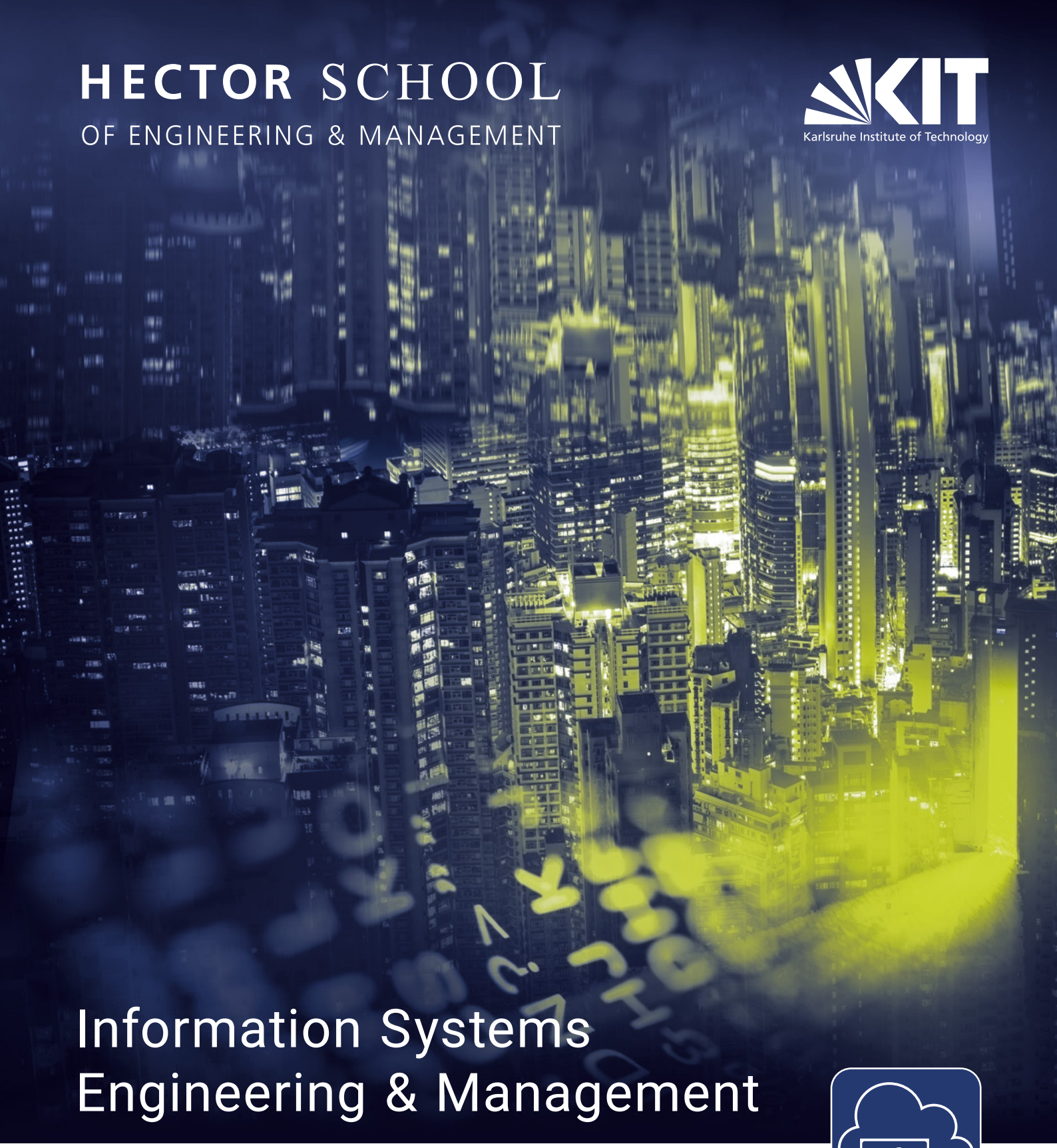
HECTOR SCHOOL
OF ENGINEERING & MANAGEMENT

