

# Module Handbook

## Health Technology Management

As of: Update 04.2026

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## Compulsory modules

76001	Scientific Methods/Statistics
76002	Project/Process Management
76003	General Management
76006	Risk Management
76004	Regulatory Affairs/Ethics
76005	Leadership 4.0
76007	Health Technologies and Innovation Management
76008	Medical Data Fusion and Artificial Intelligence
76010	Master's thesis

## Elective

76810	Elective Module – HTM 1
76811	Elective Module – HTM 2
76812	Elective Module – HTM 3
76813	Elective Module – HTM 4
76051	International Health Technology Management 1
76052	International Health Technology Management 2
76053	International Health Technology Management 3
76054	International Health Technology Management 4
76055	International Health Technology Management 5
76056	International Health Technology Management 6

## Elective modules (examples)

76820	Interdisciplinary Research Project
76821	Advanced Interdisciplinary Research Project
76815	Communication, Movement, and Expression
76281	Medicine for non physicians
76019/76022	Advanced Medical Technologies
xxx	Health Market Access

### Key Abbreviations Credit

PLK	Written examinations
PLM	Oral examination
PLS	Term paper/research report
PLR	Presentation
PLL	Laboratory work
PLA	Practical work
PLP	Project
PLE	Draft
PLF	Portfolio
PPR	Internship
PLT	Learning diary
PMC	Multiple choice
PLC	Multimedia-based examination (e-exam)

### Key Abbreviations Type of course

V	Lecture
E	Excursion
L	Laboratory
Ü	Exercise
S	Seminar
P	Project
PR	Internship
K	Colloquium
EX	Experiment
EL	E-learning
X	Not fixed

**Module name: 76001 Scientific Methods / Statistics**

<b>Degree</b>	Health Technology Management – (M.Sc. HTM)
<b>Module coordinator</b>	Prof. Dr. Anne STUMPER
<b>Module type</b>	Compulsory module
<b>Semester</b>	1st semester
<b>Module duration</b>	1 semester
<b>Number of courses</b>	2
<b>Frequency</b>	Winter
<b>Credits</b>	5
<b>Workload Attendance</b>	60 hours
<b>Workload for self-study</b>	90 hours
<b>Prerequisite for participation requirements Module</b>	Content-related prerequisite: none
<b>Use in other S G</b>	
<b>Language</b>	English

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**Module objectives****Technical skills**

After successful completion of the module, students:

- analyze empirical questions on health technologies (e.g. effectiveness, safety, usability, cost-effectiveness) and design suitable qualitative and quantitative study designs.
- structure and manage health-related datasets in statistical programs (e.g. R / python, SPSS, basic skills for programs will be acquired during the module), analyze these data with appropriate statistical procedures and document their workflow in a reproducible way.
- interpret and evaluate descriptive and inferential statistical results in the context of health technologies and justify the choice of methods used.
- search, select and critically evaluate scientific literature (e.g. clinical studies, HTA reports) and synthesize results by calculating and interpreting effect sizes as well as conducting simple meta-analytic evaluations on provided or self-prepared data.
- create a methodologically sound analysis concept for a term paper and integrate literature findings with their own statistical results.

**Interdisciplinary skills**

After successful completion of the module, students:

- plan, organize and monitor their self-study independently, select relevant literature and learning resources, and evaluate their own learning progress on the basis of criteria they have developed.
- collaborate, coordinate tasks (literature search, data extraction, analysis, reporting) and resolve conflicts constructively in interdisciplinary teams and study groups.
- present, defend and critically reflect their methodological decisions and statistical results in written and oral form and revise their work (e.g. term paper concept) based on structured feedback.

**Learning content**

- Principles of scientific work and study design in the Health Sector
- Quantitative and qualitative methods
- Statistical software (e.g. R / SPSS / python) and data management
- Descriptive statistics
- Fundamentals of inferential statistics
- Frequency analysis
- Parametric and nonparametric tests for differences
- Correlations and regressions
- Literature-based data synthesis and meta-analytic thinking
- Application to term paper
  - Developing a research question based on the literature and practical HTM problems
  - Analyzing and evaluating the results and integrating them with the literature to derive conclusions for health technologies
  - Creating a structured, scientifically sound term paper (introduction, methods, results, discussion, implications for practice) and reflecting on its strengths and limitations

**Literature**

Own script

W. Köhler, G. Schachtel & P. Voleske (2012). Biostatistik. Springer-Verlag.

L. Sachs & J Hedderich (2006). Angewandte Statistik – Methodensammlung.

J Bortz & GA Lienert (2008). Kurzgefasste Statistik für die klinische Forschung: Leitfaden für die verteilungsfreie Analyse kleiner Stichproben. Springer-Verlag.

Kleppmann, W. (2020), Versuchsplanung: Produkte und Prozesse optimieren (Experimental Design: Optimizing Products and Processes), 10th revised edition, Carl Hanser Verlag, Munich

Trimmel, M. (2009), Scientific Work in Psychology and Medicine, UTB-Verlag

Weiß, C. (2019), Basic Knowledge of Medical Statistics, 7th completely revised edition, Springer-Verlag, Munich

**Courses included (LV)**

Course no.	Name of course	Instructor	Type	SWS	CP
76101	Scientific Methods	Prof. Dr. Stumper	V/Ü	2	3
76102	Statistics	Prof. Dr. Stumper	V/Ü	2	2

**Module examination** (prerequisite for the awarding of credit points)

Course no.	Type and duration of performance assessment	Determination of module grade	Comment
76101/ 76102	PLP	50	Exposé + Term paper
76101/ 76102	PLK	50	

**Requirements for admission to the module examination:** The prerequisite for participation in the exam is the submission of the term paper.

**Further feedback during the course:** Exposé evaluation during the semester

**Comments:** none

**Last update:** April 2026, Prof. Dr. Anne Stumper

**Module name: 76002 Project/Process Management**

<b>Degree</b>	Health Technology Management – (M.Sc. HTM)
<b>Module coordinator</b>	Prof. Dr. Anne STUMPER
<b>Module type</b>	Compulsory module
<b>Semester</b>	1st semester
<b>Module duration</b>	1 semester
<b>Number of courses</b>	2
<b>Frequency</b>	Winter
<b>Credits</b>	5
<b>Workload Attendance</b>	45 hours
<b>Workload for self-study</b>	105 hours
<b>Participation prerequisite requirements Module</b>	Formal: none Content: none
<b>Use in other SG</b>	
<b>Language</b>	English

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**Module objectives****Technical skills**

After successful completion of the module, students:

- analyze and design project procedures in a complex exercise project by systematic methodological components of classic and agile project management (e.g. water
- develop and justify alternative hypotheses for possible project procedures, evaluate on the basis of defined criteria and select a preferred course of action.
- create, document and structure project results and present and defend them in a group-oriented manner in front of the group and the (fictional or real) client.
- evaluate and critically discuss process structures, process requirements and the
- assume leadership responsibility in project contexts by linking and applying method components (planning, implementation, controlling/management).
- present and explain the current project status to clients and stakeholders and justify the plan as well as derived control measures.

