Curriculum 2020-2022

Director of degree programme: Assistant Professor Jens Schmidt

Degree: Master of Science (Technology), 120 ECTS

Abbreviation: IEM

Industrial engineering and management as a field

The Industrial Engineering and Management (IEM) programme provides students with the essential skills and entrepreneurial mindset to create and transform technology-based businesses. The programme is a unique combination of engineering, business and leadership studies that empower top-tier future leaders to create value and sustained competitive advantage for organisations. Graduating engineers from the programme are prepared for challenging positions to solve the most complex business problems including crafting strategies, developing daily operations and designing future organisations.

Alumni of the programme have taken expert and leadership positions in a number of different types of companies, ranging from start-ups to large multinational companies, as well as public and non-profit organizations. They have co-founded a several startups (including some of the fastest-growing companies in Europe) and have been involved in and supported some of the major strategic decisions taken by a number of multinational companies. There is an active community of alumni that is closely involved with the current generation of students and actively participates in events jointly organized by alumni, students and faculty.

Learning outcomes

Businesses are increasingly shaped by technology. Therefore, the programme prepares graduates to lead and develop technology-based businesses by combining engineering, economic, and human perspectives. Industrial Engineering and Management programme graduates have:

- An integrative understanding of technology and business. Graduates understand engineering processes, technical systems and underlying technologies and how they are connected to the value creation process of businesses.
- Strong leadership and people skills. Graduates are equipped to lead and develop organisations and motivate people to realise their inherent potential.
- Practical problem-solving skills. Graduates possess applicable practical skills to solve complex business problems, for example by leveraging sophisticated data analytics.
- A can-do attitude. Graduates are confident and willing to face challenges and tackle new tasks with determination.
- An entrepreneurial mindset. Graduates are able to identify innovative opportunities for adding value for technology-based businesses.
- Broad knowledge of various organisations. Graduates are able to apply their learnings to a wide scale of technology-based businesses from early-stage startups to large multinational corporations.
- Hands-on experience. Graduates have practical experience in putting the theories into action within the context of technology-based businesses.
- Knowledge and skills needed to follow and articulate the scientific development within the field of the chosen major and/or minor as well as to apply scientific knowledge and scientific methods independently, which also provide a solid basis for scientific postgraduate education.

Upon graduation from the IEM programme, graduates have solid competence in engineering and business as well as widely applicable practical leadership and problem-solving skills.

Degree structure

- Major (45 ECTS)
- Master’s thesis (30 ECTS)
- Minor (20 ECTS)
- Elective studies (25 ECTS)

Students must choose a major from one of the following three options:

- Operations Management
- Organization Design and Leadership
- Strategy.

The major consists of 4 core courses that are common for all students (one course from each of the 3 majors areas and a course on data analytics that covers topics from each of the 3 majors). In addition, there are two major-specific courses and a research assignment which includes doing a scientific study on a topic related to the chosen major. The master's thesis is also typically done one a topic related to the chosen major.
The degree includes a minor, chosen from an appropriate field of engineering. There are restrictions on the choice of the minor. Depending on the content of the bachelor’s studies the choice of minor can also be free (i.e. the minor need not be from a field of engineering and the restrictions on the choice need not apply).

Each of these elements are described in detail in this guide.

Planning and scheduling of the studies

Each student’s major and minor are confirmed in the Personal Study Plan.

In order to support graduation in 2 years, it is important to recognize the critical path. **Students are encouraged to choose their major before the 1st year starts.** Thereby, the first autumn emphasizes the compulsory courses of the major enabling the research assignment already in the first spring (or the 2nd autumn). The research assignment is a prerequisite for starting the master’s thesis. Although the intensive work takes place in the 2nd spring, preparations for the master’s thesis should gradually start in the beginning of the second year. The choice and timing of the optional courses of the major should support the progress in the critical path.

During the 1st autumn, students should choose their minor (whether the choice is restricted of free). In the planning and scheduling of studies, students should take into consideration quotas, prerequisite knowledge and the suggested sequence for the courses in the minor. The sooner the choice of the minor is made; the more possibilities a student has to level the overall workload without delaying the graduation. Likewise, planning of a semester in a foreign university becomes easier.

The last element in making the personal study plan is choosing the electives.