KIT
Karlsruhe Institute of Technology



Information Systems Engineering & Management

Executive Master's Program

Digital Transformation of Products, Services, and Organizations

Download this brochure

KIT – The Research University in the Helmholtz Association

The KIT is system-accredited by aaq

Become a HECTOR School Master

Leadership Know-How for Demanding Careers

»Studying at the HECTOR School was exactly the right decision. Besides the studies themselves, the network makes the HECTOR School unique. Through the studies, new friendships have formed and even years later you have the opportunity to be connected through the alumni program and always meet new, exciting people. In the meanwhile, my co-workers are studying at the HECTOR School.«

Britta Daffner
Alumna of Intake 2014

»The master program offers an excellent synergy of the disciplines informatics, business administration and international law. Close collaboration with lectures and applied studies in small groups with students from several industries supported me to share knowledge and bring state-of-the-art expertise into my business. Thanks to the well organized program and compact lecture sessions, I was able to successfully manage my studies alongside my job. In summary, the Master´s program enriched both my expert knowledge and professional career.«

Oliver Gündling
Alumnus of Intake 2005

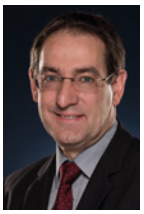
Voices
More Alumni

Executive Master's Program

Information Systems Engineering & Management

MARKETING & DATA IT SAFETY & SECURITY AUTONOMOUS ROBOTICS AGILE & SELF-ORGANIZING NETWORKS DECISIONS & RISK SERVICE SYSTEMS CLOUD ENGINEERING IOT & INDUSTRY 4.0 PRESCRIPTIVE ANALYTICS FINANCE & VALUE MOBILE BUSINESS & COMMUNICATION BIG DATA ARTIFICIAL INTELLIGENCE DIGITALIZATION STRATEGY & PEOPLE INNOVATION & PROJECTS MACHINE LEARNING DISTRIBUTED SYSTEMS SERVICE ENGINEERING

Program Directors



Prof. Dr. Andreas Oberweis
Institute of Applied Informatics & Formal Description Methods, KIT

Prof. Dr. Ralf Reussner
Institute for Program Structures and Data Organization, KIT

Prof. Dr. Martin E. Ruckes
Institute of Finance, Banking, and Insurance, KIT

Recent advances in information technology (IT), such as artificial intelligence (AI), blockchain, cloud computing, machine learning, and the Internet of Things (IoT), are rapidly transforming business and society. Software-implemented IT services now play a critical role in both internal operations and customer interactions, driving the need for companies to adopt digital strategies and integrate digital products and software services across all their business processes to stay competitive.

The Master Program in Information Systems Engineering & Management (ISEM) equips graduates to lead this digital transformation by combining advanced IT expertise with strong management skills. Graduates are trained to address digitalization challenges from both business and engineering perspectives, using modern management approaches to foster innovation and improve processes. The program emphasizes the strategic use of IT to develop forward-thinking digital solutions that enhance organizational performance.

Students gain in-depth knowledge of cutting-edge technologies, including AI, IoT, blockchain, and machine learning. They learn how to leverage these tools to design and optimize digital platforms and services, using cloud infrastructure and advanced data analytics to turn big data into actionable insights. A strong focus on security and privacy ensures that graduates can design systems that protect critical infrastructure and sensitive information in an interconnected world.

ISEM students can specialize in fields such as digital services or autonomous systems, gaining expertise in areas like automation, robotics, and smart technologies, which are key to future business innovation and efficiency.

Alongside technical expertise, students complete management modules shared with other programs at HECTOR School, covering strategy, finance, project management, and innovation. This interdisciplinary learning enables graduates to assess the broader business implications of technology decisions and apply a comprehensive approach to digital leadership.

By combining cutting-edge IT knowledge with business acumen, ISEM graduates are well-positioned to lead organizations through digital transformation, driving innovation and shaping the future of business in a technology-driven world.