**Interdisciplinary skills**

After completion of the module, students:

- negotiate, structure and coordinate the distribution of tasks in the project (project management, work package responsibility) and reflect on their own roles
- experiment with and evaluate different roles (e.g. project manager, team member) and derive conclusions for their own leadership and collaboration style.
- collaborate, communicate and resolve conflicts constructively in interdisciplinary and integrate different perspectives into joint project solutions.

work on exercise project topics with a high social context and thereby analyze and discuss interdisciplinary issues (e.g. ethical, economic, social aspects) and derive well-founded recommendations for action.

## Learning content Project management

- Fundamentals of classic project management
- Fundamentals of agile project management and common methods
- Comparison and integration of classic and agile methods
  - Analyzing and contrasting strengths and weaknesses of classic vs. agile approaches
  - Use cases and hybrid project management (e.g. waterfall with agile components)
  - Designing and justifying a suitable project approach for given case studies
- Project work
  - Planning and designing a fictional project in small groups
  - Applying and documenting project management methods (classic and/or agile) to concrete project steps
  - Monitoring and evaluating project progress and handling deviations
  - Preparing, presenting and defending the individual steps and overall solution in front of the client and fellow students
  - Reflecting on project experiences (methods, roles, communication, leadership) and deriving improvement ideas

## Process management

- Fundamentals of the BPM life cycle
- Process mapping
- Process analysis
- Process implementation and monitoring
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## Literature

- Gerold Patzak, Günter Rattay, Project Management: A Guide to Managing Projects, Project Portfolios, Programs, and Project-Oriented Companies, Linde Verlag Vienna, 2009, 7th edition 2017
- Gray, Clifford F, and Larson, Erik W. Project Management: The Managerial Process. 8th ed., McGraw Hill, 2021.
- Dumas, Marlon, et al. Fundamentals of Business Process Management. Springer, 2013.
- Schwaber, Ken, and Sutherland, Jeff. "The Scrum Guide." Scrum Alliance, 2020.
- Wysocki, Robert K. Effective Project Management: Traditional, Agile, Extreme. 8th ed., John Wiley & Sons, 2019.
- Further references will be provided during the lectures.
- Lecture notes

## Courses included (LV)

Course no.	Name of course	Instructor	Type	SWS	CP
76103	Project Management	Prof. Dr. Anne Stumper	V, Ü	2	3
76105	Process Management	Prof. Dr. Anne Stumper	V, Ü	1	2

**Module examination** (prerequisite for the awarding of credit points)

Course no.	Type and duration of performance assessment	Determination of module grade	Comment
76103 76105	PLP PLK	50 50	PLP and PLK Each graded, PLP consists of an exposé and a presentation/poster presentation

**Requirements for admission to the module examination:** Participation in the exercise project; requirements for the exam are an exposé and a presentation/poster presentation

**Further feedback during the course:** Feedback on group work and presentation of interim and final results

**Comments:** none

**Last update:** April 2026, Prof. Dr. Anne Stumper

**Module number: 76003**

**SPO version: 34**

**Module name: 76003 General Management**

<b>Degree</b>	Health Technology Management – (M.Sc. HTM)
<b>Module coordinator</b>	Prof. Dr. med. Ralf von BAER
<b>Module type</b>	Compulsory module
<b>Semester</b>	1st semester
<b>Module duration</b>	1 semester
<b>Number of courses</b>	1
<b>Frequency</b>	Winter
<b>Credits</b>	5
<b>Workload Attendance</b>	45 hours
<b>Workload for self-study</b>	105 hours
<b>Prerequisite for participation requirements Module</b>	Formal: none Content: none
<b>Use in other SG</b>	
<b>Language</b>	English

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**Module objectives**

**Technical skills**

Students will be able to present management decisions, roles, leadership, and organizational forms, as well as specific problem areas in strategic corporate development, using exemplary business cases, identify possible alternatives, and critically compare them in context.

Students will be able to analyze companies or organizational units, identify critical issues, and present starting points for optimization.

Students will be able to explain and analyze the phases and instruments of strategic planning, strategies at various company levels, strategy implementation, and strategic control.

**Interdisciplinary skills**

Through comparison, collaboration, and direct exchange, students are able to interact socially and communicate effectively. Students are able to design, plan, prepare, and implement projects.

- Learning content**
1. Overview of general management – subject matter, topics, theories
  2. Goals, corporate philosophy, principles, and mission statements
  3. Functions and Levels of Management
  4. New forms of organization
  5. Managerial decisions, roles, and leadership
  6. Strategic corporate development and change management
    - a. Fundamentals of strategic management
    - b. Strategic corporate goals
    - c. Strategic analysis and forecasting
    - d. Strategy determination
    - e. Strategy implementation
    - f. Strategic control
  7. Special problem areas of strategic corporate development
    - a. Crisis and risk management
    - b. Management of mergers and acquisitions (M&A)
    - c. Internationalization of corporate management
  8. Overview of specific cross-functional tasks

In short projects, the course content is implemented in practical cases by individual groups, presented, and critically reflected upon by all students.

- Literature**
- Corporate Management: Management & Leadership  
by Ralf Dillerup & Roman Stoi
- Strategic Management: How Strategic Initiatives Lead to Change  
by Günter Müller-Stewens & Christoph Lechner
- Corporate Management: International Management Knowledge Concepts – Methods – Practice  
by Klaus Macharzina & Joachim Wolf
- Principles of General Management: The Art and Science of Getting Results Across Organizational Boundaries  
by John L. Colley Jr., Jacqueline L. Doyle, Robert D. Hardie, George W. Logan, Wallace Stettinius

**Courses included (LV)**

Course no.	Name of course	Instructor	Type	SWS	CP
76104	General Management	Prof. Dr. Ralf von Baer	V, Ü, P	3	5

**Module examination (prerequisite for the awarding of credit points)**

Course no.	Type and duration of performance assessment	Determination of module grade	Comment
76104	PLK (60 minutes)	60	
76104	PLP	40	Group project; throughout the semester

**Prerequisites for admission to the module examination:** none

**Further feedback during the course:** none

**Comments:** none

**Last update:** December 12, 2025, Prof. Dr. Ralf von Baer

**Module number: 76006**

**SPO version: 34**

**Module name: 76006 Risk Management**

<b>Degree</b>	Health Technology Management – (M.Sc. HTM)
<b>Module coordinator</b>	Prof. Dr. Markus GLASER
<b>Module type</b>	Compulsory module
<b>Semester</b>	1st semester
<b>Module duration</b>	1 semester
<b>Number of courses</b>	1
<b>Frequency</b>	Winter
<b>Credits</b>	5
<b>Workload Attendance</b>	45 hours
<b>Workload for self-study</b>	105 hours
<b>Participation prerequisite requirements Module</b>	Formal: none Content: none
<b>Use in other SG</b>	
<b>Language</b>	English

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**Module objectives**

**General**

The development of medical devices (including instruments, implants, prostheses, and equipment) for use on humans for the purpose of, among other things, detecting, preventing, monitoring, and alleviating diseases is subject to national legislation in compliance with national and international standards (norms). Risk management is a key factor in the development and approval of medical devices.

