Biomedical Engineering.

You will learn how to increase the organisational effectiveness, efficiency and safety of health care. In addition to knowledge of medical aspects, this requires effective managerial insight. The HCTM specialisation of the 'Industrial Engineering and Management' master's degree programme differs from other educational programmes in that, in preparing you for a career in the health care sector, its emphasis lies on the quantitative analysis of problems and the methods used in producing goods or services.

Financial Engineering and Management (FEM)

Over the past decades the increasing complexity of financial products, the size of the markets and the ever increasing variety in the products traded have generated a growing demand for skilled professionals to create, price and hedge complex derivatives and, more generally, to manage risk. Acquiring such skills requires mastering both mathematical and managerial knowledge. To meet this demand we offer a master's specialisation in financial engineering and risk management.

Students are trained to identify and quantify risk. Moreover, they learn to determine the extent to which risk should be dealt with using financial engineering instruments or other types of solutions, such as reengineering business processes, adapting the firm's strategy, switching customers/suppliers or taking different investment decisions. Finally, students receive comprehensive management training, learning to apply strategic skills to manage the firm's innovation and technology.

Pre-master programmes

The fulltime IEM pre-master programmes starts once a year in September.

The pre-master's has to be completed successfully within 12 months (with no more than 2 exams per course) to be admitted to the master's programme.

Students encountering special circumstances have to ask the exam committee for exemption of the rules mentioned above and inform their study counsellor as soon as the circumstances come up.

Each specialisation has a specific pre-master programme. For the specialisations PLM and HCTM the pre-master programme is the same. The pre-master programme for the specialisation FEM differs from the other two specialisations. Which programme you need to follow, and how long this will take, also depends on your previous education:

Research University: Technical programme: If you are a student with a technical programme from a Research University and you are admitted to one of the pre-master programmes, you have to take up to 15EC of courses. Below you find the pre-master programmes per specialisation:

Research University Technical BSc Programmes		
Production and Logistics Management (PLM) / Health Care Technology and Management (HCTM)		
First quartile (Sept-Oct)		
Course code	*Course name*	*EC*
202001176	Statistics and Probability Theory	5
202000450	OR models for premaster IEM	10
		15

Financial Engineering and Management (FEM)		
First quartile (Sept-Oct)		
Course code	*Course name*	*EC*
202001176	Statistics and Probability Theory	5
202000454	Financial Engineering for premaster IEM	10
		15

BSc Create (UT)		
Production and Logistics Management (PLM) / Health Care Technology and Management (HCTM)		
First quartile (Sept-Oct)		
Course code	*Course name*	*EC*
202001178	Linear algebra	3
202001236	Probability Theory	2
202000450	OR models for premaster IEM	10
		15

Financial Engineering and Management (FEM)		
First quartile (Sept-Oct)		
Course code	*Course name*	*EC*
202001178	Linear algebra	3
202001236	Probability Theory	2
202000454	Financial Engineering for premaster IEM	10
		15

University of Applied Sciences: technical programme or Research University: social science programme
If you are a student with a technical programme from a University of Applied Science or a student with a social science programme from a Research University and you are admitted to one of the pre-master programmes, you have to take up to 30EC of courses. Below you find the pre-master programmes per specialisation:

Applied Sciences and Research University Social Sciences programmes(Obligatory VWO Mathematics B)						
Production and Logistics Management (PLM) / Health Care Technology and Management (HCTM)						
(Sept-Oct)			*(Nov-Feb)*			
Course code	*Course name*	*EC*	*Course code*	*Course name*	*EC*	
202001172	Calculus A	4	202001176	Statistics and Probability Theory	5	
202000451	Academic skills for premaster IEM	1	202000451	Academic skills for premaster IEM	4	
			202300167	Data Analysis and Programming	3	
202000450	OR models for premaster IEM	10	202000397	Operations Strategy	3	
		15			15	30

Applied Sciences and Research University Social Sciences programmes(Obligatory VWO Mathematics B)						
Financial Engineering and Management (FEM)						
First quartile (Sept-Oct)			*Second quartile (Nov-Feb)*			
Course code	*Course name*	*EC*	*Course code*	*Course name*	*EC*	
202001172	Calculus A	4	202001176	Statistics and Probability Theory	5	
202000451	Academic skills for premaster IEM	1	202000451	Academic skills for premaster IEM	4	
			202300167	Data Analysis and Programming	3	
202000454	Financial Engineering for premaster IEM	10	202000397	Operations Strategy	3	
		15			15	30

Admittance into the (pre-)master's programme

- Students with a BSc in Industrial Engineering and Management from a Dutch Research University are admitted directly to the master's programme.
- Students with other prior knowledge might have to do a pre-master programme first to be admitted.