Engineering Modules (EM)

Digital Transformation of Products, Services, and Organization

»Digitalization enables new business models, creates new service opportunities and redefines existing products. All of that is done through software implemented innovation. This transforms our economy towards software realized added values in an unprecedented way. Hence, the capabilities of efficiently developing high quality software are becoming crucial for nearly for all enterprises. In our Master´s program Information Systems Engineering and Management accordingly we concentrate on software engineering, software quality, in particular security, cloud service engineering and AI technologies.«

Prof. Dr. Ralf Reussner, Program Director ISEM

EM 1	**Digital Platforms & AI**	
Courses	Enterprise Systems, Emerging Technologies & Critical Information Infrastructure, Applied Artificial Intelligence, AI and Data Law	
EM 2	**Software Engineering**	
Courses	Software & Systems Engineering, Advanced Web Applications, Cloud Computing	
EM 3	**AI Supported Process & Knowledge Engineering**	
Courses	Business Process Engineering, Process Mining, Data & Knowledge Engineering, Big Data Management	
EM 4	**Security & Privacy Engineering**	
Courses	Information Security, Applied Cryptography, Network Security, Data Protection Regulations, Software Security Engineering	
EM 5	**Specialization Digital Services**	**EM 5** **Specialization Autonomous Robotics**
Courses	Service Innovation, Service Design Thinking, Digital Service Business Models & Transformation, Artificial Intelligence in Service Systems	Courses: Autonomous Robotics Lab
Crash Course	**Probability and Statistics**	
	We highly recommend all applicants to participate in the course to update the technical knowledge, as it might be the crucial factor for a successful degree at the HECTOR School.	

Curriculum may be subject to change.

EM 1: Digital Platforms & AI

The module enables participants to understand and design digital platforms for organizations and markets in order to drive internal and external digitalization. The module first introduces state-of-the-art Enterprise System platform architectures and concepts covering a process-, information-, and people-centric perspective. Furthermore, participants understand trade-offs between standardization and flexibility and know how to leverage digital platforms in organizations in order to find a good balance. Complementing the organizational perspective, market engineering puts an emphasis on the design of information-centric markets and services in order to realize new digital business models. Finally, this module also introduce key concepts and technologies of the Internet of Things (IoT) as an enabler for realizing contemporary digital platforms.

EM 2: Software Engineering

This module focuses on two important aspects: first, the fundamental principles, methods and tools behind state-of-the-art software & systems engineering are introduced, and second principles for advanced Web applications as well as cloud computing concepts and technologies are explained. In a first step, the participants obtain a detailed overview of the stages of software systems development and they are qualified to apply the required methods and tools in the development process. Both, the well-established software systems development lifecycle as well as the agile software development approach will be introduced and discussed. Current modeling and programming languages e.g., HTTP, SOAP or WSDL, explain the architecture of Web applications. The participants will learn how advanced Web applications need to be engineering on this basis. Finally, cloud computing concepts and technologies taught within the module enable the participants to assess the opportunities and challenges of web-scale service applications.

EM 3: AI Supported Process & Knowledge Engineering

In organizations, processes and knowledge are known to be closely linked to one another. In this module, the participants gain the ability to effectively and efficiently adapt the particular demands of business processes following an engineering approach leveraging appropriate methods and tools. Furthermore, participants learn methods and tools of process mining that follows a data-driven approach for process analysis and optimization. Understanding the need for data & knowledge engineering in businesses, participants of this module are also able to implement concepts for the modeling, representation, and management of data and knowledge. Finally, with the rise of Big Data participants acquire the necessary skills to implement and manage large-scale Big data solutions.

Master the Digital Transformation and Bridge the Gap Between IT and Business

EM 4: Security & Privacy Engineering

Today's information systems are required more than ever to guarantee security and privacy. This modules enables participants to acquire the necessary knowledge to systematically engineer security and privacy in information systems. This module first introduces information security to prevent, detect, document and counter threats to information. Second, key concepts of applied cryptography are introduced. Legal aspects play a critical role in security & privacy engineering. Therefore, the fundamental legal concepts of data protection regulation are explained. Complementing the security perspective, information privacy and privacy enhancing technologies are discussed. The module is complemented with a specific emphasis on critical infrastructures and the role security & privacy engineering plays in these infrastructures.

EM 5: Specialization Digital Services

Services already account for more than 60% of the gross value added of developed economies, and even product companies are increasingly tapping into the application processes of their customers ("servitization"). This underscores the importance of comprehensive knowledge on how to strategically use, design, engineer, and manage services. Current trends, such as digital nature, data & analytics, and system & platform perspectives, make familiarity with digital services a must for any future leader.