**Technical skills**

Students are able to define, apply, and analyze appropriate risk management for a medical device based on international standards. This includes the systematic analysis of hazards and the resulting risks. In addition, they can analyze and apply various risk reduction measures.

**Interdisciplinary skills**

Students are able to work together in a team, communicate with each other in a solution-oriented manner, and support each other.

**Learning content** Risk management – process  
 Risk analysis
 

- Purpose
- Hazard analysis
- Risk assessment

 Risk assessment
 

- Acceptability of risk

 Risk control
 

- Analysis of risk control options
- Implementation of risk control measures
- Assessment of residual risks
- Risk-benefit analysis
- Analysis of new risks
- Assessment & acceptance of the overall residual risk

 Production and post-production information

**Literature** Recommendation:  
 Schwanbom E., Kiecksee D., Professional Risk Management of Medical Devices; DIN e.V.  
 Leitgeb N., Safety of Medical Devices: Law – Risk – Opportunities, Springer  
 DIN EN ISO 14971: Risk Management for Medical Devices  
 Directive 93/42/EEC concerning medical devices

**Courses included (LV)**

Course no.	Name of course	Instructor	Type	SWS	CP
76106	Risk Management	Prof. Dr. Glaser	V	3	5

**Module examination (prerequisite for the awarding of credit points)**

Course no.	Type and duration of performance assessment	Determination of module grade	Comment
76106	PLP	100%	Throughout the semester

**Prerequisites for admission to the module examination:** none

**Further feedback during the course:** none

**Comments:** none

**Last update:** February 3, 2021, Prof. Dr. Markus Glaser

**Module number: 76004**

**SPO version: 34**

**Module name: 76004 Regulatory Affairs / Ethics**

<b>Degree</b>	Health Technology Management – M.Sc. HTM
<b>Module coordinator</b>	Prof. Dr. Anne Stumper
<b>Module type</b>	Compulsory module
<b>Semester</b>	2nd semester
<b>Module duration</b>	1 semester
<b>Number of courses</b>	1
<b>Frequency</b>	Summer
<b>Credits</b>	5
<b>Workload Attendance</b>	45 hours
<b>Workload for self-study</b>	105 hours
<b>Prerequisite for participation requirements</b>	Formal: none Content: none
<b>Use in other SG</b>	
<b>Language</b>	English

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**Module objectives**

**Technical skills**

Students will be able to identify the fundamental relationships between actors and contracts in the German healthcare system. They will also be able to name the fundamental provisions in other major international healthcare systems (e.g. USA, England, France). Students will be able to correctly classify the relevant regulatory framework with regard to different products and services. This includes, in particular, the regulatory framework (approval, benefit assessment, market launch, reimbursement) for different product groups (drugs, medical devices, cosmetics, PPA, and, in particular, digital health applications).

Students can explain the basic ethical requirements throughout the entire development and marketing process of health technologies. In particular, they can determine the legal and ethical standards for clinical trials specific to the type of technology (medical device, drug, etc.) and classify the role of ethics committees in the healthcare system. Fundamental ethical issues in healthcare, such as rationing/prioritization of services, brain drain from developing countries, planetary health and the cost of services and medications in relation to household income internationally, are examined. Students can discuss different approaches comparatively and determine possible solutions.

**Interdisciplinary skills**

Students are able to critically reflect on the economic, technical, and ethical aspects of implementing technologies in healthcare.

**Industry Insights**

Hands-on experience conveyed by industry experts gives students the opportunity to gain knowledge from experts within the healthcare system. The processing of case studies deepens the theoretical knowledge and students can apply learned concepts directly.

## Learning content

### *Regulatory Affairs:*

1. Legal framework, basic stakeholder and contractual relationships in the German healthcare system
2. Legal framework, basic stakeholder and contractual relationships in the international healthcare system
3. Approval of different health technologies and health related products
4. Required skillset for Regulatory Affairs Experts

### *Ethics:*

1. Legal and ethical requirements for clinical trials & healthcare companies
2. Fundamental ethical issues in the operational management of healthcare facilities in an international setting
3. Role of ethical framework legislation in healthcare systems
4. Planetary health
5. Digitalisation for supporting "Access for all" in healthcare

## Literature

REGULATION (EU) 2017/745 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC <https://eur-lex.europa.eu/eli/reg/2017/745/oj?locale=de>

Gesetz über den Verkehr mit Arzneimitteln, [https://www.gesetze-im-internet.de/amg\\_1976/](https://www.gesetze-im-internet.de/amg_1976/)

Busse, R., Blümel, M., Knieps, F., Bärnighausen, T.: Statutory health insurance in Germany. A health system shaped by 135 years of solidarity, self-governance, and competition. *The Lancet* 390 (10097), 882–897 (2017). doi: 10.1016/S0140-6736(17)31280-1

Schubert, T., Vogelmann, T. (Market Access in Medical Technology – With Many Practical Tips), Springer (2017). <https://doi.org/10.1007/978-3-658-23476-8>

Ezio Di Nucci: *Ethics in Healthcare: A Philosophical Introduction*, Rowman & Littlefield International, Limited, (2018)

Nancy Berlinger: *Are Workarounds Ethical?: Managing Moral Problems in Health Care Systems*, Oxford University Press (2016)

**Courses included (LV)**

Course no.	Name of course	Instructor	Type	SWS	CP
76201	Regulatory Affairs/Ethics	Regulatory Affairs: Prof. Dr. Anne Stumper & LB Haacke-Schäfer (2 SWS), Ethics: Prof. Dr. Ralf von Baer (1 SWS)	V, Ü	3	5

**Module examination (prerequisite for the awarding of credit points)**

Course no.	Type and duration of performance assessment	Determination of module grade	Comment
76201	PLK (60 min)	100	

**Prerequisites for admission to the module examination:** none

**Further feedback during the course:** none

**Comments:** Industry expert knowledge can be conveyed via block courses.

**Last update:** December 12, 2025, Prof. Dr. Ralf von Baer, December 17, 2025, Prof. Dr. Anne Stumper

**Module name: 76005 Leadership 4.0**

<b>Degree</b>	Health Technology Management – M.Sc. HTM
<b>Module name</b>	Leadership 4.0
<b>Module coordinator</b>	Prof. Dr. Angela Kuonath
<b>Module type</b>	Compulsory module
<b>Semester</b>	2nd semester
<b>Module duration</b>	1 semester
<b>Number of courses</b>	1
<b>Frequency</b>	Summer
<b>Credits</b>	5
<b>Workload Attendance</b>	45 hours
<b>Workload for self-study</b>	105 hours
<b>Prerequisite for participation requirements Module</b>	Formal: none Content: none
<b>Use in other other degree programs</b>	---
<b>Language</b>	English

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**Module objectives****Technical skills**

Students will be able to interpret core elements of modern corporate management and analyze and evaluate them in a corporate context. They will be able to discuss new approaches in the field of leadership and apply them to future corporate developments.

**Interdisciplinary skills**

Students will be able to research, develop, and discuss topics in English in groups. Presentation techniques and teaching skills will be strengthened in the process.