Admission criteria for the pre-master programme

Admission to the pre-master programme is an individual assessment, based on the following criteria:

- Level of Mathematics (at least equal to the Dutch pre-university Mathematics B (VWO Wisk B))
- Prior education (quantitative and technical knowledge)
- Study progress
- Motivation
- Individual academic qualities and extra-curricular activities (Resume)

Application procedure

UT Students who want to start the pre-master after finishing their bachelor programme

UT students who want to start the (pre-)master programme after finishing their bachelor programme can apply for the (pre-)master IEM via Studielink. All necessary documents (letter of motivation, overview of study progress, proof of sufficient level of mathematics) can be sent by email to e.s.ensink@utwente.nl

UT students who want to start the pre-master during their bachelor (minor)

UT students who wish to integrate the pre-master programme into their bachelor, can apply by sending the relevant documents (letter of motivation, overview of study progress, proof of sufficient level of mathematics) to e.s.ensink@utwente.nl. Keep in mind that you need the permission of your programme or examination board to integrate the premaster into your bachelor programme.

External students who want to start the pre-master during their bachelor (minor)

Students from other Research University's or Applied Science University's and want to integrate the premaster programme into their bachelor programme can apply via https://www.kiesopmaat.nl/

External students who want to start the pre-master after finishing their bachelor programme

Students who have finished their bachelor degree at another Research University or Applied Science University and want to start the (pre-)master programme after finishing their bachelor programme can apply for the (pre)master IEM via studielink. All necessary documents (letter of motivation, overview of study progress, proof of sufficient level of mathematics, resume) must be uploaded during the registration procedure.

Please note:

English

The IEM programme is taught in English. We strongly advise you to test your level of English.
Take the diagnostic Dialang test on http://dialangweb.lancaster.ac.uk/. This test gives you insight into where you stand in understanding English, in listening, writing, reading, vocabulary and language structures. The test will take up about 105 minutes of your time. The assessment will result in a baseline measurement of your English proficiency, as well as in potential points for improvements.

Bear in mind that the required level of English is at least C1 on each separate subject. When you don't meet these requirements, we recommended you to freshen brush up your knowledge of English before starting with the premaster programme.

Mathematics

Students who do not meet the mathematics criteria need to upgrade their deficiencies. This can be done through for instance:

1. http://www.boswell-beta.nl/
2. A State exam, see http://www.ccvx.nl/

General Information

Introduction for new students

An introduction for (pre-)master students takes place during the last week of August. This introduction, called Kick-In at the University of Twente, is important to get acquainted with fellow students and educational facilities of the University. **This information is not offered again during the (pre-)master programme**. If you cannot be present you can gather your information via our website or ask fellow students. For participation in the introduction programme you have to register: http://www.kick-in.nl/

Electronic systems

Below you find additional information about a few electronic systems.
These systems can be accessed through http://my.utwente.nl
Additional information about the kick-in can be found on http://www.utwente.nl/bms/kick-in/

Courses

In the course catalogue of Osiris, you can find course descriptions:
https://osiris.utwente.nl/student/OnderwijsCatalogus.do.
When a course is not yet available, you can find the information by searching (use the course name) at the previous academic year.

Osiris

Grades and progress are registered in Osiris. Before starting your courses you have to register yourself for them in Osiris. When you are registered in Osiris you also are registered for the exam of that course and you automatically have access to Canvas, the electronic learning environment.
You can register yourself in Osiris with your student account + password. For further information see http://www.utwente.nl/onderwijssystemen/en/

Canvas

The University uses Canvas as an electronic learning environment.
Canvas is our communication channel for course content, exams etc.

Time table/*schedule*

Information concerning time schedules can be found on *mytimetable*, through http://my.utwente.nl

Books

You can order your books, with discount, via the Study association Stress. But first, you have to register as a member of Stress, see https://www.stress.utwente.nl/
If readers are used, you can buy them in the first week of education at the Union shop in the 'Bastille' building.

Examination

Per course the examination differs:	Exam type	Lecturer
1. Calculus A (202001172, 4 EC)	Exam	dr. ir. A. Braaksma
2. Academic skills for premaster IEM (202000451, 5 EC)	Assignment (individual)	dr. I. Syran Topan
3. OR models for premaster IEM (202000450, 10 EC)	Exam + group assignment	dr. E. Topan
4. Statistics and Probability Theory (202001176, 5 EC)	Exam	dr. A.K. Sinha
5. Data Analysis and Programming (202300167, 3 EC)	Assignment(s) + exam	dr. B. Alves Beirigo
6. Operations Strategy (202000397, 3EC)	Exam	dr.ir. P. Hoffmann
7. Financial Engineering for premaster IEM (202000454)	Exam + assignment	dr. B. Roorda

Rules
Information concerning rules and regulations can be found on
https://www.utwente.nl/en/bms/education/regulations/

During the introduction, an overview of the most important issues will be given.

Contact

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