Digital Nature: The digital creation and delivery of these services opens up a range of possibilities, such as immediate globalization capabilities, agile development and deployment (DevOps), the simple inclusion of open innovation concepts, or the personalization of delivered solutions.

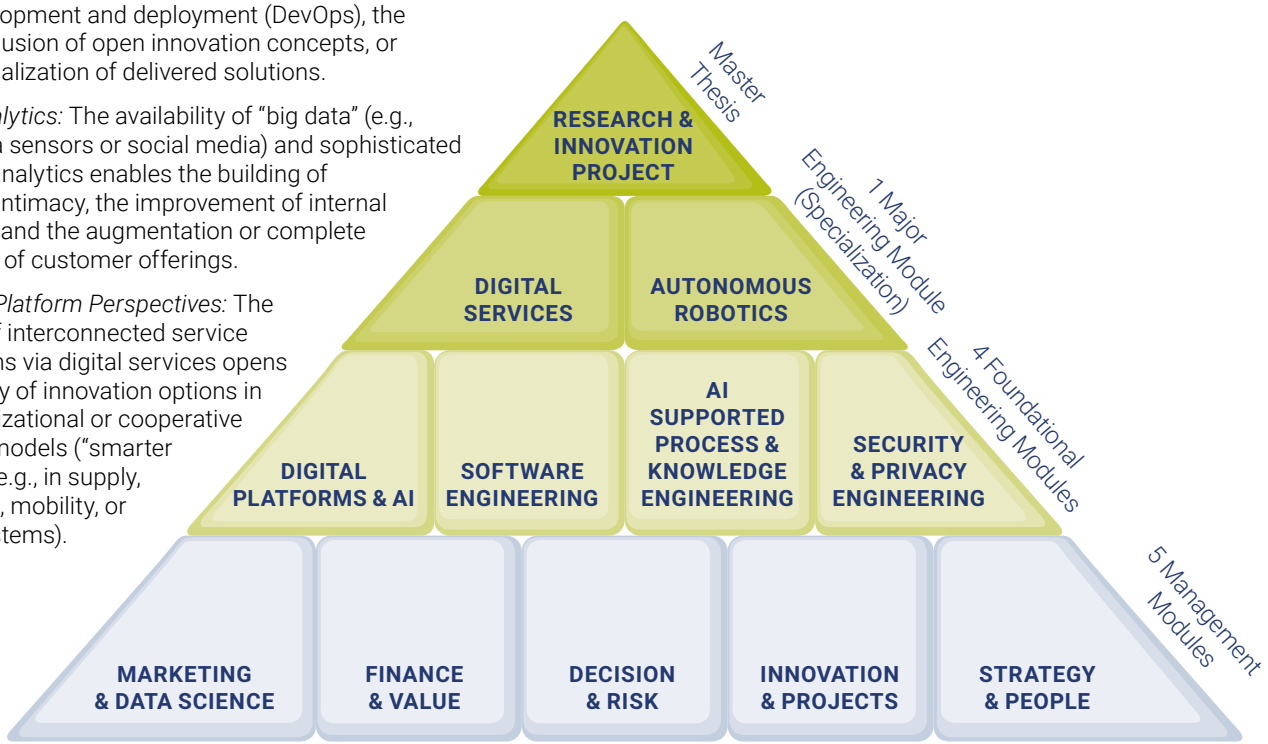
Data & Analytics: The availability of "big data" (e.g., created via sensors or social media) and sophisticated AI-based analytics enables the building of customer intimacy, the improvement of internal efficiency, and the augmentation or complete innovation of customer offerings.

System & Platform Perspectives: The concept of interconnected service ecosystems via digital services opens up a variety of innovation options in interorganizational or cooperative business models ("smarter systems," e.g., in supply, healthcare, mobility, or energy systems).

EM 5: Specialization Autonomous Robotics

The 'Autonomous Robotics' specialization introduces you to the opportunities and challenges of designing, building, and controlling autonomous robots in a manufacturing or logistics environment.