**Learning content**

- Application of established leadership and motivation theories to modern work environments
- Well-being & sustainable leadership

Redefining leadership in the age of AI  
Challenges and opportunities in modern leadership situations  
Case study on distance leadership

## Literature

Erner, M. (Hrsg.). (2019). Management 4.0 – Unternehmensführung im digitalen Zeitalter. Berlin, Heidelberg: Springer Gabler. <https://doi.org/10.1007/978-3-662-57963-3>

Kelly, R. (2019). Constructing Leadership 4.0: Swarm Leadership and the Fourth Industrial Revolution. Cham: Palgrave Macmillan. <https://doi.org/10.1007/978-3-319-98063-8>

Negri, C. (Ed.). (2019). Leading in the Working World 4.0. Wiesbaden: Springer Gabler. <https://doi.org/10.1007/978-3-662-58411-8>

Robbins, S. P., & Judge, T. A. (2023). Organizational Behavior (18th ed., Global Edition). Harlow: Pearson Education.

Additional individual literature based on chosen project for paper and presentation.

## Courses included (LV)

Course no.	Name of course	Instructor	Type	SWS	CP
76202	Leadership 4.0	Prof. Dr. Jana Wolf Prof. Dr. Angela Kuonath	P	3	5

## Module examination (prerequisite for the awarding of credit points)

Course no.	Type and duration of performance assessment	Determination of module grade	Comment
76202	PLP/PLR	60	Group Project Paper and Presentation
76202	PLK (30 min.)	40	

**Prerequisites for admission to the module examination:** none

**Further feedback during the course:** Feedback on the progress of the examination work

**Comments:** Course and presentations are held exclusively in English;

**Last update:** December 18, 2025, Prof. Dr. Angela Kuonath, Prof. Dr. Jana Wolf

**Module number: 76007**
**SPO version: 34**
**Module name: 76007 Health Technologies and Innovation Management**

<b>Degree</b>	Health Technology Management – (M.Sc. HTM)
<b>Module coordinator</b>	Prof. Dr. Steffen Kreikemeier
<b>Module type</b>	Compulsory module
<b>Semester</b>	1st semester Full-Time Equivalent (FTE); 3rd semester Part-Time Equivalent (PTE)
<b>Module duration</b>	1 semester
<b>Number of courses</b>	1
<b>Frequency</b>	Winter
<b>Credits</b>	5
<b>Workload Attendance</b>	45 hours
<b>Workload for self-study</b>	105 hours
<b>Participation prerequisite requirements Module</b>	Formal: none Content: none
<b>Use in other SG</b>	
<b>Language</b>	English

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**Module objectives**
**Technical skills**

Students can explain and analyze the different areas of the healthcare system. They can explain the structure and organization of the healthcare system and describe the specific requirements, such as data processing, that this industry demands.

Students are able to independently develop their own innovation strategy for start-ups and new businesses.

They are able to use fundamentally different approaches and methods to generate and evaluate business ideas using design thinking methods and to develop business model concepts using the Lean Canvas approach. Through workshops, students can initially apply the agile methods of design thinking and Lean Canvas to simple examples and identify the strengths and weaknesses of the individual method steps. For the subsequent concrete practical example from business or society, students can then evaluate the individual methodological steps in terms of their benefits and effects and apply them themselves in a targeted manner in order to recommend an innovation strategy and present it in a pitch presentation.

**Interdisciplinary skills**

The courses offered as part of the Health Technologies module promote civic engagement and holistic education among students. The courses complement the respective subject studies with interdisciplinary topics. The courses enable students to engage with fundamental scientific topics and current issues. Students can present complex interdisciplinary topics and classify their interrelationships. They are able to independently address socio-political issues.

Students are able to solve tasks independently. They can produce high-quality reports. Students are able to work in teams and, in particular, to establish contact, engage with, and empathize with potential customers and stakeholders.

- Learning content** - Recognizing and understanding complex interrelationships
- Application-oriented methodological knowledge
  - Reflection and evaluation of research questions and methods
  - Scientific communication and presentation of results
  - Digitalization in healthcare
  - Design thinking
  - Lean canvas
  - Initiation of the innovation process
  - Generating new ideas
  - Evaluating ideas
  - Selecting ideas and prototyping
  - Business model development
  - Success factors for innovations and business models for start-ups

**Literature**

- Kleppmann, W. (2020), *Versuchsplanung: Produkte und Prozesse optimieren (Experimental Design: Optimizing Products and Processes)*, 10th revised edition, Carl Hanser Verlag, Munich
- Trimmel, M. (2009), *Scientific Work in Psychology and Medicine*, UTB-Verlag
- Weiß, C. (2019), *Basic Knowledge of Medical Statistics*, 7th completely revised edition, Springer-Verlag, Munich
- Theisen, M.R. (2013), "Scientific Work - Successful in Bachelor's and Master's Thesis," 16th completely revised edition, Munich, Vahlen.
- Vahs, Dietmar; Brem, Alexander: *Innovation Management - From Product Idea to Successful Marketing*; 5th edition, Stuttgart: Schäffer-Poeschel-Verlag, 2015
- Hauschildt, Jürgen; Salomo, Sören: *Innovation Management*, 6th edition, Munich: Vahlen Verlag 2016
- Osterwalder, Alexander; Pigneur, Yves: *Business Model Generation – A Handbook for Visionaries, Game Changers, and Challengers*; 1st edition, Frankfurt am Main: Campus Verlag 2011
- Osterwalder; Pigneur; Bernarda; Smith: *Value Proposition Design*; 1st edition, Frankfurt am Main: Campus Verlag 2015
- Blank, Steve; Dorf, Bob: *The Handbook for STARTUPS – Step by Step to Your Own Company*; 1st edition, Heidelberg: dpunktverlag GmbH 2014
- Stähler, Patrick: *The Right Way to Start a Business – Toolbox for Entrepreneurs*; 2nd edition, Hamburg: Murrmann Publishers GmbH 2016
- Maurya, Ash: *Running Lean – The How-to for Successful Innovations*; 1st edition 2013, Heidelberg: dpunktverlag GmbH 2013
- Gerstbach, Ingrid: *Design Thinking in Business*; 1st edition, Offenbach: Gabal Verlag 2016
- Lewrick; Link; Leifer: *The Design Thinking Playbook*; 1st edition, Munich: Verlag Franz Vahlen 2017
- Uebernickel; Brenner; Pukall; Naef; Schindlholzer: *Design Thinking – The Handbook*; 1st edition, Frankfurt am Main: Frankfurter Societäts-Medien GmbH 2017
- Ries, Eric: *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Business*; Crown 2011
- Plattner, Hasso; Leifer, Larry; Meinel, Christoph: *Design Thinking: Understand – Improve – Apply*; Springer 2011

**Courses included (LV)**

Course No.	Name of course	Instructor	Type	SWS	CP
76301	Innovation Management	Dr. Benedikt Janny	V	2	5
76302	Health Technologies	Prof. Dr. Kreikemeier, Various	P	1	

**Module examination** (prerequisite for the awarding of credit points)

Course no.	Type and duration of performance assessment	Determination of module grade	Comment
76301	PLP	60	
76302	PLS	40	Reports about mandatory field trips