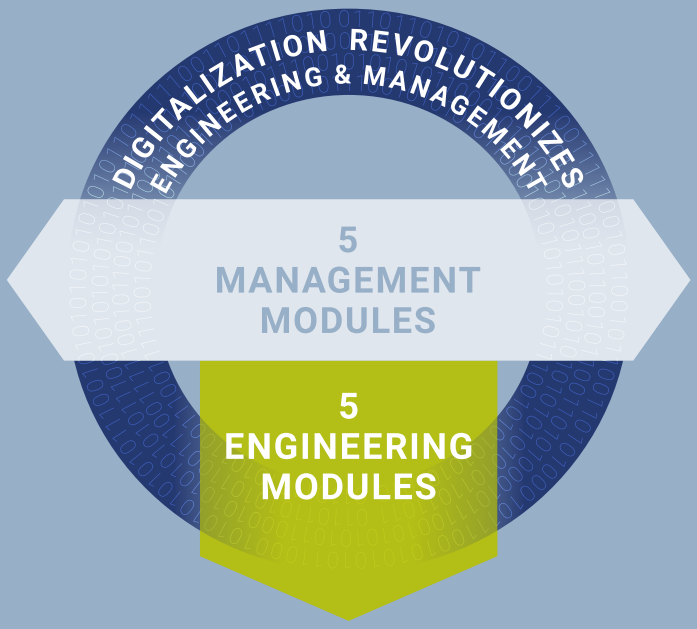
Working hands-on in teams in a logistic laboratory, you will be introduced to the fundamental concepts of autonomous control in robotics. At the same time, you will work on a task that requires collaborating robots. You will be able to design and optimise suitable software approaches for various collaboration scenarios. Finally, you will connect your devices with those developed by other teams in the module to solve challenging tasks together.



Modular Program Structure

Management Modules (MM)

Economic Know-How for Successful Managers



MM 1	Courses	**Marketing & Data Science** Data Driven Marketing, Information Systems Management, Data Analytics, Legal Aspects of Information
MM 2	Courses	**Finance & Value** Management Accounting, Sustainability, Strategic Financial Management, Case Studies
MM 3	Courses	**Decisions & Risk** Decision Modeling (+Computer Tutorials), Risk Aware Decisions (+Case Studies+Finance), Interactive Decisions, Robust and Stochastic Optimization
MM 4	Courses	**Innovation & Projects** Technology Driven Innovation, International Intellectual Property Law, Project Management, Multi-Project Management in an International Setting
MM 5	Courses	**Strategy & People** Strategic Management, Managerial Economics, Business Organization and Corporate Law, Strategic Human Resource Management, Leadership and Conflict Management

Curriculum may be subject to change.

Big Picture Management Modules

Management is becoming increasingly important in data-driven organizations, while at the same time becoming more complex and interconnected. Engineers and managers need to have a holistic understanding of all areas of the business in order to make the right decisions. This also means that innovation must be viewed and experienced as an integrated system from the perspective of the market, the employees and the company. All of the HECTOR School's Master's programs therefore include five management modules in which the latest theories and methods are taught.

Participants from different industries and international locations can share their expertise, discuss current technological and business challenges from different perspectives, and build a sustainable network of peers.

MM 1: Marketing & Data Science

This module equips participants with the tools to harness data and technology for effective decision-making in marketing and business contexts. It covers techniques for analyzing and transforming data into actionable insights, managing information systems to bridge business and IT, and understanding the legal frameworks for data and privacy protection. Through practical case studies and applied learning, participants gain skills essential for thriving in today's data-driven, digital economy.

MM 2: Finance & Value

Modern corporate governance is based on value creation. This module empowers participants to navigate financial complexities and sustainability challenges. It covers cost analysis, decision-making, and planning tools for effective management while exploring the circular economy and key sustainability indicators. Participants also gain insights into investment valuation, capital budgeting, and corporate finance strategies. A hands-on group project enhances analytical and strategic skills, applying theoretical knowledge to real-world company valuations for informed decision-making.

MM 3: Decisions & Risk

Successful management requires making the right decisions. This module develops participants' ability to make informed decisions under uncertainty. It covers quantitative decision modeling, risk-aware strategies, and robust and stochastic optimization for managing in uncertain environments. Participants also gain a rigorous understanding of game theory and its applications in strategic interactions. Through practical computer tutorials and theoretical frameworks, the module equips participants to model, analyze, and optimize decisions in complex, interconnected systems with confidence and precision.

MM 4: Innovation & Projects

In this module, participants learn to develop products and business models based on technology-driven innovation, assess technological potential, and address intellectual property challenges. It also provides traditional and adaptive project management skills for dynamic, fast-paced markets. Through interactive lectures and exercises, participants gain tools to initiate, plan, and implement projects, balancing agility and discipline in evolving business environments.

MM 5: Strategy & People

In today's fast-paced business world, this module prepares participants to tackle strategic challenges while fostering employee engagement and creativity. Combining business strategy, corporate law, and HR development, the module addresses competitive advantage, corporate governance, and global teamwork. Participants explore leadership concepts, digital transformation, and incentive systems, applying evidence-based tools in case studies and practical exercises. Participants will be able to analyse and understand strategic corporate goals in dynamic markets from a human-centred perspective.

»It was important for me to concentrate 100% on practice and my studies. Thanks to the block phases offered by the HECTOR School, I can be fully involved in both the project and the university. In terms of content, I like the general insight into all the important management methods of a company and the insight into relevant tech solutions on the market.«

Samantha Butz

Alumna of Intake 2018

Technology & Management Know-How

Quality Made by the Karlsruhe Institute of Technology (KIT)

The HECTOR School is the Technology Business School of the Karlsruhe Institute of Technology (KIT). It is named after Dr. Hans-Werner Hector, one of the co-founders of SAP SE.

The school's mission is to provide working professionals with state-of-the-art technological expertise and management know-how through part-time educational programs. The HECTOR School promotes lifelong learning within the industry. Participants are supported in their career development through executive master's degree programs, certificate courses, and customized partner programs.

The benefits of the executive master's programs are numerous, both for the participants and for the companies they work for:

- **Unique Holistic Approach:** A combination of technology expertise and management know-how.
- **State-of-the-Art Knowledge:** Direct transfer from research at the Karlsruhe Institute of Technology (KIT).
- **Part-Time Structure:** Allows participants to continue with their demanding careers while acquiring new skills.
- **Master Thesis to set up Innovation Projects:** Companies gain outstanding added value through the consultation of such projects by professors from KIT.
- **Excellent Networking Opportunities:** Professional networking is fostered across industries and on an international scale.

Portrait of the HECTOR School

QS World University Ranking 2026

Worldwide Standing	Among the best	Ranking in Germany	Ranking in Europe
#98	7%	#5	#59

Executive Education @HECTOR School

1 Technology Transfer & Innovation

from the internationally renowned university - the KIT.

2 Power of Networks

benefit from a comprehensive professional network of academemics and industry partners worldwide.

3 Part-Time Programs

allow for simultaneous work and study for participants and their companies.

4 Management & Engineering

combined makes our programs unique

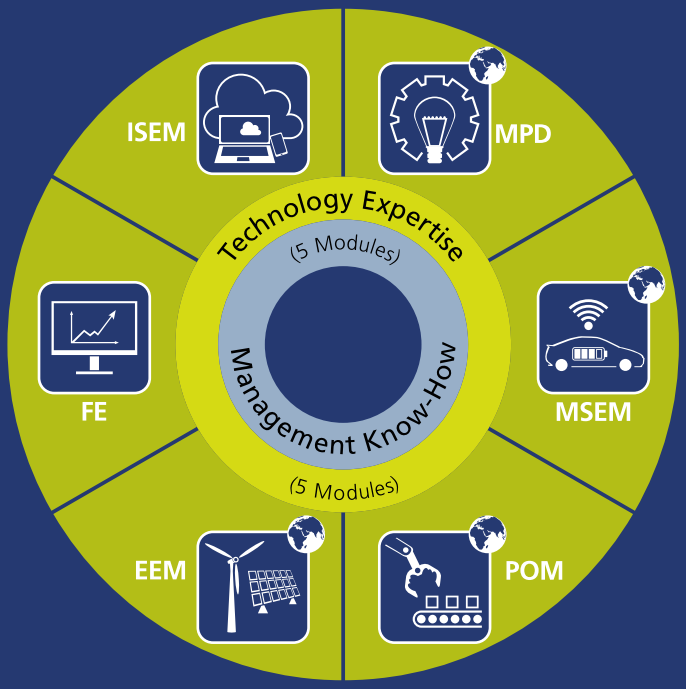
and ensures long term sustainability and competitiveness.