**Prerequisites for admission to the module examination:** none

**Further feedback during the course:** none

**Comments:** none

**Last update:** December 10, 2025, Prof. Dr. Kreikemeier

**Module number: 76008**
**SPO version: 34**
**Module name: 76008 Medical Data Fusion and Artificial Intelligence**

<b>Degree</b>	Health Technology Management – (M.Sc. HTM)
<b>Module coordinator</b>	Prof. Dr. Ralf von BAER
<b>Module type</b>	Compulsory module
<b>Semester</b>	1st semester Full-Time Equivalent (FTE); 3rd semester Part-Time Equivalent (PTE)
<b>Module duration</b>	1 semester
<b>Number of courses</b>	1
<b>Frequency</b>	Winter
<b>Credits</b>	5
<b>Workload Attendance</b>	45 hours
<b>Workload for self-study</b>	105 hours
<b>Participation prerequisite requirements Module</b>	Formal: none Content: none
<b>Use in other SG</b>	
<b>Language</b>	English

**Module objectives**
**Technical skills**

Students

- can apply semantic data integration and data fusion to medical data.
- can apply the basic concepts of data modeling, data manipulation, indexing, and normalization of databases.
- acquire basic programming skills and can apply these in the context of medical data fusion and AI.
- can assess the advantages and disadvantages of different approaches to medical data fusion and AI-based problem solving and select and apply suitable algorithms (e.g., for search, learning, or knowledge representation) for a given problem domain.
- can explain the differences between various paradigms of data fusion and their applications to medical data.
- can operate medical database systems by carrying out their own practice-oriented projects.
- can evaluate ethical risks and possible technological consequences of developing AI system, particularly in medical contexts.

**Interdisciplinary skills**

Students are able to plan and implement smaller projects in teamwork and can present and communicate project results and complex issues. They can read English scientific articles and extract the essentials, give seminar presentations, and discuss them with fellow students. They are able to take ethical and safety-related aspects into account when developing AI systems for medical applications

**Learning content** Fundamentals of Python & programming  
 Definition, problem formalization and historical background of AI  
 Introduction to programming with Python for handling medical data  
 Comparing and merging characteristics, attributes, and database schemas  
 Database normalization and indexing, storage operations ("CRUD") Data fusion methods  
 AI applications in medicine  
 Social and ethical aspects of data fusion and AI  
 Project work and presentation of results

**Literature** Alfons Kemper, André Eickler; Database Systems – An Introduction, DeGruyter Verlag, 2015, ISBN 978-3-11-044375-2  
 Davy Cielen, Arno Meysman et al.; Introducing Data Science: Big Data, Machine Learning, and more, using Python tools, Manning Publications, 2016, ISBN 978-1633430037  
 Houneida Sakly, Kristen Yeom et al.; Trends of Artificial Intelligence and Big Data for E-Health, Springer, 2023, ISBN 978-3-031-11198-3  
 Hunt: A Beginners Guide to Python 3 Programming (eBook Springer)

Selected current scientific journal articles on the topic

**Courses included (LV)**

Course no.	Name of course	Instructor	Type	SWS	CP
76303	Medical Data Fusion	Lecturer (Nico Zettler)	V	2	5
76304	Artificial Intelligence	Lecturer (Nico Zettler)	V	1	

**Module examination** (prerequisite for the awarding of credit points)

Course No.	Type and duration of performance assessment	Determination of module grade	Comment
76303	PLP	60	Group project; throughout the semester
76303	PLK (30 minutes)	40	

**Prerequisites for admission to the module examination:** none

**Additional feedback during the course:** none

**Comments:** Motivation to acquire the necessary knowledge for this course through self-study is expected.

**Last update:** April 28, 2026, Prof. Dr. Bae

**Module number: 76010**

**SPO version: 34**

**Module name: 76010 Master's thesis**

<b>Degree</b>	Health Technology Management – M.Sc. HTM
<b>Module coordinator</b>	Prof. Dr. Steffen KREIKEMEIER
<b>Module type</b>	Compulsory module
<b>Semester</b>	For part-time students: 4th semester, for full-time students: 3rd semester
<b>Module duration</b>	1 semester
<b>Number of courses</b>	1
<b>Frequency</b>	Summer semester, winter semester
<b>Credits</b>	30
<b>Workload Attendance</b>	
<b>Workload for self-study</b>	900 hours
<b>Prerequisites requirements Module</b>	Formal: see SPO
<b>Use in other SG</b>	
<b>Language</b>	German or English

**Module objectives**

**Technical skills**

Students are able to independently and critically examine a complex problem taken from their field of study and present their findings in detail using the scientific methods they have learned. The master's thesis enables students to work independently and in a structured manner to complete a task within a specified time frame using scientific methods. A central component is the written, scientifically sound elaboration of the work results and discussion of these, taking into account literature and other sources.

The colloquium enables students to present a summary of their work in an understandable manner and to discuss it with an expert audience from an objective perspective.

**Interdisciplinary skills**

Students are able to work independently and on schedule on a project related to a practical issue by analyzing, structuring, and solving complex problems.

Students are able to organize themselves independently by setting appropriate priorities and coping with the demands of the module. They can accept criticism and deal with it constructively.

**Special methodological skills, if applicable**

Students can apply the basics of research methodology by gathering relevant information, working on projects independently, interpreting and evaluating data, and selecting appropriate methods for professional use. They can present and defend complex subject-related content clearly and in a manner appropriate to the target audience, both orally and in writing. They are able to develop efficient working techniques.

**Learning content** Independent work on a research topic related to the Health Technology Management program. The master's thesis must be prepared as an oral presentation for an academic audience.

**Courses included (LV)**

Course no.	Name of course	Instructor	Type	SWS	CP
9999	Master's thesis	Professors at Aalen University			30

**Module examination** (prerequisite for the awarding of credit points)

Course no.	Type and duration of performance assessment	Determination of module grade	Comment
9999	PLS	100	

**Requirements for admission to the module examination:** ---

**Further feedback during the course:** ---

**Comments:** ---

**Last update:** December 10, 2025, Prof. Dr. Kreikemeier

**Module number: 76051-76056**
**SPO version: 34**
**Module name: 76051-76056 International Health Technology Management 1-6**

<b>Degree</b>	Health Technology Management – M.Sc. HTM
<b>Module coordinator</b>	Prof. Dr. Steffen KREIKEMEIER
<b>Module type</b>	Elective module
<b>Semester</b>	2nd or 3rd semester
<b>Module duration</b>	1 semester
<b>Number of courses</b>	
<b>Frequency</b>	
<b>Credits</b>	5
<b>Workload Attendance</b>	Depends on module
<b>Self-study workload</b>	Depends on module
<b>Participation requirements</b>	
<b>Prerequisite Module</b>	
<b>Use in other SG</b>	
<b>Language</b>	English

**Module objectives**

**Professionalism**  
 During their semester abroad, students can set their own priorities within the field of health technology management and develop an individual skills profile. In addition, they can acquire global expertise during their semester abroad.

**Interdisciplinary skills**  
 During a semester abroad, students acquire intercultural skills in particular intercultural skills and will be able to respond with intercultural sensitivity in future work situations. A semester abroad also strengthens students' self-organization skills. In addition, students improve their academic English.

**Learning content** The content is determined by the learning agreement between the coordinating institutions.

**Literature** Depends on the module

**Included courses (LV)**

Course no.	Name of course	Instructor	Type	SWS	CP
76501-76506	International Health Technology Management	Module-dependent			5

**Module examination** (prerequisite for the awarding of credit points)

Course no.	Type and duration of performance assessment	Determination of module grade	Comments
76501-76506	Module-dependent	Module-dependent	The services are provided after approval via learning agreements

**Prerequisites for admission to the module examination:** ---

**Further feedback during the course of study:** ---

**Comments** (SPO excerpt):

Upon request, students have the opportunity to complete coursework for the second or third semester abroad. The request must be submitted to the examination board responsible for the degree program.

The application shall be approved if the student provides suitable evidence (e.g., through a learning agreement or contract with a research institute, etc.) that the stay abroad is organized in a manner conducive to their studies; in doing so, the competence objectives of the second or third semester shall be taken into account appropriately.

The modules "International Health Technology Management 1–4" replace the modules in the second or third semester in the part-time program, and the modules "International Health Technology Management 1–6" replace the modules in the second semester in the full-time program.

**Last update:** April 28, 2026, Prof. Dr. Kreikemeier

**Module number: 76810-76813**

**SPO version: 34**

**Module name: 76810-76813 Elective Module**

<b>Degree</b>	Health Technology Management – (M.Sc. HTM)
<b>Module coordinator</b>	Prof. Dr. Steffen Kreikemeier
<b>Module type</b>	Elective module
<b>Semester</b>	For part-time students: 2nd semester & 3rd semester; for full-time students: 2nd semester
<b>Module duration</b>	1 semester
<b>Number of courses</b>	1
<b>Frequency</b>	Winter semester / Summer semester
<b>Credits</b>	5
<b>Workload Attendance</b>	Depends on the selected module
<b>Workload for self-study</b>	Depends on the selected module
<b>Participation requirements</b>	Formal: none
<b>requirements Module</b>	Content: none
<b>Use in other SG</b>	
<b>Language</b>	German/English (depending on module)

**General** A total of four elective modules must be selected. Two of the four elective modules must be medical or health technology modules (see "Medical and Health Technology" section of the list published each semester). The other two modules can be chosen either from the "General" section of the list published each semester or from the university's master's program offerings. The examination board is responsible for recognizing additional elective modules from Aalen University's master's program offerings.

**Module objectives** **Technical skills**  
See the corresponding elective module

**Interdisciplinary skills:**  
See the relevant elective module

**Learning content** See the relevant elective module

**Literature** See the corresponding elective module

**Courses included (LV)**

Course no.	Name of course	Instructor	Type	SWS	CP
	Module-dependent	Various			5

**Module examination** (prerequisite for the awarding of credit points)

Course no.	Type and duration of performance assessment	Determination of module grade	Comments
76801-76804	Depends on the module		

**Prerequisites for admission to the module examination:** none

**Further feedback during the course of study:** none

**Comments:** none

Last **update:** December 10, 2025, Prof. Dr. Kreikemeier

**Module number: 76820**

**SPO version: 34**

**Module name: 76820 Interdisciplinary Research Project**

<b>Degree</b>	Health Technology Management – M.Sc. HTM
<b>Module coordinator</b>	Prof. Dr. Steffen KREIKEMEIER
<b>Module type</b>	Elective module
<b>Semester</b>	2nd semester
<b>Module duration</b>	1 semester
<b>Number of courses</b>	1
<b>Frequency</b>	Summer
<b>Credits</b>	5
<b>Workload Attendance</b>	15 hours
<b>Workload for self-study</b>	135 hours
<b>Prerequisites for participation requirements Module</b>	Formal: none Content: Content from the modules " Scientific Methods/Statistics"
<b>Use in other SG</b>	
<b>Language</b>	English

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<b>Module objectives</b>	<p><b>Technical skills</b> Students will be able to compile and combine methods for addressing economic, health science, and technological problems in healthcare and develop a suitable topic for a scientific paper or research project. Students will be able to narrow down the topic and formulate a suitable research question. They will be able to research relevant literature and develop an overview of the topic.</p> <p><b>Interdisciplinary skills</b> Students will be able to analyze qualitative and quantitative methods of empirical social research. Students will be able to draft a research proposal.</p>
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**Learning content** The aim of this module is to enable students to develop a research question or a qualitative or quantitative research design and to implement this within one semester in a research proposal (in German or English). In cooperation and consultation with the supervisor, the development and implementation of the research work/research project is continuously discussed and the corresponding methods, e.g., empirical social research, are deepened in an application-oriented manner (e.g., through the reading and discussion of relevant texts).  
In this way, students acquire application-oriented methodological knowledge that encompasses not only the methods of their own project, but also alternative approaches. In addition, the respective research questions and methods are critically reflected upon, drawing on other interdisciplinary approaches and, in particular, ethical approaches.

**Literature** Döring, N. and Bortz, J. (2016): Research Methods and Evaluation in the Social and Human Sciences, 5th completely revised, updated and expanded edition, Springer, Berlin.

Schira, J. (2012): Statistical Methods in Economics and Business Administration, 4th edition, Pearson Studium, Munich.

Theisen, M.R. (2013): "Scientific Work - Successful in Bachelor's and Master's Thesis," 16th completely revised edition, Munich, Vahlen.

Wooldridge, J. (2013): Introductory Econometrics: A Modern Approach. 5th ed. Cincinnati, OH: South-Western College Publishing.

Further literature will be consulted depending on the specific issue being addressed and the methods used.

**Courses included (LV)**

Course no.	Name of course	Instructor	Type	SWS	CP
76203	Interdisciplinary Research Project	Various	S	1	5

**Module examination (prerequisite for the awarding of credit points)**

Course no.	Type and duration of performance assessment	Determination of module grade	Comment
76203	PLS	100%	Throughout the semester

**Prerequisites for admission to the module examination:** none

**Further feedback during the course:** none

**Comments:** none

Last **update:** December 10, 2025, Prof. Dr. Kreikemeier

**Module number: 76821**
**SPO version: 34**
**Module name: 76821 Advanced Interdisciplinary Research Project**

<b>Degree</b>	Health Technology Management – M.Sc. HTM
<b>Module coordinator</b>	Prof. Dr. Steffen KREIKEMEIER
<b>Module type</b>	Elective module
<b>Semester</b>	Part-time: 3rd semester; full-time: 2nd semester
<b>Module duration</b>	1 semester
<b>Number of courses</b>	1
<b>Frequency</b>	Winter
<b>Credits</b>	10
<b>Workload Attendance</b>	45 hours
<b>Workload for self-study</b>	255 hours
<b>Prerequisite for participation</b>	Formal: elective Module Interdisciplinary Research Project passed
<b>Prerequisite Module</b>	Content: none
<b>Use in other SG</b>	
<b>Language</b>	English

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**Module objectives**
**Technical skills**

Students will be able to draft a scientific article or research report at publication level. They will be able to select suitable literature on a specific topic from a relevant review and determine appropriate empirical methods. Students will be able to correctly classify the level of their article/research report (in German or English) within the relevant subject group and submit it to a specialist journal for publication.