4 REASONS

for the Technology Business School of the KIT

Executive Master of Science Programs

Cutting Edge Technology Combined with the Latest Management Expertise



EEM	Energy Engineering & Management
FE	Financial Engineering
ISEM	Information Systems Engineering & Management
MPD	Management of Product Development
MSEM	Mobility Systems Engineering & Management
POM	Production & Operations Management

= including module at another international location

Key Facts

Part-Time Master´s Program, English-Taught, Duration of 20 Months

Academic Degree

Master of Science (M.Sc.) from the KIT

Accreditation

The KIT is system-accredited by AAQ.

All HECTOR School Master's Programs are accredited by the internal quality assurance system of the KIT.

Admission Requirements

A first academic degree: e.g. Bachelor, Master or Diploma

At least 1-2 years work experience (depending on the level of the first degree, recommended > 3 years)

If English is not your mother tongue nor has it been the language of instruction for the last five years, language proficiency is required, e.g. test certificate (e.g. TOEFL score of at least 570 PBT; 230 CBT; 90 iBT or IELTs at least 6,5 points) or appropriate proof of C1 level.

Program Structure

Part-time, 10 x 2-week modules

Duration of approx. 20 months

Master thesis = project work in the company

5 engineering and 5 management modules

Teaching language: English

Yearly program start: October

Academic Calendar

Job-Compatible Format and an Ideal Work-Study Balance

September 2025

Mon	Tue	Wed	Thu	Fri	Sat	Sun
01	02	03	04	05	06	07
08	09	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
MM1	30					

October 2025

Mon	Tue	Wed	Thu	Fri	Sat	Sun
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20	21	22	23	24	25	26
27	28	29	30	31		

November 2025

Mon	Tue	Wed	Thu	Fri	Sat	Sun
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03	04	05	06	07	08	09
EM1	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

December 2025

Mon	Tue	Wed	Thu	Fri	Sat	Sun
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29	30	31				

January 2026

Mon	Tue	Wed	Thu	Fri	Sat	Sun
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MM2	13	14	15	16	17	18
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February 2026

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EM2	24	25	26	27	28	

March 2026

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April 2026

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MM3	14	15	16	17	18	19
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27	28	29	30			

May 2026

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June 2026

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EM3	09	10	11	12	13	14
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July 2026

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EM4	14	15	16	17	18	19
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August 2026

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24	25	26	27	28	29	30
31						

September 2026

Mon	Tue	Wed	Thu	Fri	Sat	Sun
	01	02	03	04	05	06
07	08	09	10	11	12	13
MM4	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

October 2026

Mon	Tue	Wed	Thu	Fri	Sat	Sun
			01	02	03	04
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19	20	21	22	23	24	25
EM5	27	28	29	30	31	

November 2026

Mon	Tue	Wed	Thu	Fri	Sat	Sun
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30						

December 2026

Mon	Tue	Wed	Thu	Fri	Sat	Sun
	01	02	03	04	05	06
MM5	08	09	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Welcome Event
MM Management Modules
EM Engineering Modules
Exams

Please note: Dates are subject to change.

The academic calender for each program starts annually in October.
It consists of 10 modules, each with a duration of 2 weeks.

All programs conclude with a **Master Thesis**:

>> 9 months project work **MPD, POM, MSEM, EEM**

>> 6 months project work **ISEM, FE**

Intake 2025

Our Programs

Course Guide Book

Download Timetable

HECTOR SCHOOL
OF ENGINEERING & MANAGEMENT

Do you have questions? We are looking forward to assisting you.

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Head of Business Development and Communications

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Martina Waldner
Senior Program Consultant

Yaxian Liu
Program Consultant

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Hanna Meinzer
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Lea Skiljo
Manager Operations

Stine Ullum
Manager Operations

Janina Guptill
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Jelena Parassidis
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More about our Services

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