**Interdisciplinary skills**

Students can constructively engage with critical comments, reflect on them, evaluate them, and implement them. Students are able to defend their findings in a colloquium.

**Learning content** This module builds directly on the Interdisciplinary Research Project module. During the semester, students write a specialist article or research report, which is submitted to a specialist journal with a review process, if possible.

**Literature**

Döring, N. and Bortz, J. (2016): Research Methods and Evaluation in the Social Sciences and Humanities, 5th completely revised, updated and expanded edition, Springer, Berlin.

Schira, J. (2012): Statistical Methods in Economics and Business Administration, 4th edition, Pearson Studium, Munich.

Theisen, M.R. (2013): "Scientific Work - Successful in Bachelor's and Master's Thesis," 16th completely revised edition, Munich, Vahlen.

Wooldridge, J. (2013): Introductory Econometrics: A Modern Approach. 5th ed. Cincinnati, OH: South-Western College Publishing.

Further literature is consulted depending on the specific issue being addressed and the methods used.

**Courses included (LV)**

Course no.	Name of course	Instructor	Type	SWS	CP
76305	Advanced Interdisciplinary Research Project	Various	S	3	10

**Module examination (prerequisite for the awarding of credit points)**

Course no.	Type and duration of performance assessment	Determination of module grade	Comment
76305	PLS	80	Publication will be submitted to a journal
76305	PLR	20	

**Requirements for admission to the module examination:** none

**Further feedback during the course:** none

**Comments:** none

Last **update:** December 10, 2025, Prof. Dr. Kreikemeier

**Module number: 76815**
**SPO version: 34**
**Module name: 76815 Communication, Movement, and Expression**

<b>Degree</b>	Health Technology Management – M.Sc. HTM
<b>Module coordinator</b>	Prof. Dr. Ralf von Baer, Prof. Dr. Regina Kempen
<b>Module type</b>	Elective module
<b>Semester</b>	For part-time students: 1st or 3rd semester; for full-time students: 1st semester
<b>Module duration</b>	1 semester
<b>Number of courses</b>	1
<b>Frequency</b>	Winter
<b>Credits</b>	5
<b>Workload Attendance</b>	45 hours
<b>Workload for self-study</b>	105 hours
<b>Participation prerequisite Requirements Module</b>	Content: none
<b>Use in other SG</b>	Business Psychology and Sustainability (BPS; M.Sc.)
<b>Language</b>	English

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**Module objectives**
**Technical skills**

Participants reflect on their own body language and paraverbal and nonverbal communication through dance, movement, and theater. They are able to apply the basics of group dynamics in practical exercises and can analyze typical dynamics (e.g., role distribution, status behavior, hierarchies) together. They can describe basic types and patterns of conflict, as well as strategies for dealing with conflict.

They reflect on the influence of linguistic and nonverbal expression on the impact and comprehensibility of messages. They can apply techniques and principles of improvisational theater and expression as a means of personal development and communication.

**Interdisciplinary skills**

Personal skills:

- Ability to self-reflect and perceive one's own modes of expression, emotions, and effects on others.
- Strengthening one's own appearance and presence in group or team situations.
- Increasing tolerance for ambiguity and spontaneity in dealing with the unexpected.

Social skills:

- Constructive handling of conflicts and tensions in groups.

- Ability to recognize status behavior, reflect on it, and deal with it appropriately in different situations.

Methodological skills:

- Application of improvisation techniques to promote creativity, team interaction, and flexibility.
- Reflecting on and adapting one's own communication behavior based on feedback.

**Learning content**

- Reflection on self-perception and external perception
- Dealing with conflicts and group dynamics in a team, including status and hierarchy, for example
- Dealing with language
- Dealing with and perception of movement and dance.

**Literature**

Literature will be announced during the course if necessary.

**Courses included (LV)**

Course no.	Name of course	Instructor	Type	SWS	CP
76501	Communication, Movement, and Expression	Theresa Kempf, Adrian Turner	V, Ü	3	5

**Module examination** (prerequisite for the awarding of credit points)

Course no.	Type and duration of performance assessment	Determination of module grade	Comment
76501	PLP	100	

**Requirements for admission to the module examination:**

Participation in all attendance days

**Further feedback during the course:**

Feedback from the instructors

**Comments:**

Proof of performance is the creation of an Educast

Important: A willingness to engage in physical activity, self-reflection, and a practical, playful approach are required.

**Last update:** September 7, 2025, Ralf von Baer

**Module number: 76281**

**SPO version: 34**

**Module name: 76281 Medicine for non physicians**

<b>Degree</b>	Health Technology Management – M.Sc. HTM
<b>Module coordinator</b>	Prof. Dr. Ralf von Baer, Prof. Dr. Regina Kempen
<b>Module type</b>	Elective module
<b>Semester</b>	For part-time students: 1st or 3rd semester; for full-time students: 1st semester
<b>Module duration</b>	1 semester
<b>Number of courses</b>	1
<b>Frequency</b>	Winter
<b>Credits</b>	5
<b>Workload Attendance</b>	45 hours
<b>Workload for self-study</b>	105 hours
<b>Participation prerequisite Requirements Module</b>	Content: none
<b>Use in other SG</b>	
<b>Language</b>	English

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**Module objectives**

**Technical skills**

Students can explain medical topics and terminology. They will be able to describe the normal anatomy and physiology of major organs. They can also explain the changes in physiology during selected major diseases.

Based on this knowledge students can describe the application of major medical devices for diagnostic and treatment of the diseases. They can explain the technical principles of the devices, the use and also what kind of staff with what kind of qualification is involved in the processes.

Students are able to reflect on operational procedures in an hospital. They are also able to explain how the existing processes can be improved by introducing new technologies.

**Interdisciplinary skills**

Personal skills:

- Improved health competency and prevention of diseases
- Ability to handle own diseases and those of friends and family better

Social skills:

- Better understanding of the interaction, motivation and collaboration in social work environments.
- Improved communication with staff from the health care sector

Methodological skills:

- Fast adaption of a sound understanding
- Strengthening communication skills in the health care environment.

**Learning content :**

The normal anatomy and physiology of selected organ systems is detailed. The changes in physiology during selected major diseases and the medical processes for their diagnostic and therapy are explained. Topics covered are as follow:

1. Heart & Circulation, haematology 1
2. Heart & Circulation, haematology 2
3. Gastroenterology
4. Wasser / Nephrology
5. Neurology
6. Bones & Skin
7. Senses
8. Infectious diseases
9. Prevention
10. Emergency medicine
11. ICU
12. Operation theater
13. Diagnostics radiology & Lab
14. Oncology.

**Literature** Literature will be announced during the course if necessary.

**Courses included (LV)**

Course no.	Name of course	Instructor	Type	SWS	CP
76204	Medicine for Non Physician	Prof. Dr. von Baer	V,	3	5

**Module examination** (prerequisite for the awarding of credit points)

Course no.	Type and duration of performance assessment	Determination of module grade	Comment
76204	PLC (60 min)	100	

**Requirements for admission to the module examination:**
**Further feedback during the course:**
**Comments:**

none

**Last update:** December 12, 2025, Ralf von Baer

**Module number: 76019 / 76022**

**SPO version: 34**

**Module name: 76019 / 76022 Advanced Medical Technologies**

<b>Degree</b>	Health Technology Management – M.Sc. HTM
<b>Module coordinator</b>	Prof. Dr. Markus Glaser
<b>Module type</b>	Elective module
<b>Semester</b>	any
<b>Module duration</b>	1 semester
<b>Number of courses</b>	1
<b>Frequency</b>	Summer term
<b>Credits</b>	5
<b>Workload Attendance</b>	75 h
<b>Workload for self-study</b>	75 h
<b>Prerequisites for participation requirements Module</b>	none
<b>Use in other SG</b>	
<b>Language</b>	English

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**Module objectives**

**General**

Upon successful completion of this module, students will have acquired a comprehensive understanding of the operating principles of complex medical devices. They will be able to identify specific technological challenges and articulate appropriate solution approaches. Furthermore, students will be capable of explaining the fields of application and the effects of such devices on the human body, including potential side effects and strategies for their mitigation.

**Subject-Specific Competencies**

Students will demonstrate a thorough understanding of the functionality of complex medical devices used in diagnostics, therapy, and rehabilitation. They will be able to relate device functionality to underlying medical mechanisms and to transfer and apply fundamental solution principles to novel problems and contexts.

**Transferable (Generic) Competencies**

In addition, students will be able to independently plan, organize, and structure their contributions within group work, and to collaborate effectively in a team-oriented environment. Within the context of a colloquium, students will be capable of presenting their project in a structured and coherent manner and of defending their results through well-reasoned and substantiated argumentation.

**Learning content** . The following content will be covered in the module:

- 1) Lectures about key principles in medical context
  - a. Sterilization (fundamentals, methods, properties, validation)
  - b. Osteosynthesis (incl. fundamentals of bone tissue)
- 2) Lab based exercises:
  - a. Laparoscopy
  - b. Biomechanics
  - c. EMG
  - d. Ultrasonic
  - e. Spirometry
- 3) Expert lectures
  - a. Experts from industry presenting latest technologies, challenges and strategies. Including technology, regulatory and management.
- 4) Medical technologies and treatment abstracts
  - a. A comprehensive collection of summaries covering a wide area in medical technologies is available for self study.
  - b. Examples are: Surgery room, cleanroom, sonography, sensors, E-ray, MRT, CT, Scintigraphy, endoscopy, robotic surgery,..
- 5) Preparation and presentation of a selected treatment / technology (to be added to the repository)

**Literature**      Medical Device Technologies: A Systems Based Overview Using Engineering Standards – Gail Baura  
 Introduction to Biomedical Engineering – John Enderle & Joseph Bronzino  
 Transformative Technologies: Revolutionizing Healthcare Through Computing and Communication - Mithun Rai, Sweta Bhattacharya,

**Courses included (LV)**

Course no.	Name of course	Instructor	Type	SWS	CP
	Advanced Technical Technologies	Prof. Dr. Markus Glaser	V	4	5

**Module examination** (prerequisite for the awarding of credit points)

Course no.	Type and duration of performance assessment	Determination of module grade	Comment
	PLM	100%	

**Prerequisites for admission to the module examination:** presentation of selected subject

**Further feedback during the course:** feedback on presentation

**Comments:** none

Last **update:** 2026-04-03, Markus Glaser

**Module number: XXXX**
**SPO version: 34**
**Module name: • Health Market Access**

<b>Degree</b>	Health Technology Management – M.Sc. HTM
<b>Module coordinator</b>	Prof. Dr. Ralf von Baer,
<b>Module type</b>	Elective module
<b>Semester</b>	2nd semester
<b>Module duration</b>	1 semester
<b>Number of courses</b>	1
<b>Frequency</b>	Summer
<b>Credits</b>	5
<b>Workload Attendance</b>	60 hours
<b>Workload for self-study</b>	90 hours
<b>Participation prerequisite</b>	Content: none
<b>Requirements Module</b>	
<b>Use in other SG</b>	
<b>Language</b>	English

<b>Module objectives</b>	<p><b>Technical skills</b></p> <p>Students can explain the requirements for market access for products and services in the healthcare sector on a product- or service-specific basis. They are familiar with the options for service delivery and reimbursement structures in the international healthcare sector and can analyze these with regard to individual products and services. Students are able to identify and assess the economic, health economic, and social law contexts in the healthcare systems of different countries and align medical technology solutions and their marketing accordingly. They can evaluate the opportunities and risks of different business models</p> <p>Students are able to identify key stakeholders in the international healthcare sector, in politics, and in professional associations, and to develop their market access strategy with these stakeholders and their interests in mind. Students can identify the pricing mechanisms of market segments and align business models and products accordingly. Students can prepare and present case studies on market access for medical products and services. To do so, they utilize the results of their own research as well as the insights they gain during visits to companies and institutions as part of field trips.</p> <p><b>Interdisciplinary skills</b></p> <p>Students demonstrate the ability to generate, evaluate, and implement ideas in a group-centered setting. They build upon the skills they have already acquired in previous semesters to work on complex issues within project groups and jointly present a coherent solution.</p> <p>They are confident when presenting to company representatives.</p> <p>They can methodically use interviews, surveys, and site visits to gather in-depth information</p>
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**Learning content :**
**INTRODUCTORY LECTURE:**
**I. Reimbursement and Payment**

1. Fundamentals of reimbursement & payment, including cost coverage for products and services
2. Reimbursement models in selected countries and their differences

**II. Market Access**

1. Cost-benefit assessments (tools and processes for method evaluation and pilot programs for the assessment of innovative diagnostic and treatment methods)
2. Market access strategies
3. Pricing strategies
4. Key players in the field of market access
5. Market access strategies for selected international markets
6. Study of best practice examples in market access
7. Development of case studies as small-group projects.

**FIELD TRIPS:**

Students are given the opportunity to gain in-depth familiarity with companies and institutions through one extended field trip or several shorter ones. To pass the module, students must attend 8 half-day field trips (8 x 6 class hours) in person. These half-day field trips may also be combined into a single study trip. Participation in individual events may also take place in previous semesters or during semester breaks. To pass the module, students must provide proof of successful participation in the required number of excursion events.

**Literature**            Literature will be announced during the course if necessary.

**Courses included (LV)**

Course no.	Name of course	Instructor	Type	SWS	CP
XXXX	Health Market Access	Prof. Dr. von Baer	P,E	3	5

**Module examination (prerequisite for the awarding of credit points)**

Course no.	Type and duration of performance assessment	Determination of module grade	Comment
XXXX	PLR	100	Working in small groups, students will prepare a case study (presentation) on the market entry strategy for an innovative product in a specific country and present it

**Requirements for admission to the module examination:**

**Further feedback during the course:**

**Comments:**

none

**Last update:** December 12, 2025, Ralf von Baer